STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	)))))	Case No. U-21981

DIRECT TESTIMONY

OF

QUENTIN A. GUINN

ON BEHALF OF

CONSUMERS ENERGY COMPANY

December 2025

Q. Please state your name and business address.

A. My name is Quentin A. Guinn, and my business address is One Energy Plaza, Jackson, Michigan 49201.

Q. By whom are you employed and in what capacity?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as Capital Asset Strategy Manager.

Q. What are your responsibilities as Capital Asset Strategy Manager for Consumers Energy?

A. As Capital Asset Strategy Manager, I am responsible for providing support and direction for Facilities strategy development, compliance, resource planning, and regulatory proceedings. The Facilities execution plan ranges from activities related to gas operations to those involving corporate operational areas of Consumers Energy. Facilities' asset portfolio consists of over 80 buildings includes the corporate office, storerooms, distribution centers, maintenance garages, service centers, welding and fusion workshops, learning and development buildings, coal generation, wind generation, gas compression, and hydroelectric sites. My responsibilities include regulatory compliance, rate case strategy and execution, corporate policy administration, organizational vision, and resource planning for field execution.

Q. What is your formal educational experience?

A. I hold a bachelor's degree in economics from Yale University, located in New Haven, Connecticut, and a Juris Doctorate degree from Washington University, located in St. Louis, Missouri.

Q. Would you please describe your previous work experience?

A. In 1999, I started my career at Consumers Energy as a Contracts Analyst. In 2000, I began a series of changing roles, with increasing responsibility, from Contracts Supervisor to Director of Contract Services. In each successive role, I led teams of Contract Analysts and Contract Administrators who were responsible for a broad range of construction, maintenance, consulting, information technology, and engineering contracts. The responsibilities of these teams included sourcing and evaluating contractors and consultants, developing scopes of work, competitively bidding work, negotiating agreements, and administering contracts. In 2013, I began work in a series of successive roles focused on data, analytics, performance, and work management culminating in my current role as Capital Asset Strategy Manager.

Q. What is the purpose and scope of your direct testimony in this proceeding?

A. The purpose of my direct testimony is to support the Company's costs related to the Gas business portion of Facility Operations. To that end, I will:

- Describe the Facilities and Shared Services function;
- Describe the methodology employed by Facility Operations ("Facilities") for evaluating the health of its various facilities;
- Support the reasonableness and prudence of the capital expenditures for Asset Preservation for the historical year ended December 31, 2024, the bridge period beginning January 1, 2025 and ending October 31, 2026, and the projected test year ending October 31, 2027; and
- Support the reasonableness and prudence of the Operation and Maintenance ("O&M") expenses for Facilities and Shared Services for the historical year ended December 31, 2024, the bridge period beginning January 1, 2025 and ending October 31, 2026, and the projected test year ending October 31, 2027.

Q. Have you previously testified before the Michigan Public Service Commission ("MPSC" or "the Commission")?

A. Yes. I have provided testimony on behalf of Consumers Energy in Case Nos. U-21148, U-21224, U-21308, U-21389, U-21490, U-21585, U-21806, and U-21870.

Q. Are you sponsoring any exhibits with your direct testimony?

A. Yes. I am sponsoring the following exhibits:

Exhibit A-12 (QAG-1)	Schedule B-5.4	Summary of Actual & Projected Capital Expenditures Facilities & Shared Services;
Exhibit A-82 (QAG-2)		Summary of Actual and Projected O&M Expenses Facilities & Shared Services;
Exhibit A-83 (QAG-3)		Detailed List of Projected Gas Capital Expenditures Facilities & Shared Services;
Exhibit A-84 (QAG-4)		Asset Replacement List of Projects and Capital Expenditures;
Exhibit A-85 (QAG-5)		New Construction List of Projects and Capital Expenditures;
Exhibit A-86 (QAG-6)		Lansing Service Center Site Plan;
Exhibit A-87 (QAG-7)		Lansing Service Center Floor Plan;
Exhibit A-88 (QAG-8)		Hastings Service Center Conceptual;
Exhibit A-89 (QAG-9)		Jolly Road Construction Building Plan;
Exhibit A-90 (QAG-10)		Jolly Road Construction Site Plan;
Exhibit A-91 (QAG-11)		Saginaw Gas Construction Building Plan;
Exhibit A-92 (QAG-12)		Saginaw Gas Construction Lease;
Exhibit A-93 (QAG-13)		Renovations List of Projects and Capital Expenditures;

Exhibit A-94 (QAG-14)	Kalamazoo Service Center Construction Documents;
Exhibit A-95 (QAG-15)	Kalamazoo Service Center Alternatives Analysis; and
Exhibit A-96 (QAG-16)	Marion Building Renovation Construction Documents.

Q. Were these exhibits prepared by you or under your direction or supervision?

A. Yes.

Q. Please describe the exhibits you are sponsoring.

A. Exhibit A-12 (QAG-1), Schedule B-5.4, details the actual and projected capital expenditures related to Facilities and Shared Services for the calendar year 2024, bridge period (22 months ending October 31, 2026), and the projected test year 12 months ending October 31, 2027. Exhibit A-82 (QAG-2) details the O&M costs related to Facilities and Shared Services. Exhibit A-83 (QAG-3) identifies Facilities and Shared Services projects and the projected capital expenditures related to those projects and programs. Exhibit A-84 (QAG-4) identifies Asset Replacement projects and the projected capital expenditures and project plans related to those projects and programs. Exhibit A-85 (QAG-5) identifies New Construction projects and the projected capital expenditures and project plans related to those projects and programs. Exhibit A-86 (QAG-6) is the site plan for the new Lansing Service Center Project; Exhibit A-87 (QAG-7) is the floor plan for the new Lansing Service Center Project; Exhibit A-88 (QAG-8) is a conceptual building plan for the new Hastings Service Center; Exhibit A-89 (QAG-9) is the building plan for the Jolly Road Construction Project; Exhibit A-90 (QAG-10) is the site plan for the Jolly Road Construction Project; Exhibit A-91 (QAG-11) is the building plan for the Saginaw Gas Construction Project; Exhibit A-92 (QAG-12) is the lease agreement for the Saginaw Gas Construction Project;

Exhibit A-93 (QAG-13) identifies Renovations projects and the projected capital expenditures and project plans related to those projects and programs; Exhibit A-94 (QAG-14) includes construction documents for the Kalamazoo Service Center Project; Exhibit A-95 (QAG-15) is the Alternatives Analysis for the Kalamazoo Service Center Project; and Exhibit A-96 (QAG-16) includes construction documents for the Marion Building Renovation Project.

Q. Please explain the Facilities and Shared Services function.

A. The Facilities and Shared Services function consists of the following support organizations: Fleet Services, Facilities, Real Estate, Contractor Oversight, and Supply Chain Materials Management. Facilities and Shared Services acquires, constructs, and maintains assets required to support the functional areas of the business that serve the Company's customers.

Q. Are you addressing all support organizations related to Facilities and Shared Services in your direct testimony and exhibits?

A. No. Fleet Services will be addressed in the testimony of Company witness Joshua J. Judy.

Q. What is the function of the Facilities organization?

A. Within Facilities and Shared Services, Facilities manages, maintains, and operates over 60 buildings comprising 3.2 million square feet of building space across the state of Michigan that allows the Company to serve customers across the state in an efficient and effective manner.

Q. How have Company facilities changed over time?

A. The Company experienced major growth in the area of Facilities during the 1950s and 1960s. Of its over 80 buildings, nearly half were built or acquired during this period and

remain in operation today. As a result, these buildings are now over 50 years old. The Company made no significant investment in its facilities and initiated no major renovations or construction of new buildings between 1970 and 2000 given competing customer investment priorities. In 2003, the Company constructed its One Energy Plaza headquarters building in Jackson. This construction marked the adoption of the open office concept (i.e. fewer hard wall offices) at the Company which, among other reasons, was adopted to foster a more collaborative work environment. Between 2000 and 2016, the Company also closed many facilities including 22 service centers across Michigan to adapt to shifting population trends in the state and to reduce costs for customers.

Q. What structural concerns or problems do these aging structures and facilities create for the Company?

A. Multiple major systems throughout these facilities, such as boilers, chillers, cranes, elevators, emergency generators, heating, ventilation, and air conditioning ("HVAC") systems, lighting, power distribution, paving, roofing, Uninterruptible Power Systems, and vehicle hoists are beyond their useful lives. Further, building materials in some facilities contain hazards such as asbestos and lead paint. Repairs on such aging infrastructure are not always cost effective and can lead to lengthy projects and significant renovation or replacement of entire structures. It is also increasingly difficult to identify and obtain adequate parts and to further locate the necessary expertise to work on aging equipment. These facilities were not designed to meet modern standards of energy efficiency nor are they suited to support evolving needs for collaborative workspaces in an environment with personnel working on-site, remotely, and in hybrid combinations of both.

Q. What concerns or problems do these aging structures and facilities create for the Company's customers?

A. The population and infrastructure of the state of Michigan looks much different than they did in the 1950s and 1960s. In 1950, the population of Michigan was 6,407,000 with growth focused in urban areas. The state's current population is now over 10 million, with much of the growth since the 1960s having occurred in suburban areas. The locations of some of the Company's facilities no longer allow the Company to optimize service to customers. In these situations, longer response times and increased drive times make meeting service delivery standards difficult for the Company's employees who are dedicated to providing the best service to Consumers Energy's customers. The cost implications of these issues include but are not limited to higher transportation fuel costs, accelerated wear and tear on vehicles, and reduced cycle time for truck rolls - all of which increase service costs to customers. This issue is particularly pronounced at the Lansing Service Center, as I will discuss in detail later in my testimony.

Q. What process does Consumers Energy utilize to evaluate whether to make capital investments in facilities?

A. The Company has been using a formal assessment process for several years that evaluates whether or not to invest in a facility by studying each facility's overall health beyond annual O&M expense. The Company plans to continue using this process and is enhancing it by incorporating the operational priorities of the Facilities organization's internal business partners (e.g. Gas Operations, Gas Engineering, etc.). Given the evolving nature of the workforce (i.e. with hybrid work) the Company is working to ensure its facilities are right sized and properly configured for the needs of the work.

Q. What is the formal assessment process related to facility health?

A. A formal assessment process was established in 2016 to determine the need for capital investments in facilities. The assessment process is re-evaluated every two years resulting in minor updates to the methodology to reduce subjectivity in scoring. The most recent assessment was completed in 2022. The Facilities Department consists of qualified, trained, and certified experts in architecture, HVAC, plumbing, and electrical that conduct the assessment. In that process, an evaluation is made, on a multi-category scale, of certain conditions and characteristics of the structure and functions of the facility being assessed. For each facility, each condition and characteristic is scored (with a score of 0 lowest to 5 highest per category), and then the facility is ranked on a multi-category scale (with an 80-point maximum score).

Q. What categories are included in the evaluation process of the Company's facilities?

A. Categories that are evaluated include: (i) safety (such as asbestos or other hazardous materials, traffic flow, and compatibility with surrounding areas); (ii) quality (such as workplace efficiency, employee comfort, and talent attraction and retention); (iii) cost (such as facility operating costs, space optimization, and energy efficiency); (iv) delivery (such as response times, driving distance within service territory, and sustainability of operations); and (v) morale (such as employee pride, wellness, and retention).

Q. How is the quality of each category identified above established?

A. The facility under evaluation falls within one of three quality designation categories depending on the score received. A score above 64 is designated as "Good"; a score of 48 to 64 is designated as "Serviceable," meaning that investment and/or replacement is needed; and a score under 48 is designated as "Poor," meaning that there are multiple

systems failing at the facility. Facilities designated as "Poor" are typically candidates for replacement.

Q. What is the next step in the facility assessment?

A. Once the facility is initially evaluated and receives a quality designation, operational departments of the business then review and validate the raw scored ranking and adjust the ranking to reflect forecasted needs of the business. Facilities finalizes the score, and any facility that scores below a minimum acceptable level, 48 out of 80 points, may be a candidate for renovation or replacement.

Q. How does the Facilities organization consider the business needs of its internal business partners when selecting locations to target and how do facility health assessments and evaluations of business partner needs combine to create a prioritization plan for Facilities work?

A. The Facilities organization considers business partner needs by meeting on a regular basis with business partners to review their business plans and the resulting impacts on the facilities necessary to support these plans. The process begins with a 10 Year Long Term Facilities Plan. This plan is maintained by the Facilities organization and contains fundamental information about each facility such as the year the building was constructed, estimated years of useful life remaining in the building, dates of major milestones in the life of the building (e.g. significant renovations and building additions), etc. The 10 Year Long Term Facilities Plan is one of several inputs then used to inform creation of the Long-Term Financial Plan ("LTFP"). The LTFP is a five-year financial plan created in part from the aforementioned facility health assessments. Facilities organization engineers and other technical experts across the Company (e.g. Company environmental analysts)

generate health assessments and develop capital investment priorities based on the health assessments (e.g. replacement of specific assets at specific buildings, preventive maintenance of specific building systems, work on a building envelope). These capital investment priorities are then reviewed by business partners for alignment with their business plans and can become projects incorporated into the LTFP. The ultimate list of capital investment projects incorporated into the LTFP is then derived from this collaboration between the Facilities organization and business partners. While considerable engineering rigor is applied to developing the facility health assessments, business partner priorities do affect the ultimate list of projects incorporated into the LTFP. The Kalamazoo Service Center Project included in this rate case, for instance, was elevated in priority to address negative employee morale and hazardous material issues, among other factors, that resulted in nearly 40% of the Kalamazoo Service Center being closed to employees.

Q. Does this process ensure priority is given to Facilities projects critical to ensuring the Company can serve its customers?

A. Yes. The facility health assessments and aforementioned planning process produces a prioritized list of facilities for renovation or replacement that is aligned with both the need to preserve and maintain facilities assets and support business plans in providing optimal customer service. Buildings that are in poor shape or are otherwise suboptimal negatively impact the Company's ability to serve customers.

Q. Are there situations in which prioritization of projects might change even after development of the LTFP?

A. Yes. Though not typical, reprioritization of projects after establishment of the LTFP can occur. For example, several years ago the Company reprioritized development of a service

center in Tawas to provide timely support to customers in the greater Tawas region and to reduce the workload impact on local first responders during response to emergency utility events. In another example, the Company revised its plans for the Kalamazoo Service Center Project included in this case. In this instance, after examining the impacts of the COVID pandemic on the workforce and changes the pandemic wrought in how work is performed, the Company revised its original plan to replace the Kalamazoo Service Center and instead decided to renovate portions of it as many of the building modifications originally proposed became more costly due to supply chain issues and were also deemed no longer necessary to support the post-COVID workforce.

Q. Is the Company taking steps to ensure its facilities are right-sized given changes in the working environment?

A. Yes. The Company continues to monitor use of its facilities in a post-COVID work environment. Following the pandemic, the Company established expectations for in-person work for all employees at Company facilities. As a result, Company facilities are continuously evaluated for alignment with current and anticipated work trends. In cases where underutilized workspace has been identified, the Company has divested or examined divesting such space. For example, in 2020, the Company terminated lease agreements for over 30,000 square feet of previously leased office space at the Commonwealth Commerce Center in Jackson. The Company will continue to evaluate space utilization with the goal of eliminating underutilized space and aligning business needs with space requirements.

Capital Spending Overview

Q. What programs are included in the projected capital expenditures for Facilities?

A. As demonstrated in Exhibit A-12 (QAG-1), Schedule B-5.4, Facilities capital spending is divided into two programs: (i) Asset Preservation; and (ii) Other Equipment. Capital spending is broken down into multiple standard cost categories, including contractor, labor, materials, business expenses, and other (loadings, chargebacks). Most Facilities capital spending, as reflected in Exhibit A-12 (QAG-1), Schedule B-5.4, is for Asset Preservation, which is broken down into four portfolio categories: emergent repairs, asset replacement, new construction, and renovations.

Other Equipment

Q. What is included in the Other Equipment program?

A. Other Equipment includes capital investments for wellness equipment; computer equipment; print equipment; Real Estate tools and equipment; Supply Chain tools and equipment; and Facilities tools. As shown in Exhibit A-12 (QAG-1), Schedule B-5.4, the Company is projecting to spend $1,119,000 on Other Equipment in the bridge period and $633,000 on Other Equipment in the test year.

Q. Can you elaborate on what the various categories of Other Equipment spending represent?

A. Wellness Equipment consists primarily of equipment used by Operations personnel and others in the Company's fitness centers. Computer Equipment includes computers acquired for use by Facilities and Shared Services personnel outside of routine lifecycle replacements. These include acquisitions of computer equipment obtained for a specialty use (e.g. a plotter) or replacement of computer equipment that fails prematurely for various

reasons. Print Equipment consists of large copying and printing equipment for the Company's Mail Room. Real Estate Tools and Equipment consists primarily of survey equipment. Supply Chain Tools and Equipment consists of tools and equipment acquired for material storerooms such as shelving.

Q. How did the Company determine this level of investment for Other Equipment?

A. Investment levels for Other Equipment are established annually as part of the annual budget setting process. Levels of investment are set to meet identified needs of the business and are established at or below the five-year historical average spend for Other Equipment. The test year in this case totals $633,000 as compared to the five-year historical average of $359,000. This level of spend over the five-year historical average is attributable to growing investments in Supply Chain warehousing used for storage and delivery of materials that support the Company's increasing electric reliability workplan.

Q. What specific projects and related forecasted spend constitute the bridge period and test year for Other Equipment?

A. Specific projects that constitute the forecasted spend for Other Equipment are not known in advance. For this reason, the Company uses a five-year historical average to determine Other Equipment capital expenditures. The Commission has accepted this rationale and granted the Company recovery for Other Equipment in multiple prior rate cases including Case Nos. U-21806, U-21585, U-21389, U-21224, and U-20963.

Emergent Repairs

Q. What capital expenditures are included in the Emergent Repairs portfolio category?

A. Emergent Repairs includes unplanned corrective maintenance and break fix repair of assets. As shown in Exhibit A-83 (QAG-3), the Company is projecting to spend

$2,634,000 in the bridge period and $1,482,000 in the test year on emergent repairs. The Company maintains data on the age, condition, and maintenance history of its major building system assets. This data, in conjunction with historical spend, is used to forecast projected spending on unplanned corrective maintenance and break fix repair of assets.

Q. How did the Company determine the level of investment for Emergent Repairs?

A. Levels of investment for Emergent Repairs are established at or below the five-year historical average spend for Emergent Repairs.

Q. What specific projects and related forecasted spend constitute the bridge period and test year for Emergent Repairs?

A. Specific projects that constitute the forecasted spend for Emergent Repairs are unknowable in advance. For this reason, the Company uses a five-year historical average to determine Emergent Repairs capital expenditures. The Commission has accepted this rationale and granted the Company recovery for Emergent Repairs in multiple prior rate cases including Case Nos. U-21806, U-21585, U-21389, U-21224, and U-20963.

Asset Replacement

Q. What capital expenditures are included in the Asset Replacements portfolio category?

A. The Asset Replacements portfolio category includes capital replacement of paved surfaces such as parking lots and driveways; roofing; mechanical and electrical equipment in buildings, and furniture. Exhibit A-83 (QAG-3) shows the Asset Replacement portfolio category broken down across the different types of work. As shown in Exhibit A-83 (QAG-3), the Company is projecting to spend $13,217,000 on Asset Replacements in the bridge period and $7,841,000 on Asset Replacements in the test year.

Q. How are Asset Replacement projects targeted?

A. Similar to the facility health assessments, asset condition assessments are performed by Facilities engineers on a regular basis, along with input provided by external industry professionals. For example, for roofing assets, a portion of roof sections is inspected annually such that all roofs are inspected once every three years. The condition of each assessed asset is ranked following standard industry-recognized methodologies. Those assets assessed to be below acceptable condition are targeted for renovation or replacement.

Q. How does the Company identify locations for Statewide Paving projects?

A. The condition of paving assets is evaluated following standard industry practices on a rolling five-year basis with a condition assessment performed annually for 20% of Company sites. Paving assets are prioritized for replacement based on the lowest assessed condition index score. Paving projects may include other related enhancements to paved surfaces such as new drainage or new lighting.

Q. How did the Company determine the amount of needed investment in Statewide Paving projects for the bridge period and the test year?

A. The total amount of needed investment in paving projects begins with the five-year historical average spend. Paving condition assessments are then used to determine how that spend is allocated. While investment in paving projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement. The test year in this case totals $7,841,000 as compared to the five-year historical average of $7,241,000. This level of spend over the five-year historical average is attributable to the transfer of Electric Vehicle ("EV") Infrastructure Projects included in

previous rate cases as a Renovations project item to the Statewide Mechanical/Electrical project line item (see Exhibit A-83 (QAG-3), line 12.

Q. What specific paving projects and related forecasted spend constitute the bridge period for Statewide Paving projects?

A. The specific paving projects and related forecasted spend that constitute the bridge period for Statewide Paving projects is detailed in A-84 (QAG-4), page 5.

Q. What specific paving projects and related forecasted spend constitute the test year for Statewide Paving projects?

A. The specific paving projects and related forecasted spend that constitute the test year for Statewide Paving projects is determined annually as part of the aforementioned LTFP planning process. While investment in paving projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. How does the Company identify locations for roofing projects?

A. The condition of roofing assets is evaluated on a rolling three-year basis with a visual inspection and detailed infrared inspection performed annually for 33% of Company sites. Roofing assets are prioritized for replacement based on the lowest assessed condition index score.

Q. How did the Company determine the amount of needed investment in roofing projects for the bridge period and the test year?

A. The total amount of needed investment in roofing projects begins with the five-year historical average spend. Roofing condition assessments are then used to determine how that spend is allocated. While investment in roofing projects may be greater than or less

than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. What specific Statewide Roofing projects and related forecasted spend constitute the bridge period for Statewide Roofing projects?

A. The specific roofing projects and related forecasted spend that constitute the bridge period for Statewide Roofing projects is detailed in A-84 (QAG-4), page 7.

Q. What specific paving projects and related forecasted spend constitute the test year for Statewide Roofing projects?

A. The specific roofing projects and related forecasted spend that constitute the test year for Statewide Roofing projects is determined annually as part of the aforementioned LTFP planning process. While investment in roofing projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. How does the Company identify locations for Mechanical/Electrical projects?

A. The condition of mechanical/electrical assets is evaluated by Facilities engineers for all Company sites. Based on the results of these evaluations, targeted maintenance work is performed on mechanical/electrical assets. Where the condition of mechanical/electrical assets is determined to be below an acceptable threshold for targeted repair or maintenance, the mechanical/electrical assets are prioritized for replacement based on the results of these evaluations.

Q. How did the Company determine the amount of needed investment in Mechanical/Electrical projects for the bridge period and test year?

A. The total amount of needed investment in Mechanical/Electrical projects begins with the five-year historical average spend. Mechanical/Electrical condition assessments are then used to determine how that spend is allocated. While investment in mechanical/electrical projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. What specific mechanical/electrical projects and related forecasted spend constitute the bridge period for Statewide Mechanical/Electrical projects?

A. The specific mechanical/electrical projects and related forecasted spend that constitute the bridge period for Statewide Mechanical/Electrical projects is detailed in A-84 (QAG-4), page 9.

Q. What specific mechanical/electrical projects and related forecasted spend constitute the test year for Statewide Mechanical/Electrical projects?

A. The specific mechanical/electrical projects and related forecasted spend that constitute the test year for Statewide Mechanical/Electrical projects is determined annually as part of the aforementioned LTFP planning process. While investment in mechanical/electrical projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. How does the Company identify locations for Statewide Elevator projects?

A. The condition of elevator assets for all Company sites are evaluated by outside consultants and subject matter experts. Elevator assets are prioritized for replacement based on the results of these evaluations utilizing a condition assessment score of 1 to 5. Elevators with an assessment score of 3 or below are targeted for modernization or replacement.

Q. How did the Company determine the amount of needed investment in Statewide Elevator projects for the bridge period and test year?

A. The total amount of needed investment in elevator projects begins with the five-year historical average spend. Elevator condition assessments are then used to determine how that spend is allocated. While investment in elevator projects may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. What specific elevator projects and related forecasted spend constitute the bridge period for Statewide Elevator projects?

A. The specific elevator projects and related forecasted spend that constitute the bridge period for Statewide Elevator projects is detailed in A-84 (QAG-4), page 11.

Q. What specific elevator projects and related forecasted spend constitute the test year for Statewide Elevator projects?

A. The specific elevator projects and related forecasted spend that constitute the test year for Statewide Elevator projects is determined annually as part of the aforementioned LTFP planning process. While investment in elevator projects may be greater than or less than

the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. How did the Company determine the level of investment for Furniture?

A. The total amount of needed investment in Furniture begins with the five-year historical average spend. Furniture replacement is determined based on business need. Subject matter experts evaluate business unit requirements and existing furniture. Where the existing furniture does not meet business unit requirements, the furniture is identified for replacement. While investment in Furniture may be greater than or less than the five-year historical average spend in a given year, total Asset Replacement investment is maintained at or below the five-year historical average spend for Asset Replacement.

Q. What specific furniture projects and related forecasted spend constitute the bridge period for Furniture projects?

A. The specific furniture projects and related forecasted spend that constitute the bridge period for Furniture projects is detailed in A-84 (QAG-4), page 13.

Q. What specific projects and related forecasted spend constitute the test year for Furniture?

A. Specific projects that constitute the forecasted test year spend for Furniture are not known in advance. The specific furniture projects and related forecasted spend that constitute the test year for Furniture is determined annually as part of the aforementioned LTFP planning process. For this reason, the Company begins with a five-year historical average to determine Furniture capital expenditures. The Commission has accepted this rationale and granted the Company recovery for Furniture in multiple prior rate cases including Case Nos. U-21806, U-21585, U-21389, U-21224, and U-20963.

New Construction

Q. What capital expenditures are included in the New Construction portfolio category?

A. The New Construction portfolio category includes major projects to build new structures, either on existing Company property or on new properties the Company acquires. In accordance with the Order in Case No. U-21585, the Company in this case will not seek an allowance for its Hastings Service Center Project in the New Construction category. See Exhibit A-83 (QAG-3). The Company will seek an allowance for this project when it demonstrates substantial progress on the project. In this testimony, I will provide information concerning the Lansing Service Center Project and the EIRP GCON Project and the status of each project respectively.

Q. Does the Company consider environmental impacts when planning for new construction?

A. Yes. New buildings incorporate the United States Green Building Council ("USGBC") standards (see usgbc.org), and the Leadership in Energy and Environmental Design ("LEED") standards (see usgbc.org/leed), with specific emphasis on reduced energy consumption, sustainability, and reduced operating cost.

Q. Do these environmental building standards benefit the Company's customers?

A. Yes. When compared to conventional construction, buildings designed to LEED standards reduce lifetime energy consumption by 30% or more, resulting in reduced operational costs which allow customers to pay less for utility costs. In addition, new buildings require less maintenance and are easier to maintain than an aged structure, resulting in an estimated 5% maintenance cost reduction. Consumers Energy's recently constructed Coldwater Service Center was designed and built to these standards.

Q. Describe the Lansing Service Center project. What is its overall goal?

A. In this project, the Company has purchased land in a new location and will construct a new facility on that property. This facility will allow the Company to retire its existing facility (which will be demolished and retained to address and abate environmental concerns resulting from the operation of a former Manufactured Gas Plant ("MGP") on the site). This new facility will house many employees currently working out of the existing service center. The Company anticipates a portion of these employees will have a hybrid work arrangement in which the employees perform some work tasks at the Lansing Service Center and some work tasks elsewhere including their homes. Employees with a hybrid work arrangement will require collaborative space and open office space in the facility when they are on-site to work with other personnel.

Q. What alternatives to the construction of a new Lansing Service Center did the Company consider?

A. The Company considered the following three alternatives: (1) Do nothing; (2) Renovate the existing Lansing Service Center; (3) Demolish the existing building and construct a new building on site; and (4) Construct a new facility at a new location, with multiple locations considered. The option to construct a new facility at a new location was determined optimal.

Q. Why has the Company chosen to build a new Lansing Service Center?

A. As demonstrated in Exhibit A-85 (QAG-5), page 3, a Facilities assessment of the existing Lansing Service Center produced a score of 39, placing the existing Lansing Service Center in the quality designation of "Poor." This information led the Company to rule out a "do nothing" option, and problems with the existing facility's location led the Company to rule

out building a new facility on the same site. The existing facility is built on the site of a former MGP, with impacted soil materials underlying the building and other structures. The existing facility is also located within the Grand River flood plain with the building floor elevation three feet below the river's flood stage. Additionally, the existing facility is located in a residential neighborhood and is served by a local road network with schools nearby, resulting in large truck traffic being routed through the residential area, which may be a safety hazard for residents (especially children). Crime in the existing area is also a problem as the site has experienced multiple law enforcement incidents involving the pursuit of armed suspects through the property, including areas within the secured perimeter, and stray shooting incidents. These incidents have resulted in the Company's inability to move vehicles out of the service center (while police officers were pursuing suspects), and a general level of unease regarding the safety and security of employees.

Q. Please elaborate on the reasons the Company decided to build a new Lansing Service Center.

A. As reflected in the scores set forth in Exhibit A-85 (QAG-5), page 3, there are several reasons the Company has chosen to relocate the existing Lansing Service Center. These reasons range from the age of the building to customer accessibility. First, the existing service center building was built in 1958. Over time, systems of the building, including major mechanical and electrical systems, even with regular maintenance and replacement, are beyond their useful lives. Currently, these systems require substantial renovations/replacement. Additionally, the existing service center is located in a residentially zoned neighborhood and due to the location, does not allow Gas Operations to meet customer needs in a timely fashion. Further, the roads (because of the residential

zoning) are inadequate for the size of equipment utilized in and out of the service center and there are often children in the vicinity, which creates significant safety concerns. The current site is also located within the floodplain of the Grand River with the finish floor elevation located three feet below the major flooding elevation projected by the Federal Emergency Management Agency. All these considerations negatively impact the Company's ability to dispatch both personnel and equipment to serve customers. Other considerations supporting the decision to construct a new facility, rather than renovate the existing facility, include operating cost reductions, security, and environmental abatement. Because of all of these factors, the Company has decided to build a new Lansing Service Center at a new location.

Q. Can you elaborate further on the security and environmental abatement issues at the Lansing Service Center?

A. Yes. The site has experienced multiple law enforcement incidents. These incidents have resulted in lock-down safety protocol implementation for employees and a resulting general level of unease regarding the safety and security of employees, customers, and others, while on the property and when accessing or leaving the property. Environmental issues arise from the former use of the current Lansing Service Center site as the location of a former MGP regulated under Public Act 451 of 1994, Part 201. This site has historical environmental contamination issues resulting from operation of the MGP, including significant underground impacted soil materials (i.e. coal tar residual). Additionally, the facility contains asbestos insulation for pipe and duct work, asbestos flooring, and has significant areas of lead paint in poor and peeling condition. Given these environmental

issues, upgrades to the facility (e.g. carpet replacement and open space enhancement) cannot be cost effectively completed.

Q. Has the Company engaged in an environmental study for the area selected for the new Lansing Service Center?

A. Yes. The site for the Lansing Service Center includes previous agricultural use; thus, no environmental impacts exist from this previous use. A Phase 1 Environmental investigation has been completed. The site contains wetland areas and the Company is leaving these wetland areas undisturbed. A wetland assessment has also been completed.

Q. What energy efficiency and waste reduction measures does the Company plan to install at the new Lansing Service Center?

A. The new Lansing Service Center facility is planned to be designed and constructed to achieve the operating efficiencies and environmental design criteria consistent with certification under the USGBC, LEED version 4 rating system even if the Company does not formally obtain certification under the USGBC, LEED version 4 rating system.

Q. The Lansing Service Center project includes the relocation of that facility to a different part of the Lansing metropolitan area. Can you explain what is considered generally when considering relocation of a facility?

A. Yes. As noted earlier, Company facilities are assessed and scored based on multiple criteria (i.e. safety, quality, cost, delivery, and morale) to provide a holistic score that informs the Company of the possible need to make improvements. Facilities with scores falling below the acceptable range are targeted for renovation or replacement. Part of the overall analysis, which is relevant to the Lansing Service Center, is the geographic location of targeted facilities. Geographic locations are analyzed against customer workload

distribution within the service territory to determine optimal location for the facility. Facilities that are determined to be mis-located within the customer service territory are evaluated for relocation to a newly constructed site with the goal of improved customer response. Facilities determined to already be optimally located within the customer service territory are evaluated for renovation or reconstruction on the existing site.

Q. How did the Company determine a new location for the Lansing Service Center?

A. An analysis of customer distribution across the service territory where the Lansing Service Center is located, and potential service center locations within that service territory, determined the optimal area to minimize response times. This analysis is reflected in Exhibit A-85 (QAG-5), pages 13 through 20. Reducing customer response times lowers fuel costs by minimizing the distance Company employees must travel to job sites. Determining the optimal area to minimize response times also maximizes employee efficiency by reducing labor hours required to reach and service customers. The current location of the Lansing Service Center is offset to the north and east of the optimal location, in a residentially zoned neighborhood, and the current location does not provide readily available highway access. The current location of the Lansing Service Center within the service territory results in increased customer response times, higher fuel costs, and reduced employee efficiency due to increased travel times as explained above. The location for the new Lansing Service Center will not only be in a more appropriately zoned area but will also provide improved customer response times.

Q. Has land been acquired for the Lansing Service Center? If so, please identify the location of the land.

A. Yes. Land was acquired for the Lansing Service Center in December 2020, located in Windsor Charter Township, at the southeast corner of the intersection of Canal Road and Billwood Highway, Dimondale, Michigan 48821.

Q. What type of operations departments will work at the new Lansing Service Center as compared to the existing Lansing Service Center?

A. The existing Lansing Service Center houses personnel from the following operating groups: Customer Experience, Electric Distribution, Electric Supply, Governmental Affairs, Gas Delivery, Gas Engineering, Gas Operations, Grid Operations & Restoration, Information Technology, Low Voltage Distribution, Storeroom, Fleet, Facilities, Planning & Scheduling, and People & Culture. The Company anticipates personnel from these same operating groups to be housed in the new Lansing Service Center. Company personnel (office-based personnel and operating personnel) needed to service customers in the Lansing area will be housed in the new Lansing Service Center.

Q. Approximately how many employees will work at the new Lansing Service Center as compared to the existing Lansing Service Center?

A. Approximately 430 employees are assigned to the existing Lansing Service Center. The Company anticipates the new Lansing Service Center will house a comparable number of employees with some adaptation in their use of the workspace including some employees adopting a hybrid work arrangement, requiring only collaborative space and open office space in the facility when they are on-site to work with other personnel.

Q. How large is the new Lansing Service Center building footprint as compared to the existing Lansing Service Center building footprint?

A. The existing Lansing Service Center building footprint is 121,240 square feet. The new Lansing Service Center building footprint will be 104,344 square feet.

Q. What is the status of the Lansing Service Center project at the time of this filing? What work has been completed so far, and what work is still remaining to be done?

A. The Lansing Service Center project is in construction. Building foundations are being completed, the site's storm water retention system is in development, and the main building, a prefabricated building, has been delivered and is being erected as of the time of this filing. Land acquisition and rezoning of the parcel in Dimondale has been completed. Design engineering and bidding have been completed and a municipal water main extension to the project site is fully constructed. A design-build contract for construction management services has been competitively bid and awarded. Programming of the building and architectural design of the building are complete. The project plan for the new Lansing Service Center Project is detailed in Exhibit A-85 (QAG-5), page 7.

Q. When does the Company anticipate completing construction of the Lansing Service Center Project?

A. The Company anticipates completing construction of the Lansing Service Center Project in November 2026. The project plan for the Lansing Service Center Project is detailed in Exhibit A-85 (QAG-5), page 7.

Q. Are there site plans, conceptual drawings, or building floorplans for the new Lansing Service Center?

A. Yes. See Exhibit A-86 (QAG-6) and Exhibit A-87 (QAG-7). Exhibit A-85 (QAG-5), page 10, contains a rendering of the new Lansing Service Center facility.

Q. How much did the Company invest in the Lansing Service Center Project in the historical year in this case?

A. The Company invested $1,817,000 in the Lansing Service Center Project. See Exhibit A-83 (QAG-3).

Q. How much has the Company in total invested in the Lansing Service Center Project as compared to the allowance the Company received for this project in Case No. U-20963?

A. As of September 30, 2025, the Company in total has invested $16,433,066 (gas allocation of $7,505,010 and electric allocation of $8,928,056) in the Lansing Service Center Project. Through December 31, 2025, the Company in total expects to invest $32,592,748 (gas allocation of $14,906,591 and electric allocation of $17,686,157) in the Lansing Service Center Project as compared to the allowance of $29,000,000 (gas allocation of $13,276,000 and electric allocation of $15,724,000) the Company received for this project in Case No. U-20963. See Exhibit A-85 (QAG-5), page 8.

Q. Please describe the Hastings Service Center project. What is its overall goal?

A. The Company is planning to construct a new Hastings Service Center at the existing service center location to include an adjacent property the Company purchased from the adjacent landowner. This new facility will house employees currently working at the existing service center. A portion of the employees currently working at the existing service center

will have a hybrid work arrangement and will require collaborative space and open office space in the facility when they are on-site to work with other personnel.

Q. What alternatives to the construction of a new Hastings Service Center did the Company consider?

A. The Company considered four alternatives: (1) Do nothing; (2) Renovate the existing Hastings Service Center; (3) Demolish the existing building and construct a new building on site; and (4) Construct a new facility at a new site. The option to demolish the existing building and construct a new building on site was identified as optimal.

Q. Why has the Company chosen to construct a new Hastings Service Center facility?

A. As demonstrated in Exhibit A-85 (QAG-5), page 24, a Facilities assessment of the existing Hastings Service Center produced a score of 41. As discussed above, because this score falls below a score of 48, it was targeted for replacement, and the "do nothing" option was ruled out. For the same reason that the Lansing Service Center was targeted for replacement, including aging infrastructure, which is beyond useful life, the Hastings Service Center was determined to need replacement. The current site is fully developed and is no longer sufficient to support ongoing utility operations as the site lacks adequate space for both safe vehicle maneuvering and utility construction material storage. In addition, the existing building envelope does not comply with current energy code requirements. The Company, therefore, ruled out the renovation option for the Hastings Service Center. The existing Hastings Service Center site is located within an industrialized area with access to major roads. The Company determined that the facility is currently in an optimal location to service customers (see Exhibit A-85 (QAG-5), pages 39 through 43). Therefore, with the acquisition of appropriate adjacent parcels, the

Hastings Service Center was targeted for replacement on the existing site in lieu of relocation.

Q. Can you further elaborate on how these alternatives were compared?

A. The Company originally sought to construct a new facility on the existing property. Construction of the new Hastings Service Center on the existing property was predicated on reaching agreement with the adjacent landowner to transfer a portion of their property to Consumers Energy, which would increase the available site area for development and provide enough space for the new facility. Agreement for a property transfer with an adjacent landowner was initially not reached. The properties on the west and east are fully developed. The Company then entered negotiations with the Barry County Road Commission (owner of the adjacent parcel to the south). The Barry County Road Commission approved the Company's conceptual plan for development of this parcel. The Company completed acquisition of the parcel in March 2025 which will allow for expansion of the existing Hastings site and construction of the new facility.

Q. What energy efficiency and waste reduction measures does the Company plan to install at the new Hastings Service Center?

A. The proposed new Hastings Service Center facility is planned to be designed and constructed to achieve the operating efficiencies and environmental design criteria consistent with certification under the USGBC, LEED version 4 rating system even if the Company does not formally obtain certification under the USGBC, LEED version 4 rating system.

Q. Will this building be larger or smaller than the existing Hastings Service Center?

A. The conceptual plan for the new service center is shown in Exhibit A-88 (QAG-8). The projected building area based on conceptual data assembled is 30,144 square feet and is larger than the existing Hastings Service Center which is 13,011 square feet. The new facility is designed with a larger footprint to address multiple deficiencies at the existing facility that negatively impact gas operations including insufficient space for crew rooms, parts and material storage, welding operations, and automotive tools and repairs. Even at 30,144 square feet **,** the projected building area of the new Hastings Service Center, based on conceptual data, is smaller than many of the Company's Service Centers.

Q. What type of operations departments will work at the new Hastings Service Center as compared to the existing Hastings Service Center?

A. The existing Hastings Service Center houses personnel from the following operating groups: Gas Distribution, Gas Service, Electric Distribution, Electric Service, Low Voltage Design, Work Management & Customer Delivery, Electric Meter Services, Planning & Scheduling, Facilities, Fleet, and Storeroom Operations. The Company anticipates personnel from all of these operating groups to be housed in the new Hastings Service Center.

Q. Approximately how many employees will work at the new Hastings Service Center as compared to the existing Hastings Service Center?

A. The existing Hastings Service Center houses 51 employees. The Company anticipates the New Hastings Service Center will house a comparable number of employees.

Q. What is the status of the construction of the Hastings Service Center at the time of this filing? What work has been completed so far?

A. The Barry County Road Commission (owner of the adjacent parcel to the south) has approved the Company's conceptual plan for development of the parcel. A Phase 1 Environmental Study, a Phase 2 Environmental Study, and a Baseline Environmental Assessment have been completed. The adjacent parcel to the south was acquired in March 2025. Programming and design of the new facility has commenced. The project plan for the new Hastings Service Center Project is detailed in Exhibit A-85 (QAG-5), page 28.

Q. Are there site plans or conceptual drawings for the new Hastings Service Center?

A. Yes. See Exhibit A-88 (QAG-8).

Q. How much did the Company invest in the Hastings Service Center Project in the historical year in this case?

A. The Company invested $95,000 in the Hastings Service Center Project in the historical year in this case. See Exhibit A-83 (QAG-3).

Q. How much has the Company in total invested in the Hastings Service Center Project as compared to the allowance the Company received for this project in Case No. U-20963?

A. As of September 30, 2025, the Company in total has invested $339,118 (gas allocation of $154,734 and electric allocation of $184,385) in the Hastings Service Center Project as compared to the allowance of $11,500,000 (gas allocation of $5,265,000 and electric allocation of $6,235,000) the Company received for this project in Case No. U-20963. See Exhibit A-85 (QAG-5), page 29. As noted, the Company in this case will not seek an

allowance for its Hastings Service Center Project. The Company will seek an allowance for this project when it demonstrates substantial progress on the project.

Q. Please describe the EIRP GCON project. What is its overall goal?

A. A complete description of the Enhanced Infrastructure Replacement Program ("EIRP") and its overall goals is outlined in the direct testimony of Company witness Kristine A. Pascarello. To support Company crews and contractor resources performing replacement of pipe and main assets as part of EIRP, the Company has identified and leased facilities that will be used to store equipment, vehicles, and other assets used in EIRP. The facilities will also serve as operation hubs to which EIRP Company crews and contractor resources will report for the duration of the EIRP project in those geographic areas. These sites allow the workforce to be positioned closer to worksites, thereby reducing travel and other related costs. The two facilities represented in Exhibit A-83 (QAG-3), line 19, EIRP GCON, are: (1) Jolly Road Construction and (2) Saginaw Gas Construction.

Q. Please describe the Jolly Road Construction Project. What is its overall goal?

A. The purpose of the Jolly Road Construction Project is to support Company crews and contractor resources performing replacement of pipe and main assets as part of EIRP's Southwest Zone of projects. The site will be used to store equipment, vehicles, and other assets used in EIRP's Southwest Project Zone (see Exhibit A-85 (QAG-5), page 48). It will also serve as an operation hub to which EIRP Southwest Zone crews and contractor resources will report for the duration of the EIRP project.

Q. What alternatives to the Jolly Road Construction Project did the Company consider?

A. The Company considered multiple properties in the Lansing area for lease but determined that constructing the Jolly Road Construction Project, 1500 East Jolly Road, Lansing, Michigan 48910 was optimal given the expected duration of projects in the area.

Q. What energy efficiency and waste reduction measures does the Company plan to execute for Jolly Road Construction?

A. As outlined in the direct testimony of Company witness Pascarello, Jolly Road Construction reduces waste and fuel expense by allowing the EIRP workforce to be positioned closer to worksites, thereby reducing travel and other related costs.

Q. What type of operations departments will work at Jolly Road Construction?

A. Personnel directly supporting the EIRP Gas Construction Program will work at Jolly Road Construction.

Q. Approximately how many employees will work at Jolly Road Construction?

A. Seven office personnel and 100 Company operations personnel will be assigned to Jolly Road Construction.

Q. What is the status of the construction of the Jolly Road Construction Project at the time of this filing? What work has been completed so far?

A. The Jolly Road Construction Project is fully constructed and in operation. The project plan for Jolly Road Construction is detailed in Exhibit A-85 (QAG-5), page 45.

Q. Are there site plans and drawings for the Jolly Road Construction Project?

A. Yes. See Exhibits A-89 (QAG-9) and A-90 (QAG-10).

Q. How much did the Company invest in the Jolly Road Construction Project in the historical year in this case?

A. The Company invested $4,757,432 in the Jolly Road Construction project in the historical year in this case.

Q. How much has the Company in total invested in the Jolly Road Construction Project?

A. As of the time of this filing, the Company in total has invested $5,685,967. See Exhibit A-85 (QAG-5), page 47.

Q. Does the Jolly Road Construction Project have a cashflow forecast?

A. Yes. See Exhibit A-85 (QAG-5), page 46.

Q. Please describe the Saginaw Gas Construction Project. What is its overall goal?

A. The purpose of the Saginaw Gas Construction Project is to support Company crews and contractor resources performing replacement of pipe and main assets as part of EIRP's Northeast Zone of projects (see Exhibit A-85 (QAG-5), page 53). The site will be used to store equipment, vehicles, and other assets used in EIRP's Northeast Zone of projects. It will also serve as an operation hub to which EIRP Saginaw Zone crews and contractor resources will report for the duration of the EIRP project. These sites allow the workforce to be positioned closer to worksites, thereby reducing travel and other related costs.

Q. What alternatives to the Saginaw Gas Project did the Company consider?

A. The Company considered multiple properties in the Saginaw area for lease and determined the Saginaw Gas Construction Project Site, 2119 River Street, Saginaw, MI 48601 was optimal given available space at the site and the associated lease rate.

Q. What type of operations departments will work at Saginaw Gas Construction?

A. Personnel directly supporting the EIRP Gas Construction Program will work at Saginaw Gas Construction.

Q. Approximately how many employees will work at Saginaw Gas Construction?

A. Three office personnel and 55 Company operations personnel will be assigned to Saginaw Gas Construction.

Q. What is the status of renovations of the Saginaw Gas Construction Project at the time of this filing? What work has been completed so far?

A. The Saginaw Gas Construction Project is fully renovated and in operation. The project plan for Saginaw Gas Construction is detailed in Exhibit A-85 (QAG-5), page 50.

Q. Are there floor plans and drawings for the Saginaw Gas Construction Project?

A. Yes. See Exhibit A-91 (QAG-11).

Q. How much did the Company invest in the Saginaw Gas Construction Project in the historical year in this case?

A. The Company invested $567,308 in the Saginaw Gas Construction project in the historical year in this case.

Q. How much has the Company in total invested in the Saginaw Gas Construction Project?

A. As of the time of this filing, the Company in total has invested $901,530 in the Saginaw Gas Construction Project. See Exhibit A-85 (QAG-5), page 52.

Q. Does the Saginaw Gas Construction Project have a cashflow forecast?

A. Yes. See Exhibit A-85 (QAG-5), page 51.

Q. What is the monthly lease expense and current lease term for the Saginaw Gas Construction Project?

A. As of the time of this filing, the monthly lease expense for the Saginaw Gas Construction Project is $1,500.00 monthly. The lease agreement for the Saginaw Gas Construction Project is included as Exhibit A-92 (QAG-12).

Q. Are lease expenses for the Saginaw Gas Construction Project accounted for as O&M?

A. No. Lease expenses for the Saginaw Gas Construction project are accounted for as follows: 5% O&M and 95% Capital.

Renovations

Q. What capital expenditures are included in the Renovations portfolio category?

A. The Renovations portfolio category includes major modifications to the interior and/or exterior of existing facilities (e.g. adding a garage to a building). As shown in Exhibit A-83 (QAG-3), the Company is projecting to spend $13,041,000 on Renovations in the bridge period and $85,000 on Renovations in the test year.

Q. Has the Company identified projects in the Renovations portfolio category?

A. Yes. As shown in Exhibit A-83 (QAG-3), the Company has identified the following Renovations projects:

- Kalamazoo Service Center
- Marion Building Renovation
- OEP5 Refresh

In this testimony, the Company will provide information concerning these projects and their respective status.

Q. Describe the Kalamazoo Service Center project. What are its overall goals?

A. In this project, the Company is renovating the existing Kalamazoo Service Center. The Company is remediating asbestos concerns, workspace concerns, and problems with aging building systems at the existing facility upon completion of this renovation. The renovations of this facility entail adding insulation to exterior walls, installation of new exterior doors and windows, new roofing membrane and roof insulation, new interior finishes, new furnishings, new plumbing fixtures and fittings, new HVAC equipment and ductwork, and new energy efficient lighting systems.

Q. What alternatives to the renovation of the Kalamazoo Service Center did the Company consider?

A. The Company considered the following three alternatives: (1) Do nothing; (2) Renovate the existing Kalamazoo Service Center; and (3) Demolish the existing building and construct a new building on site. The option to renovate was identified as optimal.

Q. How did the Company decide to renovate the existing service center?

A. The Company originally planned to construct a new facility on the existing property, as Company witness Scott J. Bartholomew testified in his direct testimony in Case No. U-20963. The Company subsequently reevaluated its plans to ensure the renovated Kalamazoo Service Center is constructed in a manner that optimizes use of capital. In Case No. U-20963, the Company's projected total cost for the renovated Kalamazoo Service Center was $52 million. The Company's projected total cost for the renovated Kalamazoo Service Center is now $35 million, an approximate 33% reduction in cost. The Company determined that a renovation would meet its workforce needs and provide better value for customers by minimizing the scope of architectural work required to achieve needed

improvements in the facility. A renovation of the existing Kalamazoo Service Center will maximize utilization of the building's existing space, while controlling capital costs and minimizing disruptions to the Company's operations. Specifically, a renovation will minimize disruptions both to areas that house the Company's operating crews and to areas where the equipment and vehicles that crews use to service customers are maintained and serviced. Other considerations supporting the decision to renovate the existing facility include the fact that the Kalamazoo Service Center is already optimally located for responding timely to the Company's customers.

Q. Why is doing nothing not a viable option at this location?

A. As demonstrated in Exhibit A-93 (QAG-13), page 3, a Facilities assessment of the existing Kalamazoo Service Center produced a score of 46. Since this assessment was conducted, additional asbestos issues have been identified at this site (i.e. spray applied fireproofing, pipe wrap, floor tiles, etc.). All employees at this site were moved to the second floor of the building due to air quality issues rooted in the growth of mold and related asbestos concerns on the first floor. This limited space is inadequate for the Company's Gas Operations employees to operate. As discussed above, because an assessment score of 46 falls below a score of 48, the Kalamazoo Service Center was originally targeted for replacement. In addition to its environmental concerns, the existing Kalamazoo Service Center was constructed in 1965, and its continuing use was determined inadequate due to aging infrastructure. Most of the existing systems throughout the facility are over 50 years old and beyond their useful lives. The space requirements of the existing workforce have changed as more personnel adopt a hybrid work arrangement requiring only collaborative workspace and open office space when they are in the office working collaboratively with

others. Finally, the existing Kalamazoo Service Center is optimally located for responding timely to the Company's customers and, therefore, remaining at the current location best supports the Company's intent to provide timely service to its customers in the Kalamazoo area.

Q. What energy efficiency and waste reduction measures does the Company plan to install at the renovated Kalamazoo Service Center?

A. The renovated Kalamazoo Service Center is being designed and constructed to achieve the operating efficiencies and environmental design criteria consistent with certification under the USGBC, LEED version 4 rating system even if the Company does not formally obtain certification under the USGBC, LEED version 4 rating system.

Q. What is the status of the renovation of the Kalamazoo Service Center at the time of this filing?

A. The Company has bid and awarded a contract for construction management services and a contract for architectural and engineering design services. Architectural design and engineering work on the project is complete and renovation construction is underway. The project plan for the Kalamazoo Service Center Project is detailed in Exhibit A-93 (QAG-13), page 7.

Q. When does the Company anticipate completing renovation construction of the Kalamazoo Service Center Project?

A. The Company anticipates completing renovation construction of the Kalamazoo Service Center Project in June 2026. The project plan for the Kalamazoo Service Center Project is detailed in Exhibit A-93 (QAG-13), page 7.

Q. How much did the Company invest in the Kalamazoo Service Center project during the historical year of this case?

A. The Company invested $3,811,000 in this project during the 2024 historical year of this case. See Exhibit A-83 (QAG-3).

Q. How much has the Company in total invested in the Kalamazoo Service Center Project as compared to the allowance the Company received for this project in Case No. U-20963?

A. As of September 30, 2025, the Company in total has invested $25,164,847 (gas allocation of $11,481,957 and electric allocation of $13,682,890) in the Kalamazoo Service Center Project. Through December 31, 2025, the Company in total expects to invest $27,524,660 (gas allocation of $12,558,976 and electric allocation of $14,965,684) in the Kalamazoo Service Center Project as compared to the allowance of $30,702,000 (gas allocation of $14,056,000 and electric allocation of $16,646,000) the Company received for this project in Case No. U-20963. See Exhibit A-93 (QAG-13), page 8.

Q. Is the projected size of the renovated Kalamazoo Service Center larger or smaller than the existing Kalamazoo Service Center?

A. The size of the renovated Kalamazoo Service Center is not projected to vary significantly from the size of the existing Kalamazoo Service Center because there is no anticipated change in the overall footprint of the facility.

Q. What type of operations departments will work at the renovated Kalamazoo Service Center as compared to the existing Kalamazoo Service Center?

A. The existing Kalamazoo Service Center houses personnel from the following operating groups: Analytics, Customer Experience, Electric Distribution, Electric Supply,

Governmental Affairs, Gas Delivery, Gas Engineering, Gas Operations, Grid Operations & Restoration, Information Technology, Low Voltage Distribution, Storeroom, Fleet, Facilities, Planning & Scheduling, and People & Culture. The Company anticipates these same personnel will remain housed in the renovated Kalamazoo Service Center.

Q. Approximately how many employees will work at the renovated Kalamazoo Service Center as compared to the existing Kalamazoo Service Center?

A. Approximately 250 employees are assigned to the existing Kalamazoo Service Center. The Company anticipates the renovated Kalamazoo Service Center will house a comparable number of employees with some employees adopting a hybrid work arrangement and requiring only collaborative space and open office space in the facility when they are on-site to work with other personnel.

Q. Are there site plans, conceptual drawings, and building floorplans for the renovated Kalamazoo Service Center?

A. Yes. See Exhibit A-94 (QAG-14).

Q. Describe the Marion Building Renovation. What are its overall goals?

A. The Company's Marion Compressor Station in Marion, Michigan is used to store and transmit natural gas to the Company's customers. Building #1 at Marion Compressor Station serves as the main office, meeting room, break room, and crew room for the Company's gas storage and gas pipeline employees who work at the site. In this project, the Company is remediating problems with asbestos and lead in Building #1 and updating the facility to modern operating standards. The renovation of Building #1 includes: abating asbestos in the walls and roof, removing and replacing the exterior envelope and roof, expanding the crew room to accommodate growth in the gas storage workforce, providing

a wellness room, updating the locker room and toilet facilities as required by code, installing privacy rooms and an additional conference room, and upgrading architectural, mechanical, electrical, structural, and information technology infrastructure as needed.

Q. What alternatives to the Marion Building Renovation Project did the Company consider?

A. The Company considered building a new building on the site. The option to renovate was determined to be optimal, however, as it is more cost effective.

Q. Why is doing nothing not a viable option for the Marion Building Renovation Project?

A. Doing nothing is not a viable option because hazards such as asbestos and lead in Building #1 must be remediated to ensure the safety and health of the Company's workforce.

Q. Are there energy efficiency and waste reduction measures the Company plans to execute as part of the Marion Building Renovation Project?

A. While the Marion Building Renovation Project is not designed and constructed to achieve certification under the USGBC, LEED version 4 rating system, it is designed in accordance with the 2015 Michigan Mechanical Code and American Society of Heating, Refrigerating and Air Conditioning Engineers ("ASHRE") 90.1 standard for energy efficient design and construction for commercial buildings. See detail in Exhibit A-93 (QAG-13), page 14.

Q. What is the status of the Marion Building Renovation Project at the time of this filing?

A. Construction of the Marion Building Renovation Project is complete. The project plan for the Marion Building Renovation Project is detailed in Exhibit A-93 (QAG-13), page 11.

Q. How much did the Company invest in the Marion Building Renovation Project during the historical year of this case?

A. The Company invested $1,874,309 in this project during the 2024 historical year of this case. See Exhibit A-83 (QAG-3).

Q. How much has the Company in total invested in the Marion Building Renovation Project?

A. As of September 30, 2025, the Company in total has invested $3,065,867 in the Marion Building Renovation Project. See Exhibit A-93 (QAG-13), page 12.

Q. What type of operations departments will work at the renovated Marion Building?

A. The Marion Compressor building will house the Company's gas storage and gas pipeline personnel who work at the site.

Q. Approximately how many employees will work at the renovated Marion Building?

A. Approximately 30 employees are assigned to the Marion Building and will continue to be housed there.

Q. Are there site plans, conceptual drawings, and/or building floorplans for the renovated Marion Building?

A. Yes. See Exhibit A-96 (QAG-16).

Q. Describe the OEP 5 Refresh Project. What are its overall goals?

A. The OEP (One Energy Plaza) 5 Refresh Project centers on a renovation of the fifth floor of the Company's OEP Headquarters Building. The fifth floor of OEP is being renovated to create a collaborative workspace that will be used by Company personnel dedicated to supporting the SAP S4HANA Implementation Project as detailed in the direct testimony of Company witness Stacy H. Baker.

Q. What alternatives to the OEP 5 Refresh Project did the Company consider?

A. Alternatives to the SAP S4HANA Implementation Project are outlined in the direct testimony of Company witness Baker. This testimony is narrowly tailored to renovation of the fifth floor of OEP that will be used to support the SAP S4HANA Implementation Project.

Q. Why is doing nothing not a viable option for the OEP 5 Refresh Project?

A. Alternatives to the SAP S4HANA Implementation Project are outlined in the direct testimony of Company witness Baker. This testimony is narrowly tailored to renovation of the fifth floor of OEP that will be used to support the SAP S4HANA Implementation Project.

Q. Are there energy efficiency and waste reduction measures the Company plans to execute as part of the OEP 5 Refresh Project?

A. Yes. New light emitting diode ("LED") lighting and smart LED sensors will be installed as part of this project. The Company estimates these energy efficiency measures will reduce energy usage by 77,293 kilowatts annually and contribute to carbon emission reductions of 65,784 pounds annually**.**

Q. What is the status of the OEP 5 Refresh Project at the time of this filing?

A. The OEP 5 Refresh Project is in design. The project plan for the OEP 5 Refresh Project is detailed in Exhibit A-93 (QAG-13), page 16.

Q. How much did the Company invest in the OEP 5 Refresh Project during the historical year of this case?

A. The Company did not invest in the OEP 5 Refresh Project during the 2024 historical year of this case. See Exhibit A-83 (QAG-3).

Q. How much has the Company in total invested in the OEP 5 Refresh Project?

A. As of September 30, 2025, the Company in total has invested $128,048 (gas allocation of $58,441 and electric allocation of $69,607) in the OEP 5 Refresh Project. See Exhibit A-93 (QAG-13), page 18.

Q. What type of operations departments will work on the renovated OEP fifth floor?

A. Subject matter experts from nearly every operating group in the Company will work on the renovated OEP fifth floor alongside the Company's information technology personnel and assorted third-party support personnel.

Q. Approximately how many employees will work on the renovated OEP fifth floor as compared to the number now working there?

A. Approximately 100 employees now work on the fifth floor of OEP. The Company anticipates approximately 150 employees and third-party support personnel will reside on the fifth floor of OEP upon completion of this project.

Q. What is included in the Miscellaneous line item, Exhibit A-83 (QAG-3), line 26?

A. The Miscellaneous line item includes any project expenditure not represented in the LTFP used to determine the list of projects that comprise the bridge period and/or test year spend in Exhibit A-83 (QAG-3), line 9, line 15, or line 20. As shown in Exhibit A-83 (QAG-3), the Company is projecting to spend $9,000 on Miscellaneous in the bridge period. The expenditure is for an office addition at the Company's Muskegon River Compressor Station. This office addition will be used to accommodate new gas storage personnel at the facility.

O&M Spending Overview

Q. What O&M expenses are included in "Facilities" in Exhibit A-82 (QAG-2), line 1?

A. Facilities work includes items such as code compliance, and regulatory maintenance, as well as repair of HVAC systems, elevators, miscellaneous building repairs, yard maintenance and snow removal, and daily cleaning or other major scheduled cleaning projects such as windows and carpeting. The Company maintains data on maintenance history in its buildings. This data, in conjunction with historical spend, is used to forecast projected Facilities O&M expense growth at or below the rate of historical plus the current inflation factor year over year.

Q. What O&M expenses are included in "Real Estate" in Exhibit A-82 (QAG-2), line 2?

A. Real estate services includes a variety of real estate asset management functions to ensure system integrity and safeguarding of the public. This includes management of all land-related uses of easements and rights of way, including encroachments, third-party requests for use of Company property, landowner requests for modification of easement rights or approval of permission to construct within an easement, as well as management of all corporate facility leases. The group also responds to all requests to sell property or grant easements, leases, or licenses to third parties. Included in real estate services is the records management function that is responsible for maintenance of a land inventory and Geographic Information System mapping for property ownership and rights of way. The Company reviews its needs for real estate services annually. This information, in conjunction with historical spend, is used to forecast projected Real Estate O&M expense growth at or below the rate of historical plus the current inflation factor year over year.

Q. To what does the Company attribute the growth in Real Estate O&M expenses from $942,000 in the historical year to $1,577,000 in the test year in Exhibit A-82 (QAG-2), line 2?

A. The increase in Real Estate O&M expenses is nominal. The increase is the result of an internal budget transfer to the Company's Real Estate Department from the Company's Forestry and Substation Department for lawn mowing and land maintenance services.

Q. Does this conclude your direct testimony in this proceeding?

A. Yes.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	)))))	Case No. U-21981

EXHIBITS

OF

QUENTIN A. GUINN

ON BEHALF OF

CONSUMERS ENERGY COMPANY

December 2025

Schedule: B-5.4

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual and Projected Capital Expenditures
Facilities & Shared Services
($000)

Case No.:	U-21981
Exhibit No.:	A-12 (QAG-1)
Schedule:	B-5.4
Page:	1 of 3
Witness:	QAGuinn
Date:	December 2025

	(a)	(b)	(c)	(d)	(e)	(f)
		Historical Year	Projected Bridge Period*			Projected Test Year
Line No	Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
1	Asset Preservation	24,668	30,080	20,687	50,767	11,623
2	Other Equipment	534	641	478	1,119	633
3	Total Facilities & Shared Services Capital	25,202	30,721	21,165	51,886	12,256

		Projected*			
		10 Mos Ending 10/31/2025	12 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027	34 Mos Ending 10/31/2027
4	Asset Preservation	21,471	29,296	11,623	62,390
5	Other Equipment	481	638	633	1,752
6	Total Facilities & Shared Services Capital	21,952	29,935	12,256	64,142

*The Company fully plans to perform the projects included in these cost projections, but the projections do not incorporate a specific confidence level.

Schedule: B-5.4

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Actual and Projected Capital Expenditures
Facilities & Shared Services
($000)

Case No.: U-21981
Exhibit No.: A-12 (QAG-1)
Schedule: B-5.4
Page: 2 of 3
Witness: QAGuinn
Date: December 2025

Line No	Description	Historical Year 12 Mos Ended 12/31/2024	Projected Bridge Year* 12 Mos Ending 12/31/2025	Projected Bridge Year* 10 Mos Ending 10/31/2026	Projected Bridge Year* 22 Mos Ending 10/31/2026	Projected Test Year 12 Mos Ending 10/31/2027
	(a)	(b)	(c)	(d)	(e)	(f)
1	**Asset Preservation**	**24,668**	**30,080**	**20,687**	**50,767**	**11,623**
	Labor	1,258	1,684	1,158	2,843	651
	Capitalized E&S	0	0	0	0	0
	Materials	2,491	2,045	1,407	3,452	790
	Contractor	19,636	24,696	16,984	41,680	9,543
	Non-Labor Overhead	0	0	0	0	0
	Non-Labor Other	1,283	1,654	1,138	2,792	639
	Contingency	0	0	0	0	0
2	**Other Equipment**	**534**	**641**	**478**	**1,119**	**633**
	Labor	4	6	5	11	6
	Capitalized E&S	0	0	0	0	0
	Materials	379	462	344	806	456
	Contractor	110	128	96	224	127
	Non-Labor Overhead	0	0	0	0	0
	Non-Labor Other	41	45	33	78	44
	Contingency	0	0	0	0	0
3	**Total Facilities & Shared Services Capital**	**25,202**	**30,721**	**21,165**	**51,886**	**12,256**
	Labor	1,262	1,691	1,163	2,854	657
	Capitalized E&S	0	0	0	0	0
	Materials	2,871	2,507	1,751	4,258	1,246
	Contractor	19,745	24,824	17,080	41,904	9,669
	Non-Labor Overhead	0	0	0	0	0
	Non-Labor Other	1,324	1,699	1,171	2,871	684
	Contingency	0	0	0	0	0

*The Company fully plans to perform the projects included in these cost projections, but the projections do not incorporate a specific confidence level.
**Unless noted otherwise, capital "other" costs include expenses such as AFUDC, fleet transportation, pension, administrative/general expenses, indirect non-labor expenses, rent/utility costs, employee benefits, and business expenses (e.g., travel, meals, etc.).

Schedule: B-5.4

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Actual and Projected Capital Expenditures
Facilities & Shared Services
($000)

Case No.: U-21981
Exhibit No.: A-12 (QAG-1)
Schedule: B-5.4
Page: 3 of 3
Witness: QAGuinn
Date: December 2025

(a)	(b)	(c)	(d)	(e)
		Projected*		
	10 Mos Ending 10/31/2025	12 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027	34 Mos Ending 10/31/2027
4 Asset Preservation	**21,471**	**29,296**	**11,623**	**62,390**
Labor	1,202	1,641	651	3,494
Capitalized E&S	0	0	0	0
Materials	1,460	1,992	790	4,243
Contractor	17,628	24,052	9,543	51,222
Non-Labor Overhead	0	0	0	0
Non-Labor Other	1,181	1,611	639	3,431
Contingency	0	0	0	0
5 Other Equipment	**481**	**638**	**633**	**1,752**
Labor	4	5	6	15
Capitalized E&S	0	0	0	0
Materials	341	453	456	1,250
Contractor	99	131	127	356
Non-Labor Overhead	0	0	0	0
Non-Labor Other	37	49	44	130
Contingency	0	0	0	0
6 Total Facilities & Shared Services Capital	**21,952**	**29,935**	**12,256**	**64,142**
Labor	1,206	1,646	657	3,509
Capitalized E&S	0	0	0	0
Materials	1,801	2,445	1,246	5,493
Contractor	17,726	24,183	9,669	51,578
Non-Labor Overhead	0	0	0	0
Non-Labor Other	1,218	1,660	684	3,562
Contingency	0	0	0	0

*The Company fully plans to perform the projects included in these cost projections, but the projections do not incorporate a specific confidence level.
**Unless noted otherwise, capital “other” costs include expenses such as AFUDC, fleet transportation, pension, administrative/general expenses, indirect non-labor expenses, rent/utility costs, employee benefits, and business expenses (e.g., travel, meals, etc.).

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual & Projected O&M Expenses
Facilities & Shared Services
($000)

Case No.: U-21981
Exhibit No.: A-82 (QAG-2)
Page: 1 of 2
Witness: QAGuinn
Date: December 2025

Line No.	(a) Description	(b) Actual 12-Mos Ended 12/31/2024	(c) Projected 12-Mos Ending 10/31/2027
1	**Facilities**	**8,481**	**8,091**
	Labor	2,378	1,955
	Material	-	-
	Contractor	-	-
	Non-Labor Overheads	-	-
	Non-Labor Other	6,103	6,136
2	**Real Estate**	**942**	**1,577**
	Labor	737	910
	Material	-	-
	Contractor	-	-
	Non-Labor Overheads	-	-
	Non-Labor Other	205	667
3	**Total**	**$ 9,423**	**$ 9,668**
	Labor	3,115	2,865
	Material	-	-
	Contractor	-	-
	Non-Labor Overheads	-	-
	Non-Labor Other	6,308	6,803

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Comparison of O&M Expenses to Inflation
Facilities & Shared Services
($000)

Case No.: U-21981
Exhibit No.: A-82 (QAG-2)
Page: 2 of 2
Witness: QAGuinn
Date: December 2025

Line No.	Description	(a)	(b) Actual 12 Mos Ended 12/31/2024	(c) Inflation Impacts on Historical Costs Test Year (b) * Compounded Inflation Rate	(d) Scope/ Cost Increases Net of Productivity Gains	(e) Projected O&M 12 Mos Ending 10/31/2027 (b) + (c) + (d)
1	Facilities		8,481	618	(1,008)	8,091
2	Real Estate		942	69	567	1,577
3	**Total**		**9,423**	**686**	**(441)**	**9,668**

Notes

	12-Mo Ending 2025	12-Mo Ending 2026	10-Mo Ending 2027	Compounded Inflation Rate
Annual inflation rates per Company witness Rayl	2.8%	2.4%	2.3%	7.7%
Number of months in the period	12	12	10	
Pro-rated inflation rate	2.8%	2.4%	1.9%	7.3%

Michigan Public Service Commission
Consumers Energy Company
Detailed List of Projected Gas Capital Expenditures
Operations Support
(000's)

Case No: U-21981
Exhibit No: A-83 (QAG-3)
Page: 1 of 3
Witness: QAGuinn
Date: December 2025

Line No		Historical Year 12 Mos Ended 12/31/2024	Projected Bridge Period 12 Mos Ending 12/31/2025	Projected Bridge Period 10 Mos Ending 10/31/2026	Projected Bridge Period 22 Mos Ending 10/31/2026	Projected Test Year 12 Mos Ending 10/31/2027
		Gas	Gas	Gas	Gas	Gas
1	**Other Equipment**	**534**	**641**	**478**	**1,119**	**633**
2	Wellness Equip	16	50	37	87	49
3	Computer Equipment	-	9	6	15	9
4	Print Equipment	36	42	31	74	42
5	Supply Chain Tools & Equipment	421	498	369	868	492
6	Facilities Tools	62	42	34	76	41
7	**Emergent Repairs**	**427**	**1,554**	**1,080**	**2,634**	**1,482**
8	Asset Preservation - Unplanned Repair	427	1,554	1,080	2,634	1,482
9	**Asset Replacement**	**10,524**	**7,006**	**6,211**	**13,217**	**7,841**
10	Statewide Paving	3,518	2,851	2,525	5,376	2,777
11	Statewide Roofing	1,194	349	1,528	1,877	1,970
12	Statewide Mechanical/Electrical	5,567	3,478	1,738	5,216	2,574
13	Statewide Elevators	53	70	324	394	406
14	Furniture	192	259	95	354	114
15	**New Construction**	**7,789**	**10,820**	**11,046**	**21,866**	**2,215**
16	Lansing Service Center	1,817	10,308	11,046	21,354	2,215
17	Hastings Service Center	95	-	-	-	-
18	Gas City Training	32	-	-	-	-
19	EIRP GCON	5,844	512	-	512	-
20	**Renovations**	**5,849**	**10,691**	**2,350**	**13,041**	**85**
21	Kalamazoo Service Center	3,811	8,025	2,350	10,375	85
22	Parnall Renovations (P1-3)	3	-	-	-	-
23	Jackson Dispatch	160	-	-	-	-
24	Marion Office Addition	1,874	1,876	-	1,876	-
25	OEP 5 Refresh	-	790	-	790	-
26	Miscellaneous	**79**	**9**	**-**	**9**	**-**
27	**Total Capital**	**25,202**	**30,721**	**21,165**	**51,886**	**12,256**

**The Company fully plans to perform the projects included in these cost projections, but the projections do not incorporate a specific confidence level.*

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Facilities & Shared Services
(000's)
5 Year Historical

Case No: U-21981
Exhibit No: A-83 (QAG-3)
Page: 2 of 3
Witness: QAGuinn
Date: December 2025

	Historical Year 12 Mos Ended 12/31/2020	Historical Year 12 Mos Ended 12/31/2021	Historical Year 12 Mos Ended 12/31/2022	Historical Year 12 Mos Ended 12/31/2023	Historical Year 12 Mos Ended 12/31/2024
	Gas	Gas	Gas	Gas	
Other Equipment	**287**	**604**	**192**	**175**	**534**
Wellness Equip	2	11	20	-	16
Computer Equipment	-	-	8	0	-
Print Equipment	75	15	-	-	36
Real Estate Tools & Equipment	24	49	17	-	-
Supply Chain Tools & Equipment	163	529	147	113	421
Facilities Tools	24	-	-	61	62
Emergent Repairs	**1,606**	**2,728**	**1,955**	**733**	**427**
Asset Preservation - Unplanned Repair	1,606	2,728	1,955	733	427
Asset Replacement	**7,482**	**4,252**	**7,886**	**6,063**	**10,524**
Statewide Paving	5,251	2,111	3,083	628	3,518
Statewide Roofing	848	846	1,915	676	1,194
Statewide Mechanical/Electrical	1,146	953	2,566	4,566	5,567
Statewide Elevators	11	183	22	138	53
Furniture	225	159	299	55	192
New Construction	**860**	**734**	**10,521**	**5,526**	**7,789**
Lansing Service Center	850	76	262	1,501	1,817
Hastings Service Center	2	8	2	4	95
Gas City Training	8	649	8,836	471	32
EIRP GCON	-	-	1,421	3,550	5,844
Renovations	**100**	**164**	**2,777**	**1,154**	**3,974**
Kalamazoo Service Center	1	21	153	407	3811
Parnall Renovations (P1-3)	99	143	2,286	353	3
Jackson Dispatch	-	-	246	302	160
Midland Building	-	-	72	13	-
EV Infrastructure	-	-	21	79	-
Other not included in (QAG-3)	**4,209**	**5,226**	**1,796**	**2,382**	**79**
Total Capital	**14,544**	**13,708**	**25,127**	**16,032**	**23,328**

Line No.	(a)	(b)	(c)	(d)
1	**Project Name**	**Internal Approval**	**Has a Business Case**	**Explanation**
2	Lansing Service Center	YES	YES	
3	Hastings Service Center	YES	YES	
4	Kalamazoo Service Center	YES	YES	
5	Statewide Paving	YES	NO	Internal funding approval. There is no formal business case but there is documented need for work as discussed in testimony.
6	Statewide Roofing	YES	NO	Internal funding approval. There is no formal business case but there is documented need for work as discussed in testimony.
7	Statewide Mechanical/Electrical	YES	NO	Internal funding approval. There is no formal business case but there is documented need for work as discussed in testimony.
8	Statewide Elevators	YES	NO	Internal funding approval. There is no formal business case but there is documented need for work as discussed in testimony.

Asset Replacement

List of Projects and Capital Expenditures
Exhibit A-84 (QAG-4)

Consumers Energy
Count on Us®

Facilities' Asset Portfolio

Site Name	Street Address	City, State, Zip
Adrian Service Center	2613 E. Maumee St.	Adrian, MI 49221
Albion Tool Hub	910 Burstein Dr	Albion, MI 49224
Alma Service Center	1325 N. Wright Ave.	Alma, MI 48801
Bad Axe Service Center	696 N. Port Crescent Rd.	Bad Axe, MI 48413
Battle Creek Service Center	311 E. Michigan Ave.	Battle Creek, MI 49014
Bay City Service Center	4141 Wilder Rd.	Bay City, MI 48706
Benzonia Service Center	2700 Benzie Highway	Benzonia, MI 49616
Big Rapids Service Center	400 Bronson Ave.	Big Rapids, MI 49307
Birch Run	11556 N DIXIE HWY	BIRCH RUN, MI 48415
Boyne City Service Center	100 N. East St.	Boyne City, MI 49712
Bronson Service Center	707 W. Chicago Rd.	Bronson, MI 49028
Cadillac Service Center	330 Chestnut St.	Cadillac, MI 49601
Caro Service Center	1028 Cleaver Rd.	Caro, MI 48723
Caro Wind Office	101 N State St	Caro, MI 48723
Clare Service Center	1 Consumers Energy Pky	Clare, MI 48617
Coldwater Service Center	505 Jonesville Rd	Coldwater, MI 49036
Consumers Innovation Center	165 W Michigan Ave	Jackson, MI 49201
Crescent Wind Farm	7001 Beck Rd	Jonesville, MI 49250
Crosswinds Wind Far	3741 W Hoppe Rd	Unionville, MI 48767
East Kent Service Center	4501 40th Street S.E.	Kentwood, MI 49512
Flint Service Center	3201 E. Court St.	Flint, MI 48506
Freedom Compressor Station	12201 Pleasant Lake Rd. Rt. 1	Manchester, MI 48158
Fremont Service Center	820 W. Main St.	Fremont, MI 49412
Gas Construction Holly	4100 E. BALDWIN RD.	HOLLY, MI 48442
Gas Construction Lansing	1530 E. JOLLY RD.	LANSING, MI 48910
Gas Construction Livonia	3250 MIDDLEBELT RD.	INKSTER, MI 48141
Gas Construction Macomb	27432 GROESBECK HWY.	ROSEVILLE, MI 48066
Gas Construction Midland	1850 BAY CITY RD.	MIDLAND, MI 48642
Gas Construction Pontiac	55 WESSEN STREET	PONTIAC, MI 48341
Gas Construction Royal Oak / Madison Heights	111 E. 12 MILE RD.	MADISON HEIGHTS, MI 48071
Gas Construction Saginaw	2119 RIVER ST.	SAGINAW, MI 48601
Gas Construction Southwest - Bellevue	6547 West Butterfield	Bellevue, MI 49021

Site Name	Street Address	City, State, Zip
Grand Rapids Service Center	4000 Clay Avenue S.W.	Grand Rapids, MI 49548
Gratiot Wind Farm	7781 SOUTH ELY HIGHWAY	MIDDLETON, MI 48856
Greenville Service Center	1100 E. Washington St.	Greenville, MI 48838
Groveland Service Center	14500 Dixie Hwy	Holly, MI 48442
Hamilton Service Center	3030 M-40 Hwy	Hamilton, MI 49419
Hart Road Facility	3247 Hart Rd	Jackson, MI 49201
Hastings Service Center	1125 Green St.	Hastings, MI 49058
Howell Grand Oaks Service Center	1000 Grand Oaks Dr	Howell, MI 48843
Investment Recovery Center	115 W. Trail St.	Jackson, MI 49201
Jackson Service Center	1955 W. Parnall Rd.	Jackson, MI 49201
Kalamazoo Service Center	2500 E. Cork St.	Kalamazoo, MI 49001
Laingsburg Training Facility	9301 Round Lake Rd	Laingsburg, MI 48848
Lake Winds Generation	4925 W Progressive Dr	Ludington, MI 49431
Lansing Service Center	530 W. Willow	Lansing, MI 48906
Livonia Service Center	11801 Farmington Rd.	Livonia, MI 48150
Ludington Service Center	5035 W Progress Drive	Ludington, MI 49431
Macomb Service Center	35350 Kelly Rd.	Clinton Township, MI 48035
Marion Compressor Station Transmission & Storage	7950 N. Partridge Rd.	Marion, MI 49665
Marshall Service Center	1220 S. Kalamazoo	Marshall, MI 49068
Meter Technology Center	1975 W. Parnall Rd.	Jackson, MI 49201
Midland Service Center	1100 Washington St.	Midland, MI 48640
Muskegon Norton Shores Service Center	700 E Sternberg Rd	Norton Shores, MI 49441
Muskegon River Compressor Station	8613 Pine Rd.	Marion, MI 49665
North Kent Service Center	679 State St	Sparta, MI 49345
Northville Compressor Station Transmission & Storage	9440 Napier Rd.	Northville, MI 48167
One Energy Plaza	One Energy Plaza	Jackson, MI 49201
Overisel Compressor Station	4131 138th Ave. Rt. 1	Hamilton, MI 49419
Owosso Service Center	1801 W. Main St.	Owosso, MI 48867
Parnall Complex	1945 W. Parnall Rd.	Jackson, MI 49201
Parnall East	1935 W. Parnall Rd.	Jackson, MI 49201
Ray Compressor Station	69333 Omo Rd.	Armada, MI 48005
Royal Oak Service Center	4600 Coolidge Highway	Royal Oak, MI 48073

Facilities Asset Portfolio (cont.)

Site Name	Street Address	City, State, Zip
Russell Leadership Center	120 Front Ave SW	Grand Rapids MI 49504
Saginaw Service Center	2400 Weiss St.	Saginaw, MI 48602
Saginaw Transmission & Storage	5131 Hackett Rd.	Saginaw, MI 48603
South Haven Conference Center	410 N. Adams Rd.	South Haven, MI 49090
South Monroe Service Center	7216 Crab Rd.	Temperance, MI 48182
St. Clair Compressor Station	10021 Marine City Hwy	IRA, MI 48203
Standish Service Center	3253 M-76	Standish, MI 48658
Tawas Service Center	2380 E Lincoln St	Tawas, MI 48730
Trail Street Lab	135 W. Trail St.	Jackson, MI 49201
Traverse City Service Center	821 Hastings St.	Traverse City, MI 49686
West Branch Service Center	4100 W M-76	West Branch, MI 48661
White Pigeon Compressor Station	68536 "A" Rd. Rt. 1	White Pigeon, MI 49099

Paving Projects

Bridge Period Summary

Consumers Energy
Count on Us®

Bridge Period Paving Projects

		12 Mos Ending
Statewide Paving	Gas Allocation ($000)	12/31/2025
	2,851	2,851
BAY CITY PAVEMENT REPLACEMENT PHASE 1 D24 C25	34	
BAY CITY PAVEMENT REPLACEMENT PHASE 2 D24 C26	31	
MACOMB Paving North Side (7-11) D22, C23	1,282	
MACOMB Phase 2 Paving	729	
SAGINAW - Paving Section 9	104	
SAGINAW PAVING SECTION 13 REPLACEMENT	14	
SAGINAW GAS - Paving Sections 1	613	
WHITE PIGEON - Asphalt Paving	45	

Note: Bridge Period List of Project Forecasts 10 Months Ending 10/31/26 Will Be Established December 2025 for 2026 Budget Year

Note: Test Year List of Project Forecasts 12 Months Ending 10/31/27 Will Be Established December 2026 for 2027 Budget Year

Roofing Projects

Bridge Period Summary

Consumers Energy
Count on Us®

Bridge Period Roofing Projects

Statewide Roofing	Gas Allocation ($000)	12 Mos Ending 12/31/2025
	349	349
Adrian Roof Replacement (Sections A,B,C)	118	
Bay City Roof (Sections A,B,C,F,G) Replacement	0.13	
Flint Roof (Sections a-3,C,C-1, D, E, F, G) Replacement	20	
Royal Oak Roof Sections F,F-1, C-1 & G Replacement	192	
Saginaw Annex Roof Section Replacement	17	
Saginaw Roof Section G Replacement	1	

Note: Bridge Period List of Project Forecasts 10 Months Ending 10/31/26 Will Be Established December 2025 for 2026 Budget Year

Note: Test Year List of Project Forecasts 12 Months Ending 10/31/27 Will Be Established December 2026 for 2027 Budget Year

Mechanical / Electrical Projects

Bridge Period Summary

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Bridge Period Mechanical / Electrical Projects

Statewide Mechanical / Electrical	Gas Allocation ($000)	12 Mos Ending 12/31/2025
	3,478	3,478
EV Infrastructure (Multiple Sites)	817	
Bay City - Return Fans 2&3 and Venting Replacement	69	
Flint - Roof Top Unit #5 (DESIGN 2025, CONSTRUCT 2026)	18	
Flint - Roof Top Unit #6 (DESIGN 2025, CONSTRUCT 2026)	15	
Groveland - FIRE ALARM SYSTEM REPLACEMENT	85	
Kalamazoo LIGHTING FIXTURE RPLCMT (CARPORT)	13	
Lansing CHILLER VFD REPLACEMENT	54	
One Energy Plaza BOILER 2&3 REPLACEMENT	105	
Parnall - AC-21 REPLACEMENT	50	
Parnall - BOILERHOUSE AHU-26 & CONDENSER REPLACEMENT	12	
Parnall - BOILERHOUSE STEAM MAKEUP REVERSE OSMOSIS SYSTEM ADDITION	14	
Saginaw UPS REPLACEMENT D20 C21	16	
Statewide - Arc Flash Mitigation	131	
Alma UPS & POWER MONITORING REPLACEMENT	55.44	
Bay City Generator Replacement	85.39	
Bay City STOREROOM & IPA MAU REPLACEMENTS	9.08	
Flint WELD SHOP RENOVATIONS	175.39	
Flint - Replace T12 lighting fixtures with LED	118.36	
Greenville ATS replacement	28.37	
Howell GARAGE OFFICE HVAC & CONDENSING UNIT	205.56	
Jackson GENERATOR REPLACEMENT	24.47	
Livona FIRE ALARM PANEL REPLACEMENT	27.52	
Macomb 2ND FLR AHU & CONTRL REPLCMNT D22, C23	32.39	
Macomb IPA MAU & Exhaust System Replacement	11.46	
Midland Generator Replacement	46.63	
Muskegon River Compressor Plant Ph 3 Lighting Upgrade	34.95	
One Energy Plaza KITCHEN REFRIGERATION SYSTEMS REPLAC	18.49	
Owosso UPS REPLACEMENT	42.19	
Ray Compressor 2 Boiler and Unit Heaters Placement	90.00	
Saginaw ANNEX OFFICE RTU REPLACEMENT	177.57	
Saginaw GARAGE HOSE REELS & VENTILATION	99.41	
Saginaw PIV (Post Indicating Valves) and Tamper Switches	5.13	
St. Clair Compressor - Heating Pump (Plant 3) Replacement	380.47	
Parnall and Jackson SC - Lighting Replacement	410.76	

Note: Bridge Period List of Project Forecasts 10 Months Ending 10/31/26 Will Be Established December 2025 for 2026 Budget Year

Note: Test Year List of Project Forecasts 12 Months Ending 10/31/27 Will Be Established December 2026 for 2027 Budget Year

Elevator Projects

Bridge Period Summary

Consumers Energy
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Bridge Period Elevator Projects

Statewide Elevators	Gas Allocation ($000)	12 Mos Ending 12/31/2025
	70	70
Trail Street Hydraulic Elevator	16	
Saginaw Hydraulic Elevator	54	

Note: Bridge Period List of Project Forecasts 10 Months Ending 10/31/26 Will Be Established December 2025 for 2026 Budget Year

Note: Test Year List of Project Forecasts 12 Months Ending 10/31/27 Will Be Established December 2026 for 2027 Budget Year

Furniture Projects

Bridge Period Summary

Consumers Energy
Count on Us®

Bridge Period Furniture Projects

Furniture	Gas Allocation ($000)	12 Mos Ending 12/31/2025
	259	**259**
Chairs	66.460	
Lift Desk	75.820	
BAY ROOM 230 OFFICE UPGRADE	4.024	
SAG WORKSTATION (5) INSTALL (SAG 152)	25.557	
SAG - OFFICE FURNITURE UPGRADE SAG-143	86.716	

Note: Bridge Period List of Project Forecasts 10 Months Ending 10/31/26 Will Be Established December 2025 for 2026 Budget Year

Note: Test Year List of Project Forecasts 12 Months Ending 10/31/27 Will Be Established December 2026 for 2027 Budget Year

New Construction

List of Projects and Capital Expenditures
Exhibit A-85 (QAG-5)

Consumers Energy
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Lansing Service Center

Project Summary

Consumers Energy
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Lansing Service Center – Health Assessment

Facility Assessment - Lansing Service Center						
Location	Lansing	Maximum Possible Points (80)	Servicable > 48 Points	Poor < 48 Points	Good > 64 Points	
Zone	MMOM					
Safety						
Compatible Use	0	5	3	2	4	
Site Conditions	3	5	3	2	4	
Traffic/Site Flow	1	5	3	2	4	
Environmental Hazard	1	5	3	2	4	
Quality						
Branding	2	5	3	2	4	
Workplace Efficiency	3	5	3	2	4	
Years since last major systems upgrade	0	5	3	2	4	
Cost						
Facility Operating Costs	4	5	3	2	4	
Non Facility Cost Impact	4	5	3	2	4	
Space Optimization	3	5	3	2	4	
Delivery						
Drive Time	3	5	3	2	4	
Customer Response	4	5	3	2	4	
Sustainability	1	5	3	2	4	
Morale						
Employee Pride	2	5	3	2	4	
Retention	3	5	3	2	4	
Wellness	5	5	3	2	4	
Total	***39***	***80***	***48***	***32***	***64***	

Lansing Service Center – Health Assessment

Safety (20 Points)	Comments	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Compatible Use	Use of property is compatible with adjoining properties and surrounding area.	Industrial zoning and use	Residential use, retail use, criminal activity	Residential zoning, high crime area	Residential zoning	Mixed Commercial / Residential zoning	Commercial zoning for Service Centers, mixed Commercial / Industrial zoning for non-Service Centers	Industrial zoning for Service Centers, Commercial zoning for non-Service Centers	Industrial zoning for Service Centers, Central Business District zoning for non-Service Centers
Site Conditions	Physical condition of site	Full utilities, good paving, fencing, drainage	No utilities, poor paving, fencing, drainage	Site not adequate to support operational requirements, located in flood plain,	Site not adequate to support operational requirements	significant upgrades, such as storm water detention, fire water, potable water, sanitary sewer, paving, etc.	Site in serviceable condition with full utilities or good condition with partial utilities	Site in good condition, full utilities	Site in good condition with undeveloped space to accommodate future growth
Traffic/Site Flow	Road network, site access drive, vehicle turning space	Close to highway, access from two roads, space for truck trailer to pull off road, one way gates	Secondary road, no truck pull off space at gate, two way gates, insufficient turning space	Unimproved road frontage / site traffic flows crossing	Non Class A road frontage / Site heavy traffic and light traffic flows crossing	with impediments, railroad tracks, intersections, etc. / Site traffic flows crossing	Class A road frontage / Site traffic flows mixed	Class A road frontage with secondary frontage / Site traffic flows separated	with secondary frontage and nearby highway access / Site traffic flows separated
Environmental Hazard	Environmental hazards	LEED certification, no environmental hazards	Former MGP site, soil contamination, abandoned underground fuel tanks, abandoned transformer storage, asbestos fire proofing, asbestos duct wrap, asbestos pipe wrap, lead paint,	Immediate hazards to employees present during normal use of site	Hazardous materials present, with reoccurring or continuous exposure hazard, former MGP site, current 201 site	Hazardous materials present in manageable form, former MGP site, current 201 site	Hazardous materials present in manageable form	No environmental impacts, hazardous materials abated or encapsulated	LEED Certified facility with no environmental impacts

Quality (15 Points)	***Employee/Customer Engagement***	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Branding	Projects positive image to community and potential employees	Well cared for facility, curb appeal, neat landscaping, coordinated site signage	Dilapidated facility, dated appearance, overgrown landscaping, mismatched site signage	damaged or deteriorated structures, landscape materials overgrown or absent, failed pavement, etc.	Structures deteriorated, landscape materials overgrown or absent, failing paving, no signage	Structures poorly maintained, landscape materials overgrown or absent, poor signage	for, landscape materials in serviceable condition, uncoordinated signage	Structures well cared for, landscape materials in good condition, coordinated signage	New facility, landscape materials in good condition, coordinated signage
Workplace Efficiency	Space is fully utilized	Space provided for all operational functions, space size meets needs, proper inventory stored	Space not provided for all operational functions, space oversized, space not fully utilized, unused materials (junk) stored	Space inadequate for intended occupancy	Hard wall offices, empty or vacant spaces	Hard wall offices, fully utilized	Mix of hard wall offices and systems furniture, fully utilized	Modular systems furniture, fully utilized	Flexible, open and collaborative workspaces, modular systems furniture, fully utilized
Years since last major systems upgrade	Condition of facility is code compliant, building systems are within normal operational life cycle and supports working environment	New construction or recently completed full renovation	Building old and unrenovated or only minimal or partial renovation work completed	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade

Lansing Service Center – Health Assessment

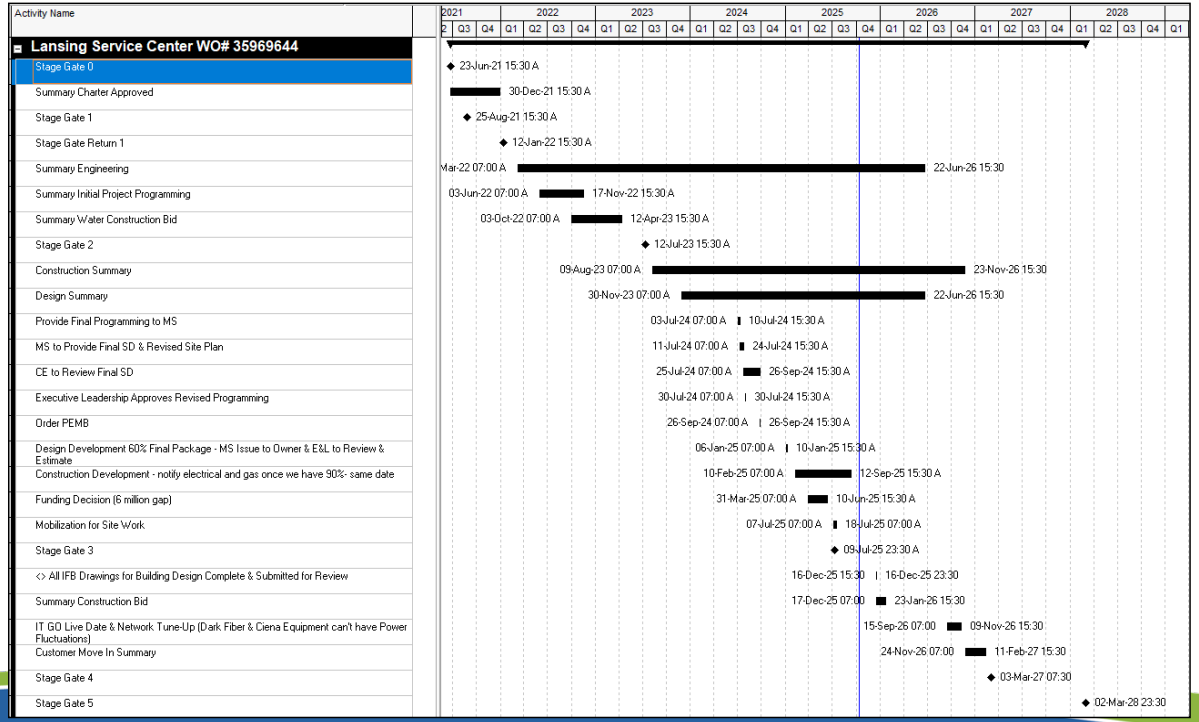
Cost (15 Points)		Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Facility Operating Costs	O&M costs to operate and maintain facility	Cost per square foot for facility less than statewide average cost per square foot ($5.31)	Cost per square foot for facility more than statewide average cost per square foot ($5.31)	costs greater than $10.00 per square foot	costs between $8.00 to $10.00 per square foot	costs between $7.25 to $7.99 per square foot	costs between $7.00 to $7.24 per square foot	costs between $5.75 to $6.99 per square foot	Combined operating costs less than $5.75 per square foot
Non Facility Cost Impact	O&M cost impacts to operations	Building correct size, centrally located within customer base area, able to accommodate necessary materials, able to maneuver onsite	Building too large, eccentrically located within customer base area, unable to accommodate necessary materials, difficult to maneuver onsite	Building eccentrically located within service territory, inadequate space	Building eccentrically located within service territory, underutilized space	Building eccentrically located within service territory	Building centrally located within service territory	Building accommodates operational needs, centrally located within service territory	Building accommodates operational need, space utilized efficiently, centrally located within service territory
Space Optimization	Reduce excess square footage	Space fully utilized, space utilized efficiently	Space under utilized, space utilized inefficiently, indoor parking area	Building vacant	Building partially occupied or partially vacant	Building occupied inefficiently, includes IPA	Building fully occupied, includes IPA	Building fully occupied, no IPA	occupied, no IPA, includes cold storage

Delivery (15 Points)	Customer Service	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Drive Time	Service territory area of proper size	Centrally located within service area(s), drive time balanced across territory and within targeted limits	Eccentrically located within service area(s), drive time unbalanced across territory and/or exceeds targeted limits	service territory and size of service territory allows drive time >1:20 Gas and >1:30 Electric	service territory and size of service territory allows drive time < 1:20 Gas and <1:30 Electric	service territory and size of service territory allows drive time < 1:10 Gas and <1:15 Electric	service territory and size of service territory allows drive time < 1:00 Gas and <1:00 Electric	service territory and size of service territory allows drive time < 0:50 Gas and <0:45 Electric	service territory and size of service territory allows drive time < 0:40 Gas and <0:30 Electric
Customer Response	Meets needs of customers	Customer response time metrics fall below targets	Customer response times exceed targets	response times meet target <90% of time, Electric CAIDI >215 minutes	response times meet target >90% of time, Electric CAIDI <215 minutes	response times meet target >95% of time, Electric CAIDI <195 minutes	response times meet target >97% of time, Electric CAIDI <180 minutes	response times meet target >98% of time, Electric CAIDI <165 minutes	response times meet target >99% of time, Electric CAIDI <150 minutes
Sustainability	Facility incroprates reduced energy utilization and minimizes environmental impact	Facility constructed in accordance with recent Energy Codes, includes onsite stormwater treatment, Green building certification	Facility constructed with no insulation, utilizes enegy intensive equipment, no onsite storm water treatment	Minimal roofing insulation	Upgraded roofing insulation	Upgraded roofing insulation and windows	Upgraded roofing insulation, windows and building envelope	insulation, windows, and building envelope with onsite storm water treatment	LEED Certified (or higher LEED rated) facility

Lansing Service Center – Health Assessment

Morale (15 Points)	Employee Wellness	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Employee Pride	Employees are engaged	Employee engagement scores > company average	Employee engagement scores < company average	Deteriorated facility	Deteriorated or dated facility with limited amenities	Dated facility with minimal amenities	Dated facility with full amenities and onsite parking	Modern facility with full amenities	Modern facility with full amenities, onsite parking
Retention	Facilities located in a desirable area, space is attractive to Millennials and supports millennial work styles	Downtown location, local amenities available, space supports varied work styles	Remote location, few local amenities, fixed work space	Remote location, no local amenities	some amenities available within 20 minutes driving distance	Remote location, amenities available within 20 minutes driving distance	Remote location, amenities available within 15 minutes driving distance	Diverse location, amenities available within 10 minutes driving distance	Diverse location, amenities available within walking distance
Wellness	Wellness facilities	Wellness room, space for trainer, drinking fountain, shower facilities nearby, space for wellness classes, well maintained exercise equipment, mirrors, lockers	Wellness room combined with non-compatible uses (i.e.: conference room), aged exercise equipment, poorly maintained exercise equipment, remote shower facilities	No shower, drinking fountain, Wellness or Nursing Mother Room, no additional space available	Shower and drinking fountain, no Wellness or Nursing Mother Room, no additional space available	Wellness Room or Nursing Mother Room, shower and drinking fountain, no additional space available	Nursing Mother Room, shower and drinking fountain, with space available to add Wellness or NMR	Wellness Room and Nursing Mother room, shower and drinking fountain, with space available for Trainer	Wellness room, Trainer room, Nursing Mother Room, shower and drinking fountain nearby

Lansing Service Center – Project Schedule



Lansing Service Center – Project Expenditures v. Rate Case U-20963 Allowance

LANSING SERVICE CENTER PROJECT SPEND ($)	2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Total Project Thru 9/30/25
Electric Allocation	16,939	1,006,192	89,633	310,675	1,778,681	2,169,659	3,556,278	8,928,056
Gas Allocation	14,290	849,566	75,955	261,575	1,500,597	1,817,219	2,985,808	7,505,010
Total	31,229	1,855,758	165,588	572,250	3,279,278	3,986,878	6,542,086	16,433,066

LANSING SERVICE CENTER PROJECT SPEND ($)	2019 Thru 2024 Total	2025 YTD Thru 9/30/25	Oct. 2025	Nov. 2025	Dec. 2025	2026 Total	2027 Total	Forecast Total Project Spend Thru 12/31/25	Lansing Service Center Case No. U20963 Allowance	Variance - Total Lansing Project Spend Thru 12/31/25 to U20963 Allowance	(%) of U20963 Allowance Spent Thru 12/31/25
Electric Allocation	5,364,867	3,556,278	2,135,277	2,968,829	3,660,906	15,698,534	61,747	17,686,157	15,724,000	1,962,157	112.5%
Gas Allocation	4,526,112	2,985,808	1,801,444	2,504,675	3,088,552	13,244,191	52,093	14,906,591	13,276,000	1,630,591	112.3%
Total	9,890,979	6,542,086	3,936,721	5,473,504	6,749,458	28,942,725	113,840	32,592,748	29,000,000	3,592,748	112.4%

Lansing Service Center – Project Cashflows

FM-00167 Lansing Service Center New							
	Budgetary Baseline	Previous Years Total	Actuals YTD 2025	Forecast 2025	Forecast 2026	Forecast 2027	Total Spend Thru 9/30/25
Engineering	$482,814	$432,112	$1,517	$0	$42,064	$0	$433,629
Procurement	$3,726,092	$1,889,726	$0	$0	$2,832,568	$0	$1,889,726
Construction	$49,732,565	$6,490,439	$5,897,270	$15,595,635	$22,568,830	$33,391	$12,387,709
Internal	$6,194,819	$1,078,704	$486,399	$514,049	$3,513,526	$16,449	$1,565,103
Contingency	$1,101,435	$0	$0	$50,000	$0	$0	$0
Unassigned	$0	$0	$156,899	$0	$0	$0	$156,899
Project Totals	$61,237,725	$9,890,980	$6,542,086	$16,159,684	$28,956,988	$49,840	$16,433,066

Lansing Service Center – Building Rendering

Lansing Service Center – Alternatives Matrix

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Alternative Scenario Evaluation Matrix - Lansing Service Center Major Systems Upgrade

	Weight	Build on New Site Score	Renov. Existing Score	Do Nothing Score	Score	COMMENTS
Section 1 - Affordable (50%)						
Operating cost per square foot below statewide average	40%	4.0	3.0	2.0		Current facility operating cost for Lansing is $6.97 per square foot, versus statewide average operating cost of $5.31 per square foot.
Construction cost	10%	1.0	4.0	5.0		
Section 1 - Scenario Average Weighted Score Total (Best = 5):		1.7	1.6	1.3	0.0	
Section 2 - Safe (25%)						
Hazardous Material Abatement (asbestos, lead paint)	5.0%	4.0	3.0	1.0		
Site located outside high crime area	5.0%	4.0	1.0	1.0		
Pedestrian traffic route separated from truck traffic route	2.5%	4.0	1.0	1.0		
Site located outside defined FEMA 100 year flood elevation	10.0%	4.0	1.0	1.0		Current location is 3' below FEMA 100 year flood elev.
Site soils not impacted by previous use (Manufactured Gas Plant)	2.5%	4.0	1.0	1.0		Current location is former Manufactured Gas Plant site
Section 2 - Scenario Average Score Total (Best = 5):		1.0	0.4	0.3	0.0	
Section 3 - Reliable (17.5%)						
Overall score above 72 as measured by Facilites Scorecard	2.5%	4.0	3.0	1.0		Current overall facility score for Lansing is 39
Building size matches operational needs	5.0%	4.0	2.0	2.0		Building fully occupied currently (pre COVID-19)
Improve CAIDI Score > 3%	4.0%	4.0	1.0	1.0		
On Premise start times improved by 5 to 10 minutes	5.0%	4.0	2.0	1.0		Improved material flow and vehicle loading
Drive through vehicle repair bays	2.5%	4.0	2.0	2.0		Improved vehicle repair time, reduced vehicle damage
Section 3 - Scenario Weighted Score Total (Best = 5):		0.6	0.3	0.2	0.0	
Section 4 - Clean (7.5%)						
LEED V4.1 Certification	2.5%	4.0	3.0	1.0		
Stormwater detention and treatment	2.5%	4.0	1.0	1.0		Stormwater currently direct discharge to Grand River
Onsite solar power generation	1.0%	4.0	1.0	1.0		
Section 3 - Scenario Weighted Score Total (Best = 5):		0.2	0.1	0.1	0.0	
TOTAL WEIGHTED VALUE SCORE: (BEST = 5)	100%	3.5	2.4	1.8	0.0	

Lansing Service Center – Alternatives Matrix

Safe
Hazardous Material Abatement (asbestos, lead paint)
Site located outside high crime area
Pedestrian traffic route separated from truck traffic route
Site located outside defined FEMA 100 year flood elevation
Site soils not impacted by previous use
Affordable
Operating cost per square foot below statewide average
Construction cost
Reliable
Overall score above 72 as measured by Facilites Scorecard
Building size matches operational needs
Improve CAIDI Score > 3%
On Premise start times improved by 5 to 10 minutes
Drive through vehicle repair bays
Clean
LEED V4.1 Certification
Stormwater detention and treatment
Onsite solar power generation
Non-Monetary Considerations
Other Risks & Barriers
Regulatory
Technical/Engineering
Aesthetics
People
Process
Technology
Customer Requirements
Real Estate
Municipality Requirements

New Lansing Service Center – Potential Locations

Property Details	Site A	Site B	Site C
Site Address	6964 N. Canal Rd. Dimondale, MI 48821	401 N. Verlinden Ave. Lansing, MI 48915	S. Waverly Rd & W. Miller Rd. Lansing, MI 48911
County	Eaton	Ingham	Ingham
Municipality	Windsor Township	City of Lansing	City of Lansing
Acreage	77.67	57	50

New Lansing Service Center – Potential Locations

Site Characteristics	Site A	Site B	Site C
Site Address	6964 N. Canal Rd. Dimondale, MI 48821	401 N. Verlinden Ave. Lansing, MI 48915	S. Waverly Rd. & W. Miller Rd. Lansing, MI 48911
Internal CE Security Assessment	Low Risk	High Risk	Medium Risk
Distance to Highways	Less than 1 mile to I-96	¼ Mile from M43; 2 miles to I-496	1.5 miles to I-96
Zoning	M1 Industrial	Industrial	Residential
3 Phase	Yes	Yes	No
Natural Gas	Yes	Yes	Yes
Water	No; water main extension pending	Yes	Yes
Sewer	Yes	Yes	Yes
Fiber	No	No	No
Wetlands Identified	Yes; 60 usable acres	No; 57 usable acres	Yes; 40 usable acres
Known Environmental Contamination	No	Yes	No

New Lansing Service Center – Potential Locations – Gas / Electric Customer Response Time Comparisons

Electric work order x minutes			
Number of Work Orders and Time			
Verlinden Site Option	**Electric**		
10 minutes	17,984	179,840	
20 minutes	63,792	1,275,840	
30 minutes	15,949	478,470	
40 minutes	972	38,880	
50 minutes			
Total	98,697	1,973,030	Best Electric but worst Gas
Waverly Site Option	**Electric**		
10 minutes	7,505	75,050	
20 minutes	52,207	1,044,140	
30 minutes	31,058	931,740	
40 minutes	7,841	313,640	
50 minutes	86	4,300	
Total	98,697	2,368,870	Worst Electric but best Gas
Canal Site Option	**Electric**		
10 minutes	8,464	84,640	
20 minutes	56,349	1,126,980	
30 minutes	28,126	843,780	
40 minutes	5,742	229,680	
50 minutes	16	800	
Total	98,697	2,285,880	Mid for both Electric and Gas

Gas work order x minutes			
Number of Work Orders and Time			
Verlinden Site Option	**Gas**		
10 minutes	41,742	417,420	
20 minutes	62,020	1,240,400	
30 minutes	22,865	685,950	
40 minutes	1,939	77,560	
50 minutes			
Total	128,566	2,421,330	Worst Gas but best Electric
Waverly Site Option	**Gas**		
10 minutes	26,982	269,820	
20 minutes	77,463	1,549,260	
30 minutes	19,380	581,400	
40 minutes	4,741	189,640	
50 minutes			
Total	128,566	2,590,120	Best Gas but worst Electric
Canal Site Option	**Gas**		
10 minutes	21,801	218,010	
20 minutes	85,674	1,713,480	
30 minutes	17,453	523,590	
40 minutes	3,638	145,520	
50 minutes			
Total	128,566	2,600,600	Mid for both Gas and Electric

New Lansing Service Center – Potential Locations within City of Lansing

401 N. Verlinden Ave. Lansing, MI 48915

Positives:

- Low purchase price
- Potential tax incentives available
- Utilities available

Limitations:

- Environmental concerns
- Unknown abandon utilities and tunnels under surface
- LBWL substation on site along with HVD line but unable to serve ourselves with electric
- Fiber would need to be ran to site
- Medium-risk security assessment needed

S. Waverly Rd. & W. Miller Rd. Lansing, MI 48911

Positives:

- Potential assistance with site preparation
- Potential assistance with demo of asbestos

Limitations:

- Wetlands and possibly not enough usable property
- Potentially unable to have a drive on S. Waverly due to hill and high speeds coming northbound on Waverly - both drives would have to be off of W. Miller Rd
- Length of time to potentially acquire site
- Demo of houses with asbestos
- Probably unable to serve ourselves with electric
- Fiber is currently some distance away – would need to be ran to site
- Currently zoned residential and would need to be rezoned to light industrial
- Medium-risk security assessment needed
- Unknown purchase price

New Lansing Service Center – Potential Locations within City of Lansing

South of Grand River, Ave.

Positives:

- Utilities available (Water & Sewer)

Limitations:

- Fuel station across the street
- Possible wetlands
- Further north
- Lots of traffic on road

*No other data was collected regarding this location

New Lansing Service Center Potential Location

401 N. Verlinden Ave. Lansing - Site Characteristics

57 acres

Response Time:	• 87% of reported outages are reached in 30 minutes timeframe • 100% of reported outages are reached within 45 minutes
Ease of Travel:	CE Operations: • Difficulty with turning and maneuvering trucks and trailers through city streets and blocks • Travel impediment due to foot and bike traffic, CATA bus stops, railroad crossing and street parking in residential areas • Difficult to access highways through residential areas: 2 miles to I-496
Security:	• **CE Security Risk Assessment Rating – HIGH** • Crimes occurring within 1-mile radius of parcel within 12/26/19-01/23/20: Assault – 15; Weapon Offenses – 6; Larceny – 6; Vandalism – 4; Burglary – 4; Motor Vehicle Theft – 3; Robbery – 1 • 74 sex offenders in registry within 1-mile radius
Wetlands identified:	• No identified wetlands on the parcel
Environmental concerns:	• Significant concern regarding existing contamination and abandoned underground utility facilities on the property. Further due diligence would be required if site is selected to evaluate impact to service center construction and operations.

New Lansing Service Center Potential Location

S. Waverly & W. Miller Rd, Lansing - Site Characteristics

33 usable acres

Response Time:	• 88% of reported outages are reached in the 30 minutes • 100% of reported outages are reached within 50 minutes
Ease of Travel:	CE Operations: • Difficulty with turning and maneuvering trucks and trailers through city streets and blocks • Travel impediment due to foot and bike traffic, CATA bus stops and street parking in residential areas • Difficult to access highways through residential areas: 1.5 miles to I-96
Security:	• **CE Security Risk Assessment Rating – MEDIUM** • Crimes occurring within 1-mile radius of parcel within 12/26/19-01/23/20: Assault – 6; Vandalism – 1; Larceny – 1; Motor Vehicle Theft – 1 • 16 sex offenders in registry within 1-mile radius
Wetlands identified:	• The State's National Wetland Inventory map indicates 17 acres of regulated wetlands of the 50-acre parcel • CE would not be able to use 17 acres without costly wetland mitigation. Would limit or possibly eliminate future expansion on site.
Environmental concerns:	• LEAP reports asbestos abatement needed prior to demolition of existing houses on parcel • CE Environmental reports existing contaminated site on the adjacent property to the east

New Lansing Service Center Potential Location

6964 N. Canal Rd, Dimondale - Site Characteristics

60 usable acres

Response Time:	• 91% of reported outages are reached in the 30 minute timeframe • 100% of reported outages are reached within 45 minutes
Ease of Travel:	CE Operations: • Located in the industrial area of Windsor Commerce Parkway. Roads and intersections provide for wider turns for maneuvering trucks and trailers • Access to highways through commercial areas: 0.75 miles to I-96; 1.35 miles to I-69 • Limited foot and bike traffic and no parking on roads
Security:	• **CE Security Risk Assessment Rating – LOW** • Crimes occurring within 1-mile radius of parcel within 12/26/19-01/23/20: Assault – 0 • 4 sex offenders in registry within 1-mile radius • High police presence due to Michigan State Police within 0.6 miles from parcel
Wetlands identified:	• The State's National Wetland Inventory map indicates 7.29 acres of regulated wetlands on the 77.67-acre parcel • Property size allows for CE use to be designed to avoid wetland areas and allow for future expansion.
Environmental concerns:	• No known environmental concerns

New Lansing Service Center – Electric Benefits

New Lansing Service Center - Electric Customer Benefits

Electric work order x minutes
Number of Work Orders x Travel Time

Canal - New Site	Electric	WO x Min.
10 minutes	8,464	84,640
20 minutes	56,349	1,126,980
30 minutes	28,126	843,780
40 minutes	5,742	229,680
50 minutes	16	800
Total	98,697	2,285,880

Willow - Current Site	Electric	WO x Min.
10 minutes	2,142	21,420
20 minutes	58,784	1,175,680
30 minutes	31,496	944,880
40 minutes	6,239	249,560
50 minutes	36	1,800
Total	98,697	2,393,340

2018 Electric Outages	50,135	Customers
2019 Electric Outages	56,670	Customers
Total Electric Outages	106,805	Customers
Avg Annual Outages	53,403	Customers

Difference:	107,460	Minutes reduction in travel time to customer sites compared to Willow Road
	4.5%	Reduction in travel time to customer sites compared to Willow Road
Cost Savings:	$185,906	Productivity recaptured annually based on $3.46 per minute per employee

Electric CAIDI Improvement:	53,730	Annual reduction in travel minutes
	4,478	Monthly reduction in travel minutes

New Lansing Service Center – Gas Benefits

New Lansing Service Center - Gas Customer Benefits

Gas work order x minutes
Number of Work Orders x Travel Time

Canal – New Site	Gas	WO x Min.
10 minutes	21,801	218,010
20 minutes	85,674	1,713,480
30 minutes	17,453	523,590
40 minutes	3,638	145,520
50 minutes		
Total	128,566	2,600,600

Willow – Current Site	Gas	Adjust.
10 minutes	25,726	257,260
20 minutes	62,260	1,245,200
30 minutes	30,560	916,800
40 minutes	9,489	379,560
50 minutes	531	26,550
Total	128,566	2,825,370

Difference:	**224,770**	**Minutes reduction in travel time to customer sites compared to Willow Road**
	8.0%	**Reduction in travel time to customer sites compared to Willow Road**
Cost Savings:	**$309,059**	**Productivity recaptured annually based on $2.75 per minute per employee**

Gas Response Time Improvement: 224,770

Hastings Service Center

Project Summary

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Hastings Service Center – Health Assessment

Facility Assessment - Hastings Service Center					
Location	Hastings	Maximum Possible Points (80)	Servicable > 48 Points	Poor < 48 Points	Good > 64 Points
Zone	SWOM				
Safety					
Compatible Use	4	5	3	2	4
Site Conditions	4	5	3	2	4
Traffic/Site Flow	2	5	3	2	4
Environmental Hazard	3	5	3	2	4
Quality					
Branding	3	5	3	2	4
Workplace Efficiency	3	5	3	2	4
Years since last major systems upgrade	1	5	3	2	4
Cost					
Facility Operating Costs	0	5	3	2	4
Non Facility Cost Impact	4	5	3	2	4
Space Optimization	2	5	3	2	4
Delivery					
Drive Time	4	5	3	2	4
Customer Response	3	5	3	2	4
Sustainability	3	5	3	2	4
Morale					
Employee Pride	1	5	3	2	4
Retention	3	5	3	2	4
Wellness	1	5	3	2	4
Total	***41***	***80***	***48***	***32***	***64***

Hastings Service Center – Health Assessment Scoring Criteria

Safety (20 Points)	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Compatible Use	Residential zoning, high crime area	Residential zoning	Mixed Commercial / Residential zoning	Commercial zoning for Service Centers, mixed Commercial / Industrial zoning for non-Service Centers	Mixed Commercial / Industrial zoning for Service Centers, Commercial zoning for non-Service Centers	Industrial zoning for Service Centers, Central Business District zoning for non-Service Centers
Site Conditions	Site not adequate to support operational requirements, located in flood plain,	Site not adequate to support operational requirements	significant upgrades, such as storm water detention, fire water, potable water, sanitary sewer, paving, etc.	Site in serviceable condition with full utilities or good condition with partial utilities	Site in good condition, full utilities	Site in good condition with undeveloped space to accommodate future growth
Traffic/Site Flow	Unimproved road frontage / site traffic flows crossing	Non Class A road frontage / Site heavy traffic and light traffic flows crossing	with impediments, railroad tracks, intersections, etc. / Site traffic flows crossing	Class A road frontage / Site traffic flows mixed	Class A road frontage with secondary frontage / Site traffic flows separated	Class A road frontage with secondary frontage and nearby highway access / Site traffic flows separated
Environmental Hazard	Immediate hazards to employees present during normal use of site	Hazardous materials present, with reoccurring or continuous exposure hazard, former MGP site, current 201 site	Hazardous materials present in manageable form, former MGP site, current 201 site	Hazardous materials present in manageable form	No environmental impacts, hazardous materials abated or encapsulated	LEED Certified facility with no environmental impacts
Quality (15 Points)	Score 0	Score 1	Score 2	Score 3	Score 4	Score 5
Branding	damaged or deteriorated structures, landscape materials overgrown or absent, failed pavement, etc.	Structures deteriorated, landscape materials overgrown or absent, failing paving, no signage	Structures poorly maintained, landscape materials overgrown or absent, poor signage	Structures well cared for, landscape materials in serviceable condition, uncoordinated signage	Structures well cared for, landscape materials in good condition, coordinated signage	New facility, landscape materials in good condition, coordinated signage
Workplace Efficiency	Space inadequate for intended occupancy	Hard wall offices, empty or vacant spaces	Hard wall offices, fully utilized	Mix of hard wall offices and systems furniture, fully utilized	Modular systems furniture, fully utilized	Flexible, open and collaborative workspaces, modular systems furniture, fully utilized
Years since last major systems upg	construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	0-10 years since initial construction or last major systems upgrade
Cost (15 Points)	Score 0	Score 1	Score 2	Score 3	Score 4	Score 5
Facility Operating Costs	costs greater than $10.00 per square foot	costs between $8.00 to $10.00 per square foot	costs between $7.25 to $7.99 per square foot	costs between $7.00 to $7.24 per square foot	costs between $5.75 to $6.99 per square foot	Combined operating costs less than $5.75 per square foot
Non Facility Cost Impact	Building eccentrically located within service territory, inadequate space	Building eccentrically located within service territory, underutilized space	Building eccentrically located within service territory	Building centrally located within service territory	Building accommodates operational needs, centrally located within service territory	Building accommodates operational need, space utilized efficiently, centrally located within service territory
Space Optimization	Building vacant	Building partially occupied or partially vacant	Building occupied inefficiently, includes IPA	Building fully occupied, includes IPA	Building fully occupied, no IPA	Building fully occupied, no IPA, includes cold storage

Delivery (15 Points)						
Drive Time	service territory and size of service territory allows drive time > 1:20 Gas and > 1:30 Electric	service territory and size of service territory allows drive time < 1:20 Gas and < 1:30 Electric	Location within service territory and size of service territory allows drive time < 1:10 Gas and < 1:15 Electric	service territory and size of service territory allows drive time < 1:00 Gas and < 1:00 Electric	service territory and size of service territory allows drive time < 0:50 Gas and < 0:45 Electric	service territory and size of service territory allows drive time < 0:40 Gas and < 0:30 Electric
Customer Response	response times meet target <80% of time, Electric CAIDI >215 minutes	response times meet target >80% of time, Electric CAIDI <215 minutes	response times meet target >85% of time, Electric CAIDI <195 minutes	response times meet target >97% of time, Electric CAIDI <180 minutes	response times meet target >98% of time, Electric CAIDI <165 minutes	response times meet target >99% of time, Electric CAIDI <150 minutes
Sustainability	Minimal roofing insulation	Upgraded roofing insulation	Upgraded roofing insulation and windows	Upgraded roofing insulation, windows and building envelope	Upgraded roofing insulation, windows and building envelope with onsite storm water treatment	LEED Certified (or higher LEED rated) facility
Morale (15 Points)	Score 0	Score 1	Score 2	Score 3	Score 4	Score 5
Employee Pride	Deteriorated facility	Deteriorated or dated facility with limited amenities	Dated facility with minimal amenities	Dated facility with full amenities and onsite parking	Modern facility with full amenities	Modern facility with full amenities, onsite parking
Retention	Remote location, no local amenities	some amenities available within 20 minutes driving distance	Remote location, amenities available within 20 minutes driving distance	Remote location, amenities available within 15 minutes driving distance	Diverse location, amenities available within 10 minutes driving distance	Diverse location, amenities available within walking distance
Wellness	No shower, drinking fountain, Wellness or Nursing Mother Room, no additional space available	Shower and drinking fountain, no Wellness or Nursing Mother Room, no additional space available	Wellness Room or Nursing Mother Room, shower and drinking fountain, no additional space available	Wellness Room or Nursing Mother Room, shower and drinking fountain, with space available to add Wellness or NMR	Wellness Room and Nursing Mother room, shower and drinking fountain, with space available for Trainer	Wellness room, Trainer room, Nursing Mother Room, shower and drinking fountain nearby

Hastings Service Center – Alternatives Matrix

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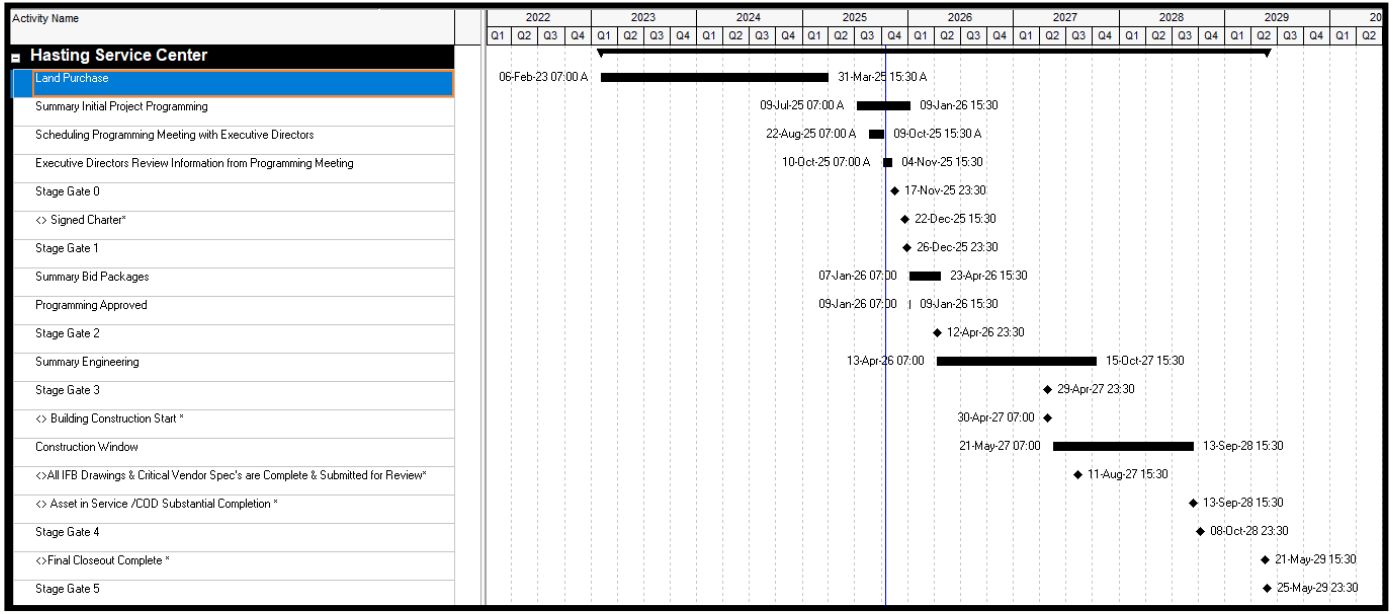
Alternative Scenario Evaluation Matrix - Hastings Service Center Major Systems Upgrade

	Weight	Build on New Site Score	Build on Ex. Site Score	Renov. Existing Score	Do Nothing Score	COMMENTS
Section 1 - Affordable (50%)						
Operating cost per square foot below statewide average	40%	4.0	4.0	2.0	1.0	Current facility operating cost for Hastings is $13.85 per square foot, versus statewide average operating cost of $5.31 per square foot.
Construction cost	10%	2.0	2.0	3.0	4.0	
Section 1 - Scenario Average Weighted Score Total (Best = 5):		1.8	1.8	1.1	0.8	
Section 2 - Safe (12.5%)						
Hazardous Material Abatement (asbestos, lead paint)	2.5%	4.00	4.0	3.0	2.0	
Reduced site congestion and improved vehicular traffic flow	10%	4.00	3.00	1.00	1.00	
Section 2 - Scenario Average Score Total (Best = 5):		0.5	0.4	0.2	0.2	
Section 3 - Reliable (25%)						
Overall score above 72 as measured by Facilites Scorecard	5%	4.0	4.0	3.0	1.0	Current overall facility score for Hastings is 41
On Premise start times improved by 5 to 10 minutes	10%	4.0	4.0	2.0	1.0	Improved material flow and vehicle loading
Drive through vehicle repair bays	5%	4.0	4.0	3.0	3.0	Improved vehicle repair time, reduced vehicle damage
Temporary relocation of operations	5%	4.0	1.0	2.0	4.0	
Section 3 - Scenario Weighted Score Total (Best = 5):		1.0	0.9	0.6	0.5	
Section 4 - Clean (12.5%)						
LEED V4.1 Certification	2.5%	4.0	4.0	2.0	1.0	
Stormwater detention and treatment	2.5%	4.0	4.0	3.0	1.0	Stormwater currently discharged to ditch
Onsite solar power generation	2.5%	4.0	4.0	1.0	1.0	
Municipal Utilities Available	5%	1.0	4.0	4.0	4.0	Available parcels are located outside Hastings urban area, private well and septic will be required
Section 3 - Scenario Weighted Score Total (Best = 5):		0.4	0.5	0.4	0.3	
TOTAL WEIGHTED VALUE SCORE: (BEST = 5)	100%	3.7	3.6	2.2	1.7	

Hastings Service Center – Alternatives Matrix Criteria

Safe
Hazardous Material Abatement (asbestos, lead paint)
Reduced site congestion and improved vehicular traffic flow
Affordable
Operating cost per square foot below statewide average
Construction cost
Reliable
Overall score above 72 as measured by Facilites Scorecard
On Premise start times improved by 5 to 10 minutes
Temporary relocation of operations
Drive through vehicle repair bays
Clean
LEED V4.1 Certification
Stormwater detention and treatment
Onsite solar power generation
Municipal Utilities Available
Non-Monetary Considerations
Other Risks & Barriers
Regulatory
Technical/Engineering
Aesthetics
People
Process
Technology
Customer Requirements
Real Estate
Municipality Requirements

Hastings Service Center – Project Schedule



Hastings Service Center – Project Expenditures v. Rate Case U-20963 Allowance

HASTINGS SERVICE CENTER PROJECT SPEND ($)	2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Total Project Spend Thru 9/30/25	Hastings Service Center Case No. U20963 Allowance	Variance - Total Project Spend to U20963 Allowance
Electric Allocation	9,571	2,480	9,976	2,879	4,789	113,671	41,019	184,385	6,235,000	(6,050,615)
Gas Allocation	8,075	2,094	8,454	2,425	4,040	95,207	34,439	154,734	5,265,000	(5,110,266)
Total	17,646	4,574	18,430	5,304	8,829	208,878	75,457	339,118	11,500,000	(11,160,882)

Hastings Service Center – Current Project Cashflow Estimate

HAS Hastings Service Center (FM-00163)	Previous Years Total	Actuals YTD 2025	Forecast 2025	Forecast 2026	Forecast 2027	Forecast 2028	Actuals thru 9/30/25
Engineering	$0	$0	$0	$305,000	$90,000	$0	$0
Procurement	$263,661	$30,040	$0	$0	$0	$0	$293,701
Construction	$0	$0	$0	$0	$16,422,500	$15,422,500	$0
Internal	$0	$45,417	$20,803	$184,758	$901,603	$2,312,773	$45,417
Contingency	$0	$0	$0	$20,000	$875,000	$875,000	$0
Unassigned	$0	$0	$0	$0	$0	$0	$0
Project Totals	$263,661	$75,457	$20,803	$509,758	$18,289,103	$18,610,273	$339,118

Gas Call Drive Time Summary

- **For the current Hastings Service Center and the proposed site at Vacant Land M-179**
  - Within 20 minutes we are able to reach 50% of gas customers and in 40 minutes we are able to reach 100% of gas customers.
- **For the proposed site at Vacant Land Enterprise Drive**
  - Within 25 minutes we are able to reach 50% of gas customers and in 45 minutes we are able to reach 100% of gas customers.

Electric Outage Drive Time Summary

- **For the current Hastings Service Center and the proposed site at Vacant Land M-179**
  - Within 15 minutes we are able to reach 50% of electric customers and in 30 minutes we are able to reach 100% of electric customers.
- **For the proposed site at Vacant Land Enterprise Drive**
  - Within 20 minutes we are able to reach 50% of electric customers and in 30 minutes we are able to reach 100% of electric customers.

Summary Site Comparison

Vacant Land: Enterprise Dr

- Public water and septic
- Would add 5 minutes to both electric and gas drive times

Vacant Land: M-179

- Private water and septic
- Drive times would remain similar to what is being experienced at the current location

Hastings Service Center Site Options Comparison

Vacant Land: Enterprise Dr, Hastings, MI 49058

Characteristics:

- Property – 18 acres
- Municipal Water – Available at the street
- Municipal Sewer – Available at the street
- Fiber – Available
- Wetlands – No mitigation required
- 3-Phase – Available at the street
- Natural Gas – Available at the street

Vacant Land: M-179, Hastings, MI 49058

Characteristics:

- Property – 30 Acres
- Private Water System – New system needed
- Private Septic System – New system needed
- Fiber – Available
- Wetlands – No mitigation required
- 3-Phase – Available at the street
- Natural Gas – Available at the street

Vacant Land: M-179, Hastings, MI 49058

Location Description: Just west of the corner of M-43 and M-37, on M-179 at M-43. Just East of Kellogg Community College parcel.

Access: Main entrance off M-37

Owner: 2 property owners have been approached one being Kellogg Community College

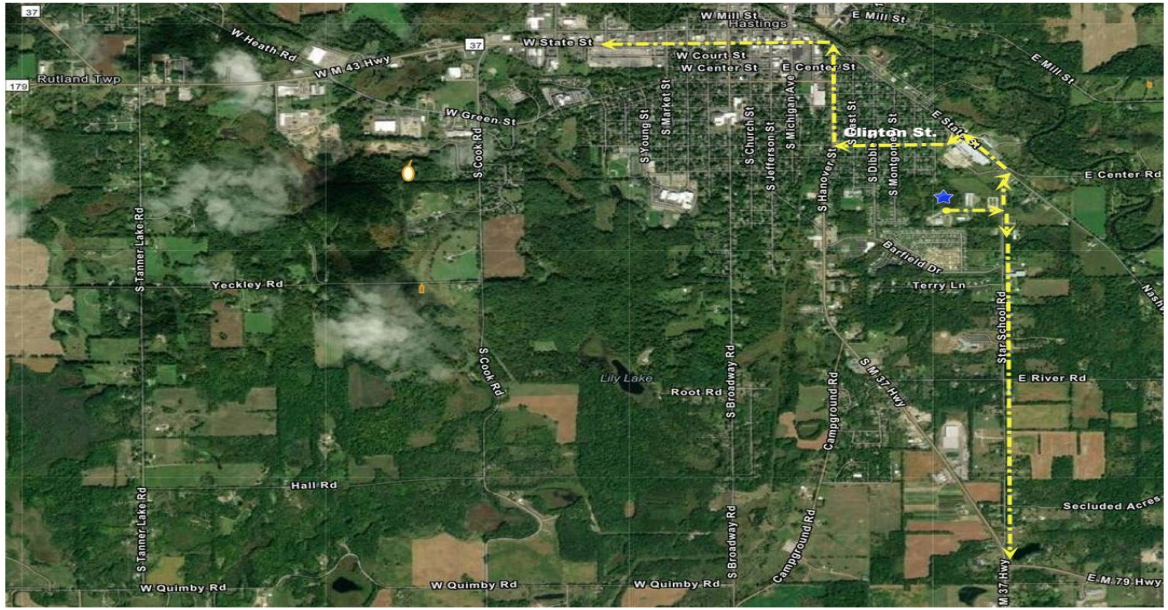
Vacant Land: Enterprise Dr, Hastings, MI 49058

Location Description: Southeast in the City just off E State St and Star School Rd in the Industrial Park

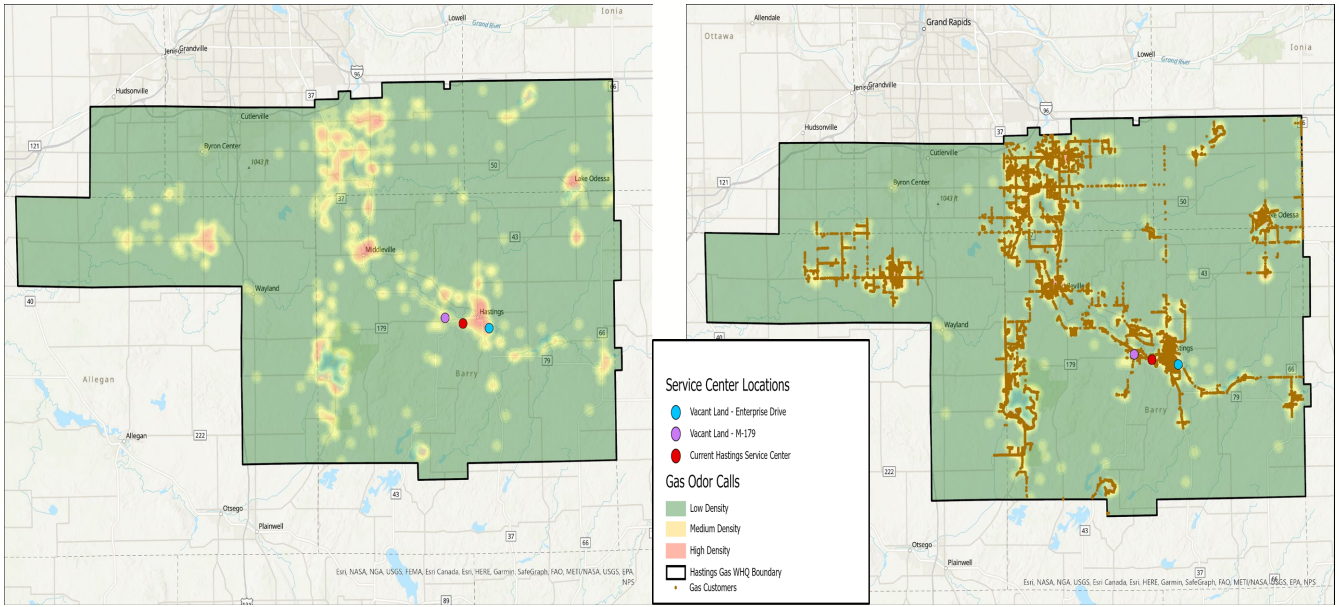
Access: There could be multiple drives on E. Enterprise Dr. Northeast parcel has access to Star School Rd.

Owner: City of Hastings, parcels are currently for sale.

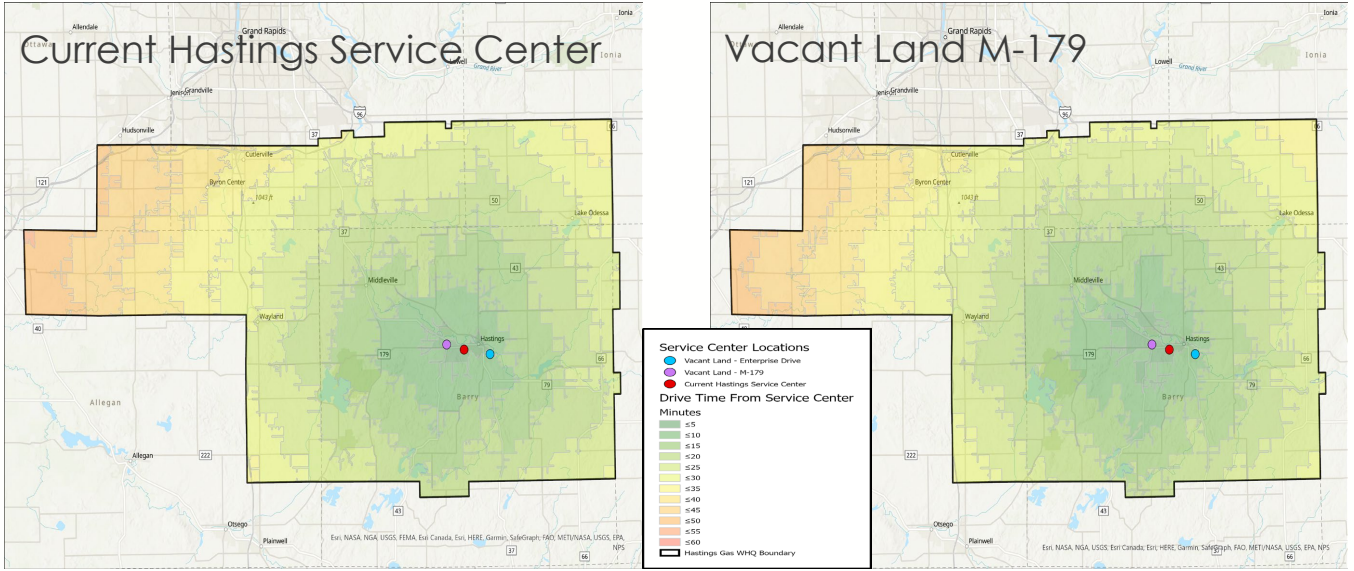
Class A Road Access Vacant Land Enterprise Dr.



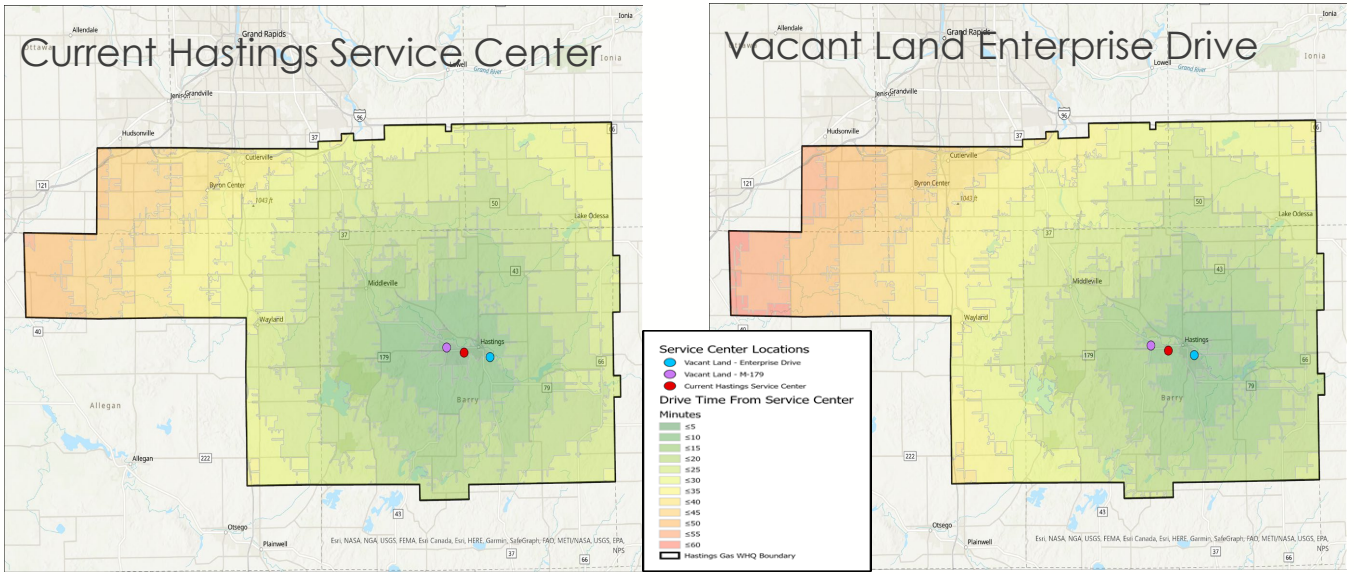
2019-2020 Density of Gas Odor Calls and Customer Data



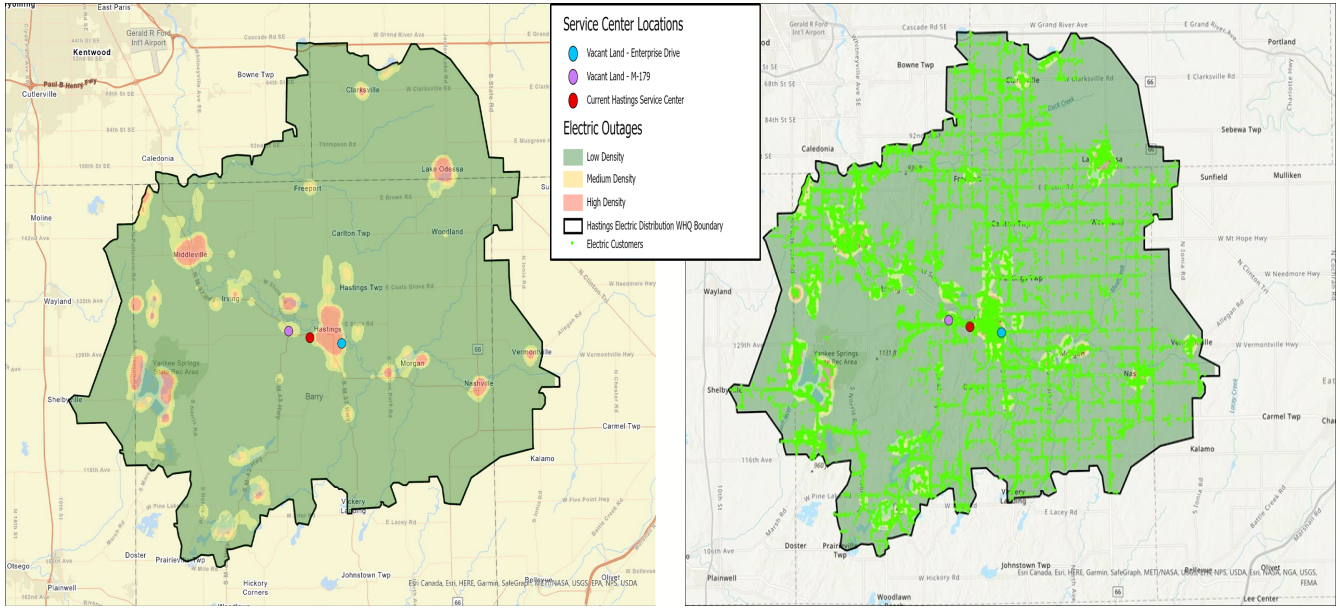
Gas Call Drive Times



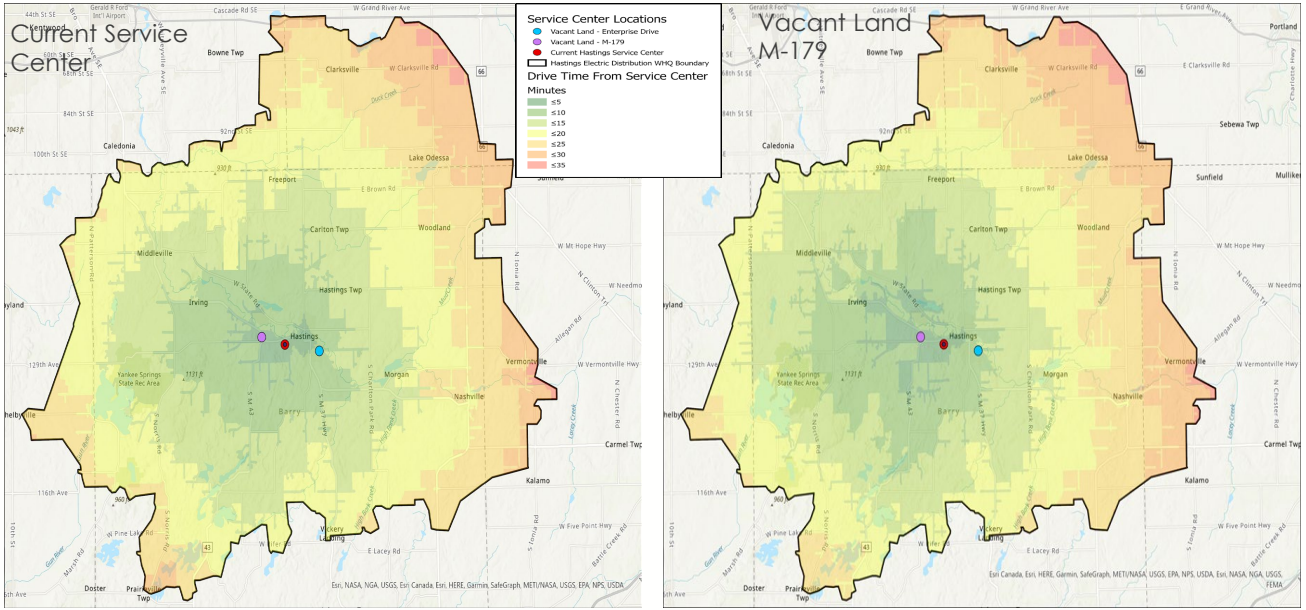
Gas Call Drive Times



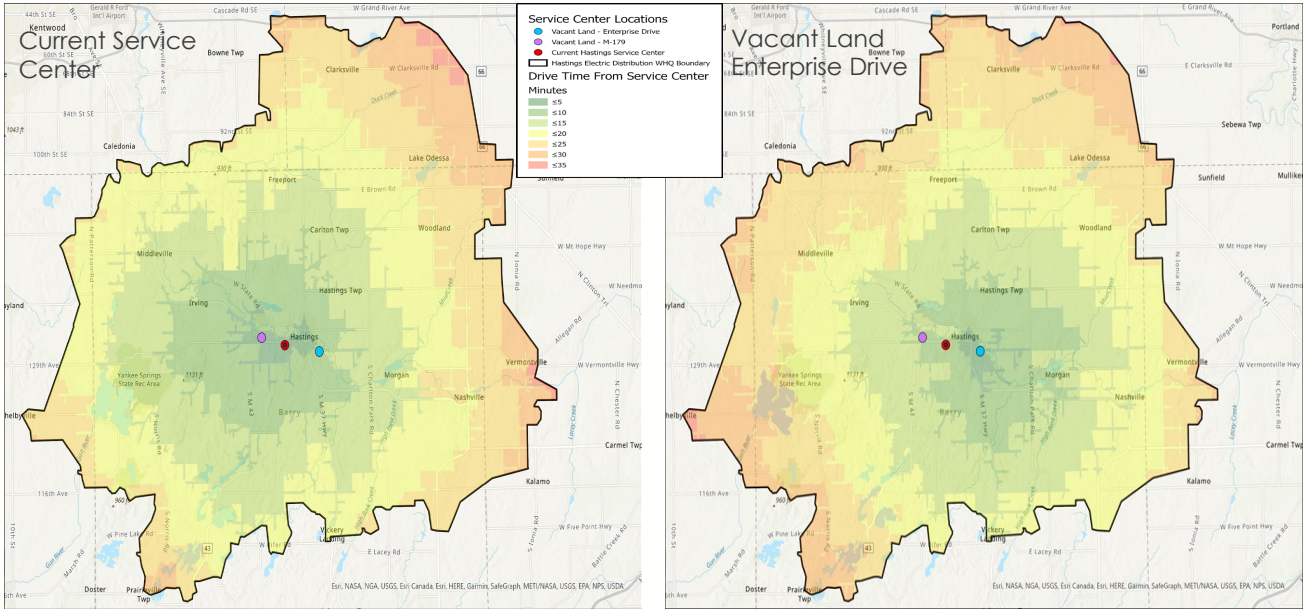
2019-2020 Density of Electric Outages and Customer Data



Electric Call Drive Times



Electric Call Drive Times



Jolly Road Construction

Project Summary

Consumers Energy
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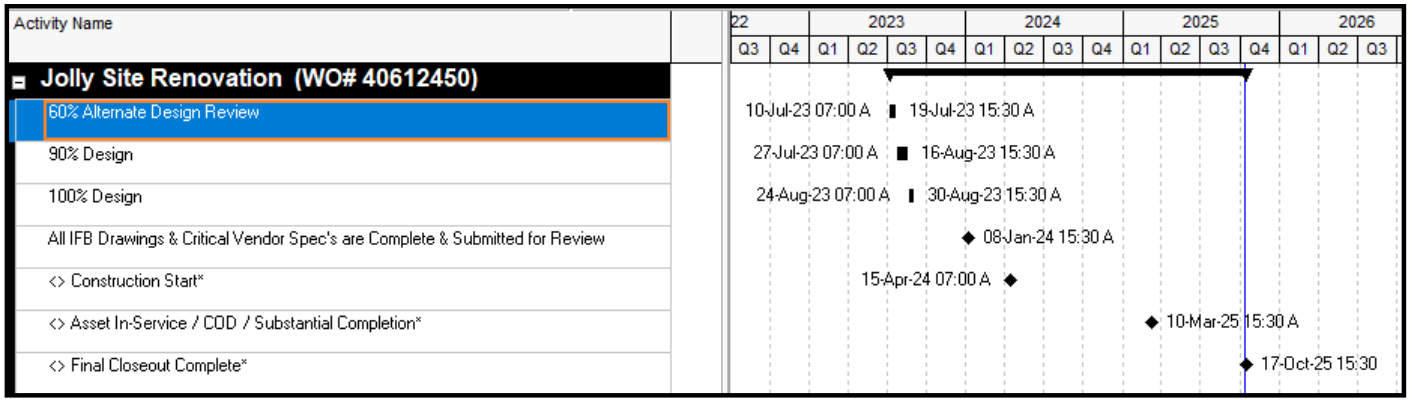
Jolly Road Construction – Project Schedule



Jolly Road Construction – Project Expenditures

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COST – PROJECT OVERVIEW
by Project

September 2025

JOL-SITE RENOVATION (40612450)

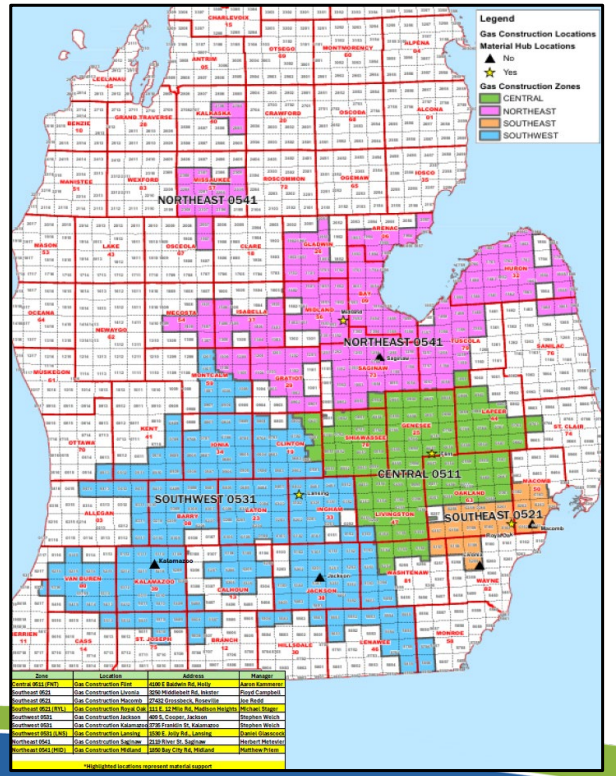
	Budgetary Baseline	Project FAC	Variance	Previous Years Total	Actuals YTD 2025	Forecast 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Future Years Forecast	Actuals to-Date	FTC
Engineering	$0	$122,700	$122,700	$154,150	($31,450)	$0	$0	$0	$0	$0	$0	$122,700	$0
Procurement	$0	$61,280	$61,280	$60,660	$620	$0	$0	$0	$0	$0	$0	$61,280	$0
Construction	$0	$4,441,503	$4,441,503	$4,284,617	$156,886	$0	$0	$0	$0	$0	$0	$4,441,503	$0
Internal	$0	$551,301	$551,301	$394,067	$157,234	$0	$0	$0	$0	$0	$0	$551,301	$0
Contingency	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Unassigned	$0	$470,545	$470,545	$470,657	($112)	$0	$0	$0	$0	$0	$0	$470,545	$0
Project Totals	$0	$5,647,328	$5,647,328	$5,364,151	$283,177	$0	$0	$0	$0	$0	$0	$5,647,328	$0

Note: Previous Years Total in this visual does not include $38,639 spent during 3-month period ending October 31, 2022

Jolly Road Construction – Project Cashflows

JOLLY ROAD CONSTRUCTION PROJECT SPEND ($)	2022 Total	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Total Project Spend Thru 9/30/25
Gas Allocation	98,304	547,054	4,757,432	283,177	5,685,967
Total	98,304	547,054	4,757,432	283,177	5,685,967

EIRP Gas Construction Zones



Zone	Location	Address	Manager
Central 0511 (FNT)	Gas Construction Flint	4100 E Baldwin Rd, Holly	Aaron Kammeier
Southeast 0521	Gas Construction Livonia	3250 Middlebelt Rd, Inkster	Floyd Campbell
Southeast 0521	Gas Construction Macomb	27450 Groesbeck, Roseville	Joe Redd
Southeast 0521 (RTL)	Gas Construction Royal Oak	111 E. 12 Mile Rd, Madison Heights	Michael Shagri
Southwest 0531	Gas Construction Jackson	400 S. Cooper, Jackson	Stephen Welch
Southwest 0531	Gas Construction Kalamazoo	3718 Franklin St, Kalamazoo	Stephen Welch
Southwest 0531 (LNS)	Gas Construction Lansing	6530 E. Jolly Rd., Lansing	Daniel Glascock
Northeast 0541	Gas Construction Saginaw	2110 River St, Saginaw	Herbert Metevier
Northeast 0541 (MID)	Gas Construction Midland	1400 Bay City Rd, Midland	Matthew Frisch

*Highlighted locations represent material support

Saginaw Gas Construction

Project Summary

Consumers Energy
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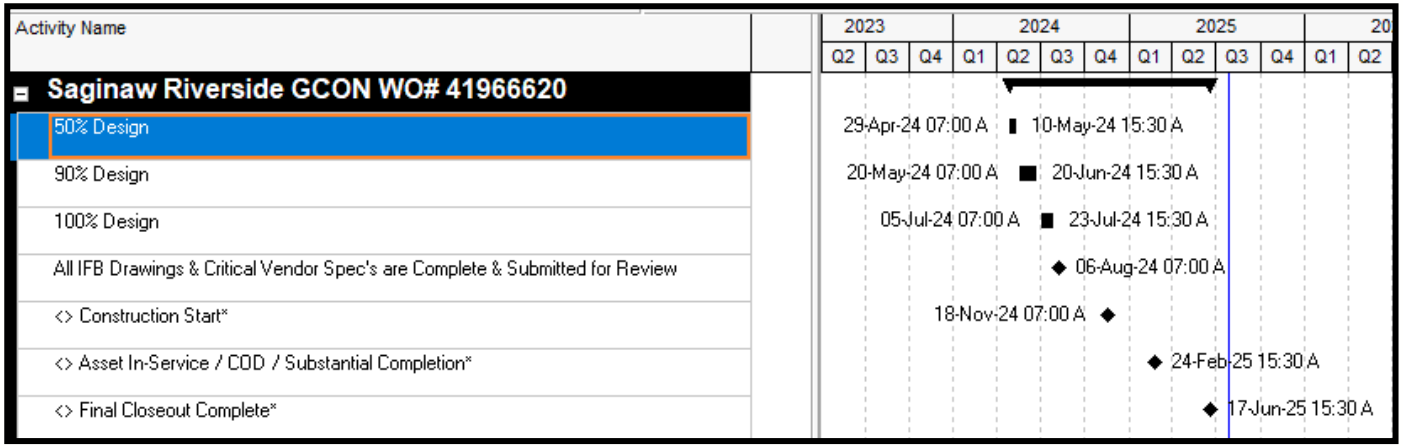
Saginaw Gas Construction – Project Schedule



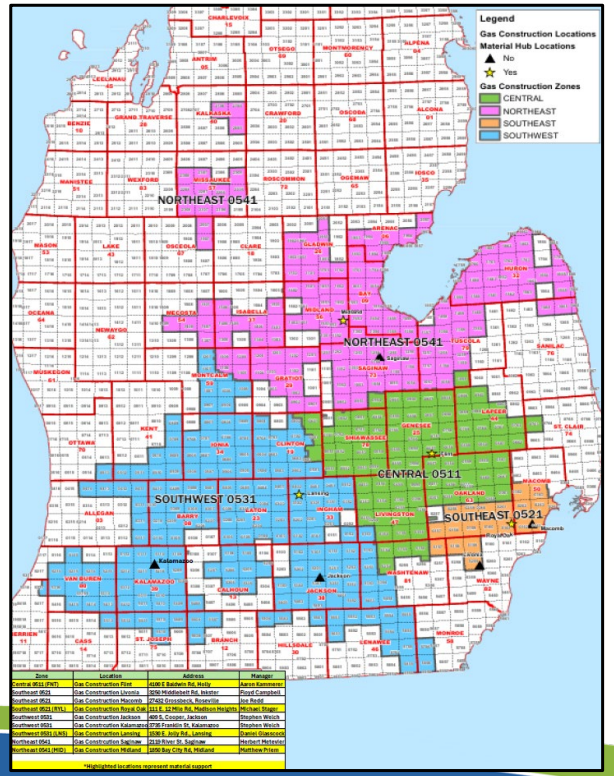
Saginaw Gas Construction – Project Expenditures

GSA - SITE RENOVATION 41966620								
	Budgetary Baseline	Project FAC	Variance	Previous Years Total	Actuals YTD 2025	Forecast 2025	Future Years Forecast	Actuals to-Date
Engineering	$49,685	$20,655	$29,030	$20,655	$0	$0	$0	$20,655
Procurement	$21,969	$0	$21,969	$0	$0	$0	$0	$0
Construction	$766,574	$154,496	$612,077	$0	$154,496	$0	$0	$154,496
Internal	$71,036	$662,288	($591,252)	$590,449	$71,839	$0	$0	$662,288
Contingency	$44,406	$64,091	($19,685)	$64,091	$0	$0	$0	$64,091
Unassigned	$0	$0	$0	$0	$0	$0	$0	$0
Project Totals	$953,669	$901,530	$52,139	$675,195	$226,335	$0	$0	$901,530

Saginaw Gas Construction – Project Cashflows

SAGINAW GAS CONSTRUCTION PROJECT SPEND ($)	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Total Project Spend Thru 9/30/25
Gas Allocation	107,887	567,308	226,335	901,530
Total	107,887	567,308	226,335	901,530

Gas Construction Zones



Zone	Location	Address	Manager
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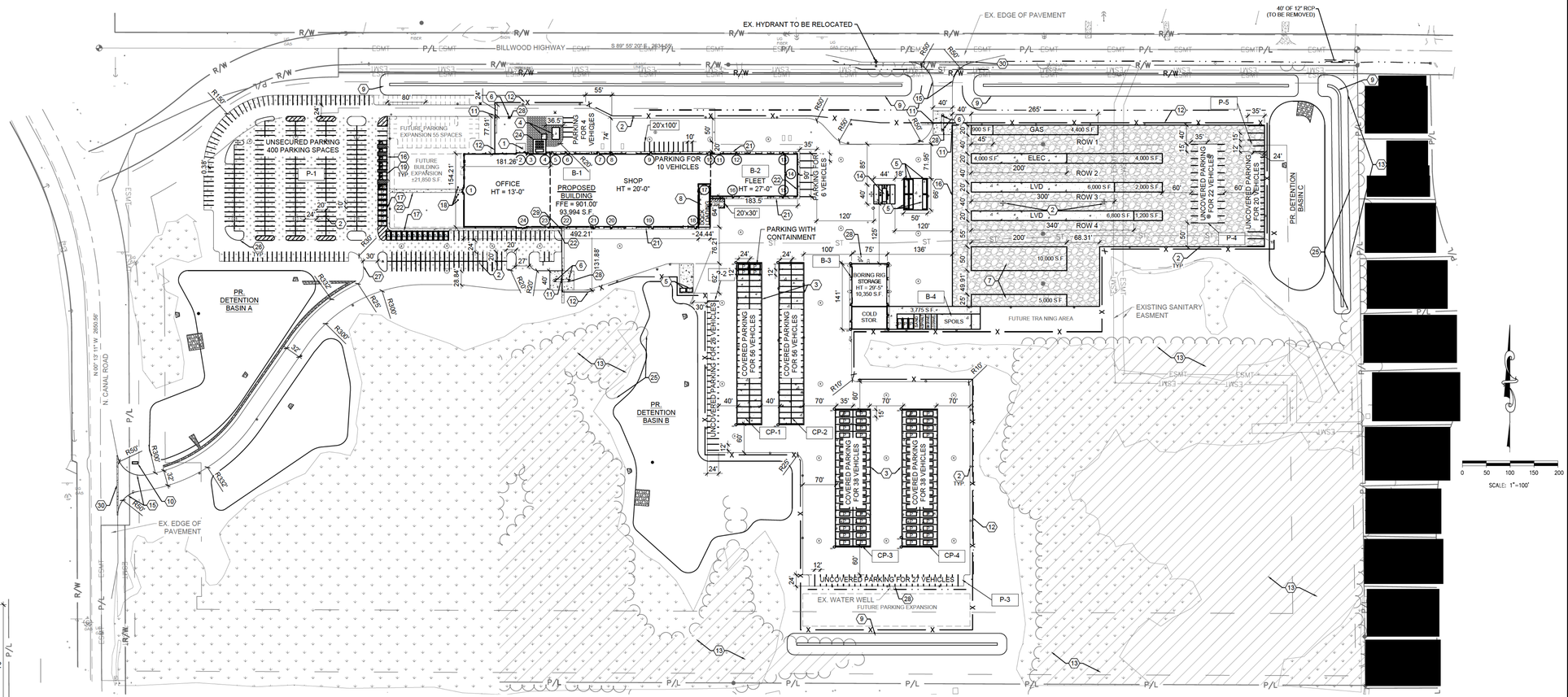
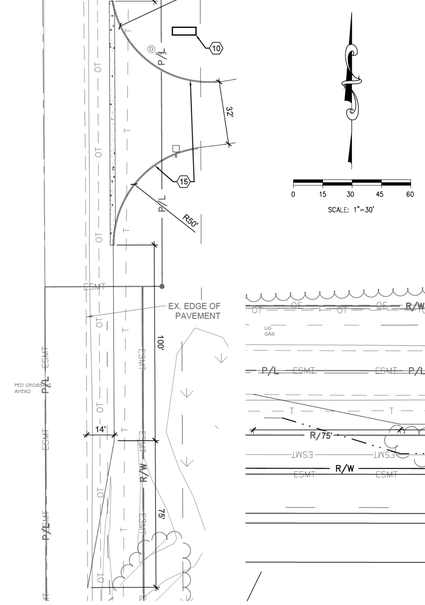
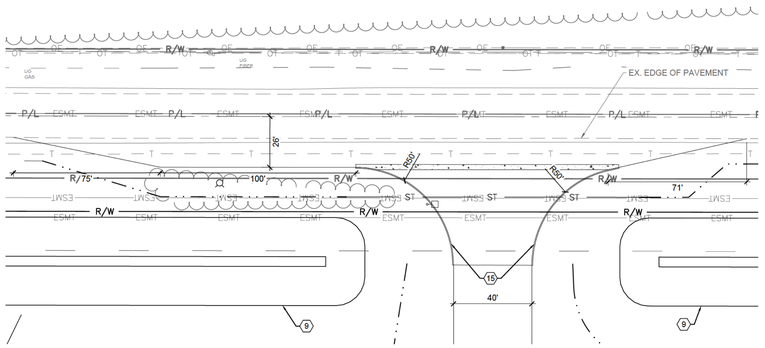
Southeast 0521	Gas Construction Livonia	3250 Middlebelt Rd, Livonia	Floyd Campbell
Southeast 0521	Gas Construction Macomb	27450 Groesbeck, Roseville	Joe Redd
Southeast 0521 (RYL)	Gas Construction Royal Oak	111 E. 12 Mile Rd, Madison Heights	Michael Shagin
Southwest 0531	Gas Construction Jackson	400 S. Cooper, Jackson	Stephen Welch
Southwest 0531	Gas Construction Kalamazoo	3718 Franklin St, Kalamazoo	Stephen Welch
Southwest 0531 (LNS)	Gas Construction Lansing	6530 E. Jolly Rd., Lansing	Daniel Glascock
Northeast 0541	Gas Construction Saginaw	2110 River St, Saginaw	Herbert Metevier
Northeast 0541 (MID)	Gas Construction Midland	1650 Bay City Rd, Midland	Matthew Frisch

*Highlighted locations represent material support





WEST ENTRANCE ENLARGED PLAN



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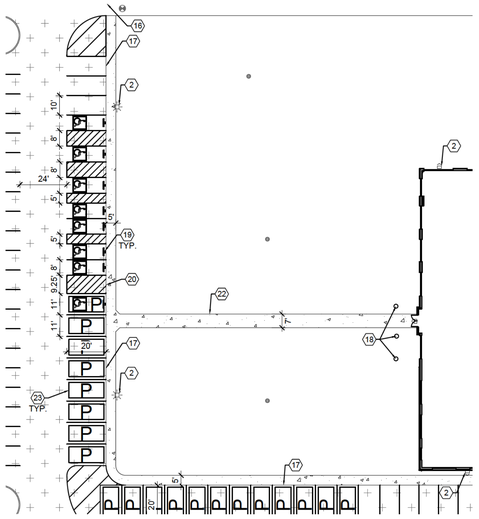


FRONT PARKING ENLARGED PLAN

SITE AREA TABLE

PAVEMENT	TOTAL AREA (S.F.)
LIGHT-DUTY ASPHALT	124,453
HEAVY-DUTY ASPHALT	416,696
CONCRETE	128,391
SIDEWALK	10,801
GRAVEL	191,401
BUILDINGS	TOTAL AREA (S.F.)
SERVICE/FLEET REPAIR BUILDING	93,994
BORING RIG/COLD STORAGE	10,350
TOTAL	104,344

GENERAL NOTES

A. PROVIDE SMOOTH TRANSITION FROM NEWLY PAVED AREAS TO EXISTING PAVED AREAS AS NECESSARY. THE EXISTING EDGE OF PAVEMENT SHALL BE FREE OF ALL LOOSE DEBRIS AT ALL AREAS WHERE PROPOSED PAVEMENT MEETS EXISTING PAVEMENT. THE EDGE OF EXISTING ASPHALT PAVEMENT SHALL BE PROPERLY SEALED WITH A TACK COAT MATERIAL IN ALL AREAS WHERE NEW ASPHALT PAVEMENT IS INDICATED TO JOIN EXISTING.

B. ALL EXISTING UTILITIES, ARE TAKEN FROM SURVEY AND DO NOT NECESSARILY REPRESENT ALL UNDERGROUND UTILITIES ADJACENT TO OR UPON PREMISES SHOWN ON PLAN.CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION, AND IS RESPONSIBLE FOR ANY DAMAGE TO THEM DURING CONSTRUCTION.

C. ALL DIMENSIONS TO FACE OF CURB UNLESS OTHERWISE NOTED.

D. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND TAKE ALL PRECAUTIONS NECESSARY TO AVOID DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT.

E. REFER TO ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS AND ADDITIONAL INFORMATION.

F. ALL CONSTRUCTION METHODS AND MATERIALS MUST CONFORM TO CURRENT STANDARDS AND SPECIFICATIONS OF THE FEDERAL, STATE, COUNTY, CITY OR LOCAL REQUIREMENTS, WHICHEVER HAS JURISDICTION.

G. ALL EXCAVATED AREAS TO BE SEEDED AND/OR SODDED AFTER FINISH GRADING UNLESS OTHERWISE NOTED. ALL NEWLY SEEDED/SODDED AREAS SHALL HAVE A MINIMUM OF 4" OF TOPSOIL. HOLD SOIL DOWN 1" FROM PAVEMENT ELEVATION. CONTRACTOR TO SUPPLY STRAW MULCH WHERE GRASS SEED HAS BEEN PLANTED.

H. ALL RADII INDICATED ON PLANS SHALL BE CONSTRUCTED AS CIRCULAR ARCS. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.

I. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL LOCAL STANDARDS AS NOTED.

J. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING UTILITIES DURING CONSTRUCTION AND ALL DAMAGE SHALL BE REPAIRED TO ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.

KEYED NOTES

1. PROPOSED EMPLOYEE PICNIC AREA.
2. PROPOSED SITE LIGHTING, SEE ELECTRICAL SITE PLAN AND PHOTOMETRIC PLAN FOR QUANTITY AND DETAILS.
3. PROPOSED COVERED PARKING STRUCTURE, SEE ARCHITECTURAL PLANS FOR DETAILS
4. PROPOSED ELECTRIC TRANSFORMER AND GENERATOR WITH CONCRETE PADS. SEE MECHANICAL AND STRUCTURAL PLANS FOR DETAILS.
5. PROPOSED DUMPSTERS.
6. PROPOSED CARD READER.
7. PROPOSED POLE BUNKER.
8. PROPOSED HEAVY-DUTY CONCRETE LOADING DOCK.
9. PROPOSED BUFFER YARD BERMS, 5' TALL, 5' WIDE TOP WITH 4:1 SLOPES.
10. PROPOSED MONUMENT SIGN.
11. PROPOSED GATE WITH WIRED KNOX BOX FOR FIRE DEPARTMENT ACCESS.
12. GALVANIZED STEEL 7' HIGH CHAIN-LINK FENCE WITH 12" OF THREE STRAND BARBED WIRE.
13. EXISTING TREES AND VEGETATION TO REMAIN.
14. 6,000 GALLON ABOVE GROUND DIESEL FUEL TANK PER NFPA SECTION 30 AND 30A AND FUEL ISLAND. SEE STRUCTURAL AND MECHANICAL PLANS FOR DETAILS.
15. PROPOSED CONCRETE CURB AND GUTTER.
16. PROPOSED FLUSH CONCRETE CURB.
17. PROPOSED INTEGRATED CONCRETE CURB AND WALK.
18. PROPOSED FLAGPOLE.
19. PROPOSED HANDICAP PARKING SIGN IN BOLLARD.
20. PROPOSED SIDEWALK TO BE FLUSH WITH ASPHALT PAVEMENT.
21. PROPOSED 4' WIDE CONCRETE APRON.
22. PROPOSED CONCRETE SIDEWALK.
23. PROPOSED ELECTRIC VEHICLE PARKING SPACE.
24. PROPOSED HVAC EQUIPMENT, SEE MECHANICAL PLANS FOR DETAILS.
25. REMOVE TREES AS NEEDED FOR CONSTRUCTION. DO NOT IMPACT WETLANDS.
26. PROPOSED THICKENED EDGE CURB.
27. TRANSITION FROM CURB AND GUTTER TO THICKENED EDGE CURB.
28. PROPOSED BOLLARD, TYPICAL.
29. PROPOSED PEDESTRIAN SECURITY GATE.
30. PROPOSED CONCRETE GUTTER PER MDOT DETAIL R-28-J.

LEGEND

	DESCRIPTION
	HEAVY-DUTY ASPHALT PAVEMENT
	LIGHT-DUTY ASPHALT PAVEMENT
	CONCRETE PAVEMENT
	CONCRETE WALK
	HEAVY-DUTY STONE PAVING
B-1	BUILDING
P-1	PARKING LOT
CP-1	COVERED PARKING STRUCTURE
	TREELINE
	EX. TREES AND VEGETATION TO REMAIN
x x x	PROPOSED FENCE
	WETLAND
	LIGHT FIXTURE
	BUILDING EXTERIOR LIGHT

MISS DIG 811

KEY PLAN

ISSUED FOR BIDS

ms consultants, inc.
engineers, architects, planners
2000 Town Center, Suite 1900
Southfield, MI 48075
phone 248.351.1000

NOTICE

THIS ARCHITECTURAL AND ENGINEERING DRAWING IS GIVEN IN CONFIDENCE AND SHALL BE USED ONLY PURSUANT TO THE AGREEMENT UNDER WHICH IT WAS PREPARED. ANY DISSEMINATION, DISCLOSURE OR COPYING MAY BE MADE WITHOUT PRIOR WRITTEN CONSENT OF THE ARCHITECT. ALL COMMON LAW RIGHTS OF COPYRIGHT AND OTHERWISE ARE HEREBY SPECIFICALLY RESERVED.

						E	2025-04-04	BID PACKAGE 01 - ADDENDUM 3	MO	MO	JML	JML
						D	2025-02-07	BID PACKAGE 01 - ADDENDUM 2	MO	MO	JML	JML
BULLETIN 03	MO	MO	IA	JML		C	2025-01-21	BID PACKAGE 01 - ADDENDUM 1	MO	MO	JML	JML
CIVIL - AFC	MO	MO	IA	JML		B	2025-01-10	60% REVIEW SET - BID PACKAGE 01 - CIVIL	MO	JML	IA	JML
BULLETIN 01	MO	MO	IA	JML		A	2024-06-10	30% REVIEW SET	MO	JML	IA	JML
DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

L	2025-09-12	
H	2025-07-29	
G	2025-07-25	

SIGNATURE
NAME
MICHIGAN P.E. NO.

Consumers Energy
LANSING SERVICE CENTER
7000 CANAL RD. DIMONDALE

SHEET TITLE
SITE PLAN

SCALE	DRAWING NUMBER	SHEET	REV
PROJ. NO. FM-00167	3177-LSC-SC01	C-101	L

D E F G H I

ROOM LEGEND

ROOM #	ROOM NAME	Area	USE GROUP	ROOM #	ROOM NAME	Area	USE GROUP
100A	CONFERENCE ROOM	532 SF	OFFICE	300G	HUDDLE ROOM	113 SF	OFFICE
100B	CONFERENCE ROOM	536 SF	OFFICE	301	PRIVACY ROOM	61 SF	OFFICE
100C	CONFERENCE ROOM	1063 SF	OFFICE	302	PRIVACY ROOM	62 SF	OFFICE
100D	CLOSET	143 SF	OFFICE	303A	ELECTRIC UNDERGROUND CREW ROOM	1111 SF	OFFICE
101	CONFERENCE ROOM	334 SF	OFFICE	303B	LVD CREW ROOM	1191 SF	OFFICE
102	CONFERENCE ROOM	348 SF	OFFICE	320	SUPERVISORS' AND SCHEDULERS' OFFICE	1693 SF	SHOP
103	NURSING MOTHERS ROOM	88 SF	OFFICE	320A	CONFERENCE ROOM	317 SF	SHOP
104	WOMENS RESTROOM	474 SF	OFFICE	321A	GAS SERVICE CREW ROOM	911 SF	SHOP
105	MENS RESTROOM	605 SF	OFFICE	321B	GAS DISTRIBUTION CREW ROOM	1096 SF	SHOP
106	JANITOR CLOSET	117 SF	OFFICE	322	PRIVACY ROOM	84 SF	SHOP
107	WELLNESS CENTER	694 SF	OFFICE	323	PRIVACY ROOM	94 SF	SHOP
107A	TRAINER'S OFFICE	132 SF	OFFICE	324	WELD SHOP	1161 SF	SHOP
108	MDF ROOM	270 SF	OFFICE	324A	WELD SHOP OFFICE	181 SF	SHOP
108A	STOR.	65 SF	OFFICE	400	LOADING AREA	14872 SF	STORE ROOM
108B	STOR.	65 SF	OFFICE	400A	UTILITY AREA	145 SF	STORE ROOM
109	UPS ROOM	174 SF	OFFICE	400B	ELECTRIC MINOR MATERIALS	615 SF	STORE ROOM
110	IT STORAGE ROOM	175 SF	OFFICE	400C	GAS MINOR MATERIALS	614 SF	STORE ROOM
111	ELECTRICAL ROOM	122 SF	OFFICE	400D	ELECTRIC UNDERGROUND READY ROOM	613 SF	STORE ROOM
120	EMO OFFICE	323 SF	SHOP	401	STOREROOM	12242 SF	STORE ROOM
121	UNISEX RESTROOM	65 SF	SHOP	401A	STOREROOM OFFICE	652 SF	STORE ROOM
122	UNISEX RESTROOM	63 SF	SHOP	401B	MECHANICAL AND ELECTRICAL ROOM	104 SF	STORE ROOM
123	MEN'S RESTROOM	470 SF	SHOP	401C	UNISEX RESTROOM	78 SF	FLEET
124	LVD READY ROOM	1090 SF	SHOP	420	JANITOR CLOSET	50 SF	FLEET
125	WOMEN'S RESTROOM	153 SF	SHOP	421	OIL STORAGE ROOM	828 SF	FLEET
126	GAS CATHODIC AND MECHANIC	507 SF	SHOP	422	FLEET REPAIR GARAGE	9235 SF	FLEET
127	SUB METRO	554 SF	SHOP	423	PARTS ROOM	750 SF	FLEET
128	UNION OFFICE	102 SF	SHOP	424	TIRE STORAGE ROOM	642 SF	FLEET
129	MECHANCAL AND ELECTRICAL ROOM	178 SF	SHOP	425	BREAK ROOM	252 SF	FLEET
130	GAS M&R	448 SF	SHOP	425A	MECHANIC OFFICE	580 SF	FLEET
200	OPEN OFFICE	3229 SF	OFFICE	425B	UNISEX RESTROOM AND SHOWER	120 SF	FLEET
200A	LABOR RELATIONS OFFICE	208 SF	OFFICE	425C	CLOSET	27 SF	FLEET
200B	HUDDLE ROOM	101 SF	OFFICE	426	SUPERVISOR AND SCHEDULER OFFICE	227 SF	FLEET
201	CALL CENTER	2747 SF	OFFICE	427	WASH BAY	2192 SF	FLEET
201A	RELAXATION ROOM	78 SF	OFFICE	500	MEZZANINE	840 SF	FLEET
202	CAFE	774 SF	OFFICE	501	EQUIPMENT PLATFORM	6238 SF	SHOP
202A	VENDING	94 SF	OFFICE	H1-1	HALLWAY	337 SF	OFFICE
203	BUSINESS CENTER	306 SF	OFFICE	H1-2	HALLWAY	Redundant Room	OFFICE
204	MECHANICAL/ELECTRICAL ROOM	923 SF	OFFICE			985 SF	OFFICE
205	FACILITIES OFFICE	300 SF	OFFICE	H1-3	HALLWAY	329 SF	OFFICE
205A	FACILITIES	924 SF	OFFICE	H1-4	HALLWAY	278 SF	OFFICE
220	ELECTRIC METER OPERATIONS (EMO)	1256 SF	SHOP	H1-5	HALLWAY	386 SF	SHOP
221	GAS SERVICE	1586 SF	SHOP	H1-6	HALLWAY	499 SF	SHOP
222	GAS DISTRIBUTION	2754 SF	SHOP	H1-7	HALLWAY	370 SF	STORE ROOM
223	GAS MECHANIC AREA	258 SF	SHOP	H1-8	HALLWAY	293 SF	FLEET
300	OPEN OFFICE	4651 SF	OFFICE	H1-9	HALLWAY	113 SF	FLEET
300A	MANAGERS' OFFICE	427 SF	OFFICE	S1-1	STAIR	52 SF	FLEET
300B	CONFERENCE ROOM	208 SF	OFFICE	S1-2	STAIR	150 SF	OFFICE
300C	HUDDLE ROOM	117 SF	OFFICE	V1	VESTIBULE	85 SF	OFFICE
300D	HUDDLE ROOM	117 SF	OFFICE	V1A	METER PICKUP	49 SF	OFFICE
300E	HUDDLE ROOM	117 SF	OFFICE	V1B	LOBBY	112 SF	OFFICE
300F	HUDDLE ROOM	113 SF	OFFICE	V2	VESTIBULE	85 SF	OFFICE

KEYED NOTES

1 MECHANICAL EQUIPMENT, TYP. - SEE MECHANICAL DRAWINGS AND SPECIFICATIONS FOR DETAILS AND CLEARANCE REQUIREMENTS.

GENERAL CONSTRUCTION NOTES

A. ALL CONSTRUCTION SHALL CONFORM TO THE CODES LISTED:
(A) THE CODES, RULES, AND REGULATIONS OF THE STATE IN WHICH THE WORK IS BEING PERFORMED
(B) NFPA REQUIREMENTS AS WELL AS TO STANDARDS OF UNDERWRITERS LABORATORIES INC., AND LOCAL UTILITY COMPANY.
(C) CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL PERMITS AS REQUIRED TO PROVIDE THE NEW CONSTRUCTION.

B. THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS. BIDS SHALL INCLUDE PROVISIONS FOR COMPLETE JOB BASED ON DESIGN INTENT SHOWN ON THE DRAWINGS. FIELD VERIFY ALL DIMENSIONS & CONDITIONS PRIOR TO START OF WORK AND REPORT ALL DISCREPANCIES TO TH ARCHITECT/ ENGINEER.

C. WHEN COMPARING THE DRAWINGS AND SPECIFICATIONS; THE DRAWINGS GOVERN SPECIFICATIONS FOR QUANTITY AND LOCATION, AND SPECIFICATIONS GOVERN DRAWINGS FOR QUALITY AND PERFORMANCE. IN THE EVENR OF AMBIGUITY IN QUANTITY OR QUALITY, THE GREATER QUANTITY AND SUPERIOR QUALITY SHALL GOVERN.

D. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL COORDINATION AS REQUIRED INCLUDING COORDINATION WITH ANY WORK PROVIDED BY OWNER AND BY OTHERS.

E. THE OWNER SHALL DESIGNATE STAGING AND STORAGE AREAS OF THE SITE FOR THE CONTRACTOR DURING CONSTRUCTION. CONTRACTOR SHALL KEEP THE PREMISES AND SURROUNDING AREA FREE FROM ACCUMULATION OF WASTE OF RUBBISH MATERIALS, CONTRACTOR'S TOOLS, CONSTRUCTION EQUIPMENT, MACHINERY, AND SURPLUS MATERIALS.

F. AREAS OF THE SITE AND EXISTING CONSTRUCTION TO REMAIN, AND IF DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THE ORIGINAL CONDITION (AT NO ADDITIONAL COST TO THE OWNER.)

G. THE CONTRACTOR SHALL PROVIDE ALL PROTECTION OF THE WORK THROUGHOUT CONSTRUCTION AS REQUIRED AND PER CODE.

H. PROVIDE A SELF-LEVELING CEMENTITIOUS UNDERLAYMENT WHERE PATCHING COMPOUNDS DO NOT MEET MANUFACTURER REQUIREMENTS FOR SUBSTRATE PREPARATION.

I. PAINTING INCLUDES WALLS, SOFFITS, DOOR FRAMES, HOLLOW METAL DOORS, ALL EXPOSED SURFACES, AND ALL SURFACES MOUNTED ITEMS AS REQUIRED TO PROVIDE A FINISHED PRODUCT.

J. THE CONTRACTOR TO VERIFY LOCATIONS OF ALL WALL MOUNTED ITEMS AND PROVIDE SOLID BLOCKING FOR MOUNTING.

K. REFER TO FINISH PLANS & NOTES FOR TYPES AND EXTENT OF FINISHES.

L. PROVIDE WALL OPENING FLASHING AT ALL OPENINGS - REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

M. "DO NOT SCALE PLANS." COPYING, PRINTING, SOFTWARE AND OTHER PROCESSES REQUIRED TO PRODUCE THESE PRINTS CAN STRETCH OR SHRINK THE ACTUAL PAPER OR LAYOUT. THEREFORE, SCALING OF THIS DRAWING MY BE INACCURATE. CONTACT MS CONSULTANTS WITH ANY NEED FOR ADDITIONAL DIMENSIONS OR CLARIFICATIONS.

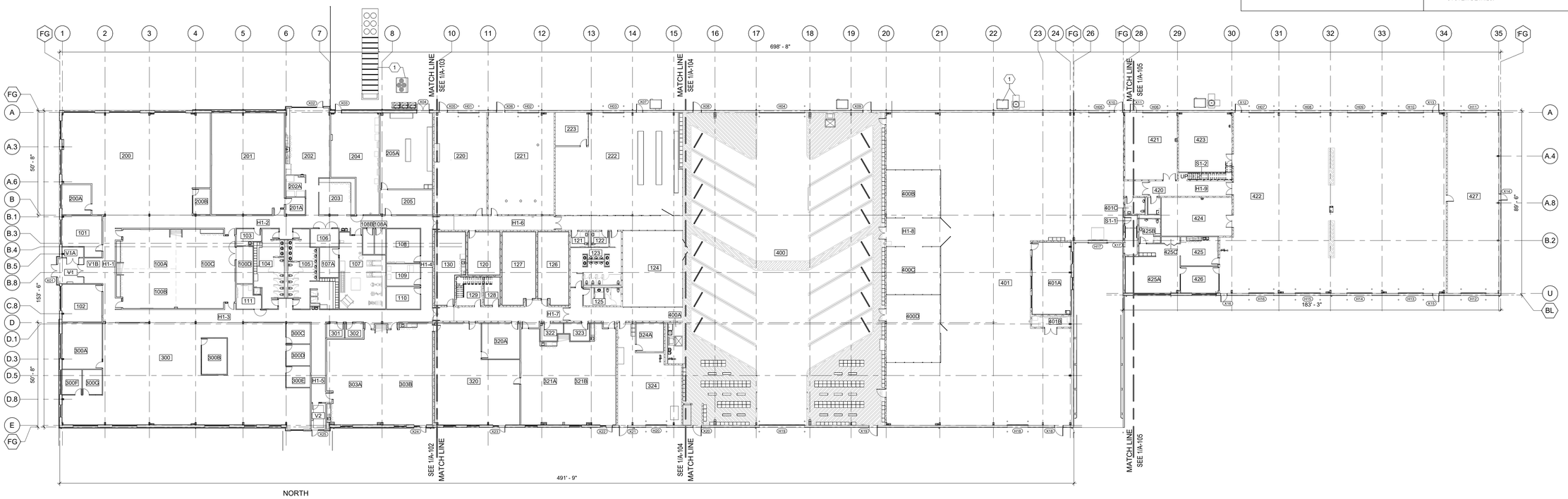
N. ALL WOOD BLOCKING AND SHEATHING TO BE FIRE TREATED PER TYPE IIB CONSTRUCTION.

O. VERIFY AND COORDINATE LOCATION OF ALL CONTROL PANELS WITH MECHANICAL AND ELECTRICAL DRAWINGS BEFORE INSTALLING FURNITURE.

P. ARCHITECTURAL DRAWINGS DEPICT CERTAIN PLUMBING FIXTURES FOR REFERENCE ONLY. REFER TO PLUMBING DRAWINGS FOR COMPLETE FIXTURE LOCATIONS AND PLUMBING SYSTEM DETAILS.

Q. ARCHITECTURAL DRAWINGS DEPICT CERTAIN MECHANICAL EQUIPMENT FOR REFERENCE ONLY. REFER TO MECHANICAL DRAWINGS FOR COMPLETE EQUIPMENT LOCATIONS AND MECHANICAL SYSTEM DETAILS.

R. ARCHITECTURAL DRAWINGS DEPICT CERTAIN ELECTRICAL FIXTURES/EQUIPMENT FOR REFERENCE ONLY. REFER TO ELECTRICAL DRAWINGS FOR COMPLETE FIXTURES/EQUIPMENT LOCATIONS AND ELECTRICAL SYSTEM DETAILS.



1 OVERALL FLOOR PLAN 1" = 20'-0"

NOT FOR CONSTRUCTION

Mosure L.L.C.
engineers, architects, planners
2221 Schrock Road
Columbus, Ohio 43229-1547
p 614.898.7100
f 614.898.7570
www.msconsultants.com

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KEY PLAN

OFFICE | SHOP | STORE ROOM | FLEET

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
K	2025-09-12	90% REVIEW SET	SDM	LJK	LJK	MAR	
B	2025-01-10	60% DESIGN DEVELOPMENT	SDM	LJK	LJK	MAR	
A	2024-06-10	30% REVIEW SET	SDM	LJK	LJK	MAR	

REF. DRAWINGS

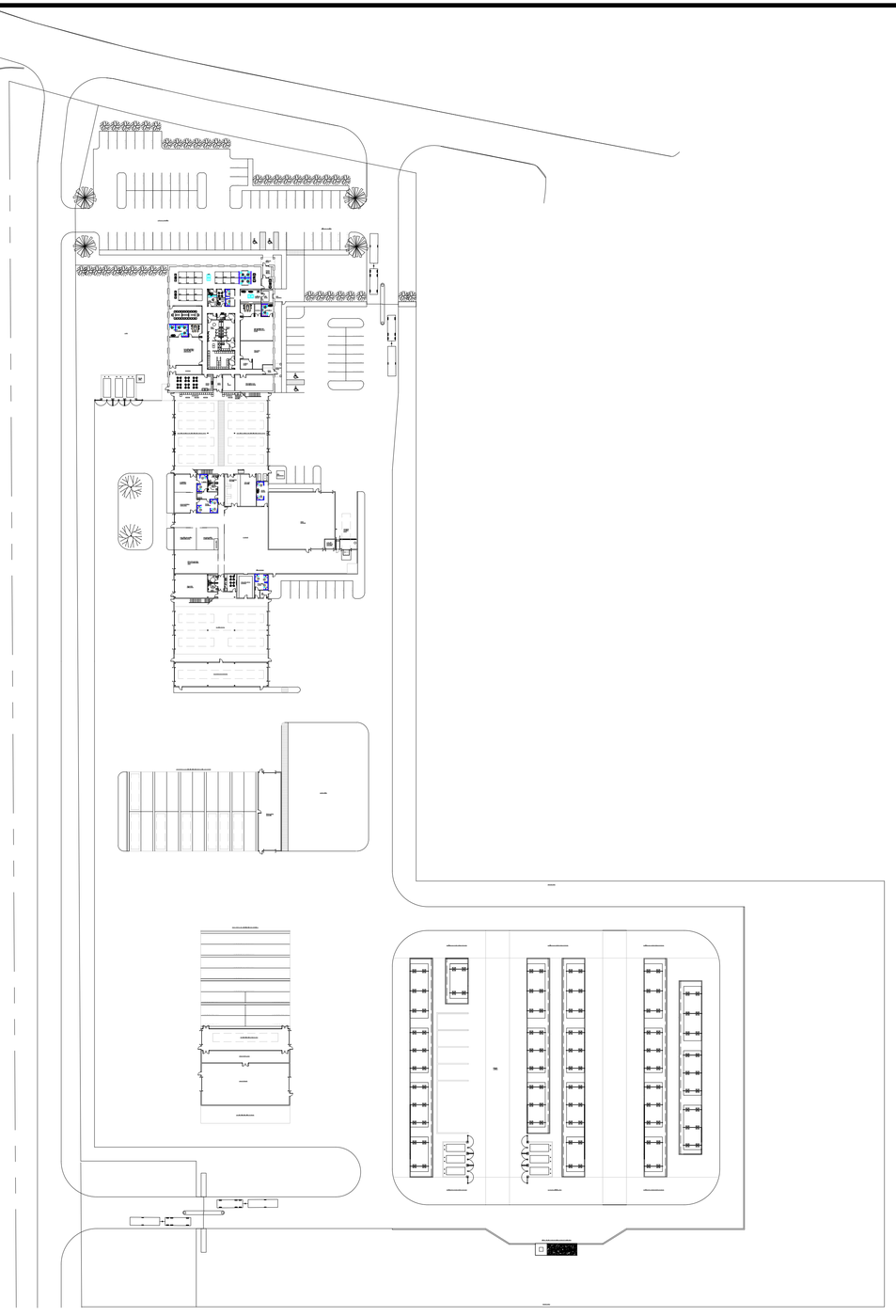
SIGNATURE
NAME
SANDIPAN ADITYA
MICHIGAN P.E. NO.
No. 1301072475
EXP. DATE: 10/4/2025

Consumers Energy
LANSING SERVICE CENTER
7000 N CANAL RD. DIMONDALE, MI

SHEET TITLE
OVERALL FLOOR PLAN

SCALE	DRAWING NUMBER	SHEET	REV
1" = 20'-0"	3177-LSC-SC01	A-101	K
PROJ. NO. FM-00167			

9/12/2025 2:15:06 PM



1/64"=1'-0"
02 20 40 100 150

NORTH

CONCEPTUAL DESIGN – SITE PLAN
NEW HASTINGS SERVICE CENTER

1
A1
SCALE – 1/64" = 1' – 0"
FILENAME

Drawing No	Reference Drawings	Rev	Date	Description	By	App

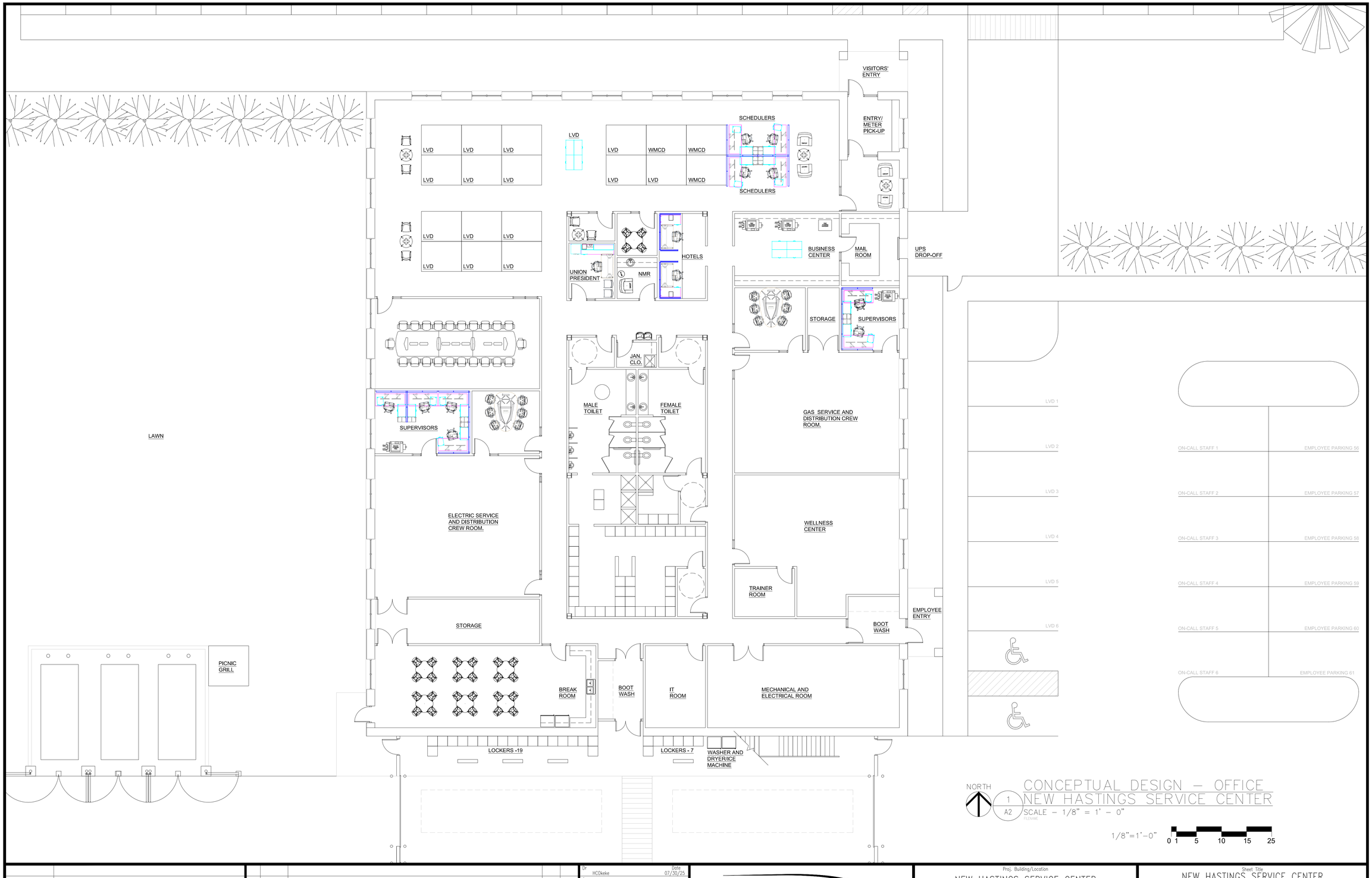
Dr HCOkeke 07/30/25
Des HCOkeke 07/30/25
App
App
Acad Title GRA-CCC.dwg
Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Proj, Building/Location
NEW HASTINGS SERVICE CENTER
HASTINGS
1125 W GREEN STR.
HASTINGS

Sheet Title
NEW HASTINGS SERVICE CENTER
CONSUMERS ENERGY
1125 W GREEN STR.

Scale: AS NOTED
Work Order # TBD
Drawing Number HAS-1
Sheet A-1
Rev



Drawing No	Reference Drawings

Rev	Date	Description	By	App

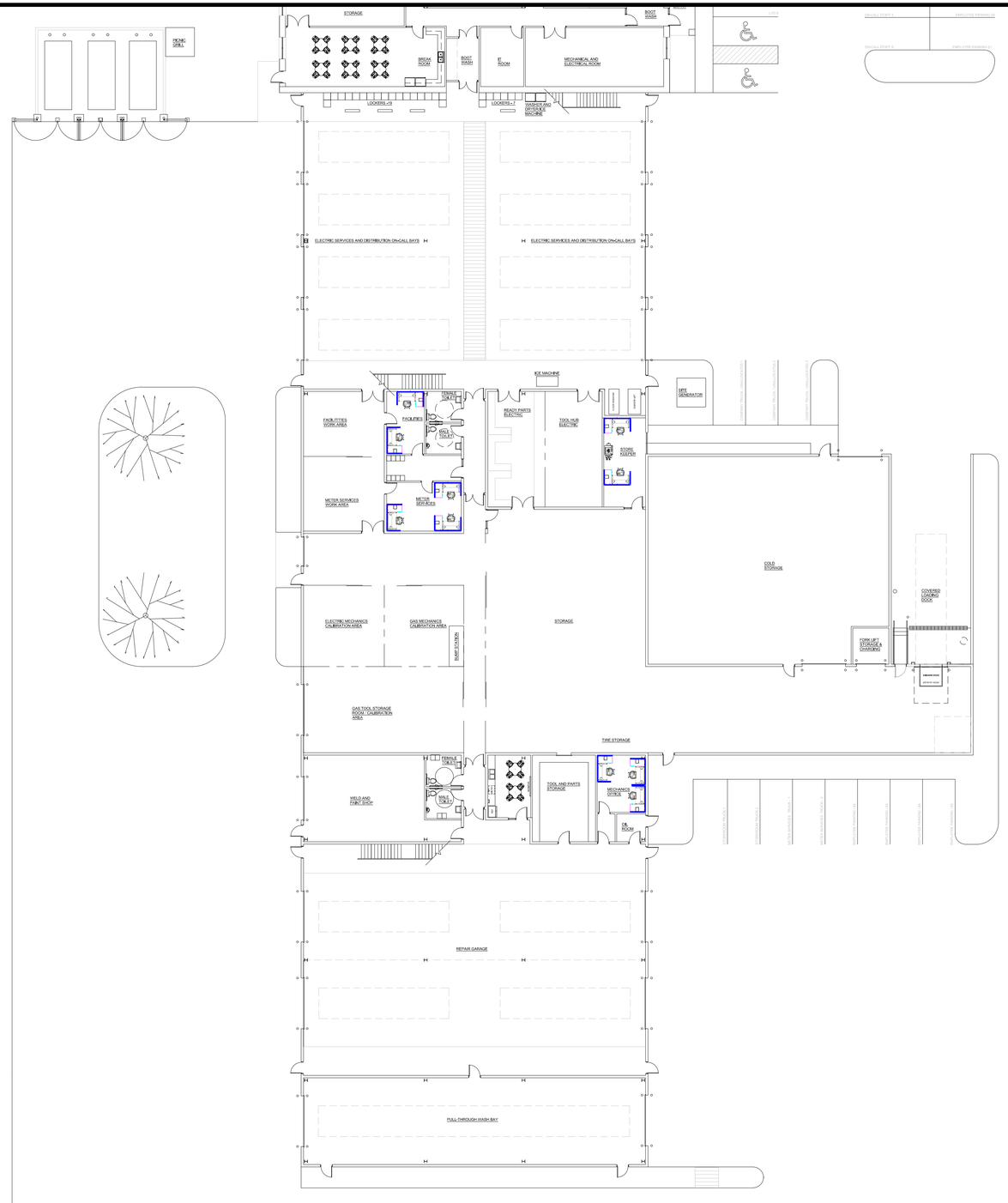
Dr HC0keke 07/30/25
Des HC0keke 07/30/25
App
App
Acad Title GRA-CCC.dwg
Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
NEW HASTINGS SERVICE CENTER
HASTINGS
1125 W GREEN STR.
HASTINGS

Sheet Title
NEW HASTINGS SERVICE CENTER
CONSUMERS ENERGY
1125 W GREEN STR.

Scale: AS NOTED
Work Order # TBD
Drawing Number HAS–2
Sheet A–2
Rev



NORTH

1
A3

IPA, STOREROOM, GARAGE AND WASH BAY
NEW HASTINGS SERVICE CENTER

SCALE – 1/16" = 1' – 0"
FILENAME

1/16"=1'-0"
0 1 5 10 20 32

Drawing No	Reference Drawings

Rev	Date	Description	By	App

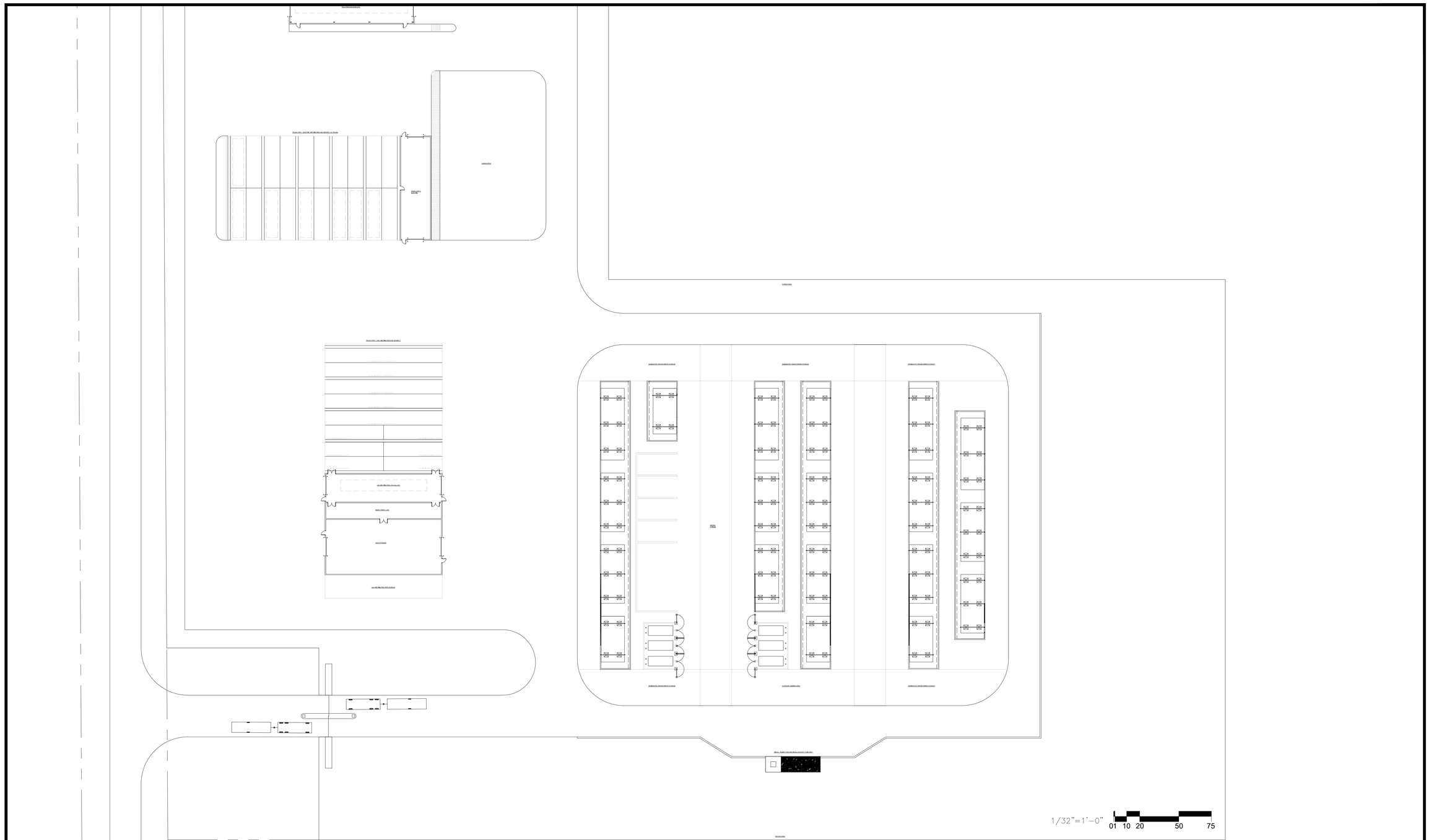
Dr HCOkeke 07/30/25
Des HCOkeke 07/30/25
App
App
Acad Title GRA-CCC.dwg
Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
NEW HASTINGS SERVICE CENTER
HASTINGS
1125 W GREEN STR.
HASTINGS

Sheet Title
NEW HASTINGS SERVICE CENTER
CONSUMERS ENERGY
1125 W GREEN STR.

Scale: AS NOTED
Work Order # TBD
Drawing Number HAS-3
Sheet A-3
Rev



NORTH

1
A4

TRUCKPORT, COLD STORAGE AND POLE YARD
NEW HASTINGS SERVICE CENTER

SCALE – 1/32" = 1' – 0"

Drawing No	Reference Drawings

Rev	Date	Description	By	App

Dr HCOkeke 07/30/25
Des HCOkeke 07/30/25
App
App
Acad Title GRA-CCC.dwg
Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
NEW HASTINGS SERVICE CENTER
HASTINGS
1125 W GREEN STR.
HASTINGS

Sheet Title
NEW HASTINGS SERVICE CENTER
CONSUMERS ENERGY
1125 W GREEN STR.

Scale: AS NOTED
Work Order # TBD
Drawing Number HAS-4
Sheet A-4
Rev

SHEET SIZE: ARCH-D 24x36

Proposed Building for:

Consumers Energy
Gas Construction (GCON) Southwest
5300 Enterprise Dr.
Lansing, MI 48911

DESIGN/BUILD CONTRACTOR:
PUMFORD CONSTRUCTION
1674 CHAMPAGNE DR.
SAGINAW, MI 48604
PH (989) 754-6262
FAX (989) 754-6263

ENGINEER
MACMILLAN ASSOCIATES
714 EAST MIDLAND ST.
BAY CITY, MI 48706
PH. (989) 894-4300
FAX (989) 894-9930

SCHEDULE OF DRAWINGS

SHEET	DESCRIPTION	RECORD DRAWINGS
T1.00	COVER SHEET	X
C-0.0	COVER SHEET	PROVIDED FOR REFERENCE ONLY. DRAWINGS APPROVED UNDER A SEPARATE SUBMITTAL.
C-1.1	TOPOGRAPHIC SURVEY	
C-1.2	TOPOGRAPHIC SURVEY	
C-2.1	DEMOLITION PLAN	
C-2.2	DEMOLITION PLAN	
C-3.1	DIMENSION AND PAVING PLAN	
C-3.2	DIMENSION AND PAVING PLAN	
C-3.3	ROADWAY SECTIONS	
C-4.1	GRADING PLAN	
C-4.2	GRADING PLAN	
C-5.1	SOIL EROSION AND SEDIMENTATION CONTROL PLAN	
C-5.2	SOIL EROSION AND SEDIMENTATION CONTROL PLAN	
C-5.3	SESC DETAILS	
C-6.1	UTILITY PLAN	
C-6.2	UTILITY PLAN	
C-7.1	DRAINAGE AREA PLAN	
C-7.2	DETENTION BASIN CALCULATIONS	
C-8.0	NOTES AND DETAILS	
C-8.1	DETAILS	
C-8.2	DETAILS	
L-1.0	LANDSCAPE PLAN	
L-1.1	LANDSCAPE PLAN	
L-1.2	LANDSCAPE DETAILS	
L-2.1	LANDSCAPE SPECIFICATIONS	
L-2.2	LANDSCAPE SPECIFICATIONS	
SE1	ELECTRICAL SITE PLAN	
SE2	LIGHTING POINT BY POINT CALCULATIONS	
E1	GATE DETAILS	
E2	ELECTRICAL DETAILS	
A1.00	CODE PLAN	X
A1.01	FLOOR PLAN	X
A1.02	ROOF PLAN	X
A2.01	DOOR SCHEDULE, FINISHES	X
A3.01	EXTERIOR ELEVATIONS	X
A4.01	BUILDING SECTIONS	X
A4.02	DETAILS	X
A4.03	DETAILS	X
A5.01	MODULAR OFFICE RAMPS/ STAIRS	X
S1.01	STRUCTURAL NOTES/ SCHEDULES	X
S2.01	FOUNDATION PLAN	X
S2.02	CONTROL JOINT PLAN	X
S3.01	FOUNDATION DETAILS	X
S3.02	PIER DETAILS	X
M1.01	HVAC AND PIPING	X
M2.01	MECHANICAL DETAILS AND SCHEDULES	X
M3.01	MECHANICAL SPECIFICATIONS	X
E1.01	LIGHTING FLOOR PLAN	X
E2.01	POWER AND SYSTEMS FLOOR PLAN	X
E3.01	ELECTRICAL INFORMATION	X
E4.01	EMERGENCY LIGHTING POINT BY POINT PLAN	X
E4.02	NORMAL LIGHTING POINT BY POINT PLAN	X

Pumford CONSTRUCTION
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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

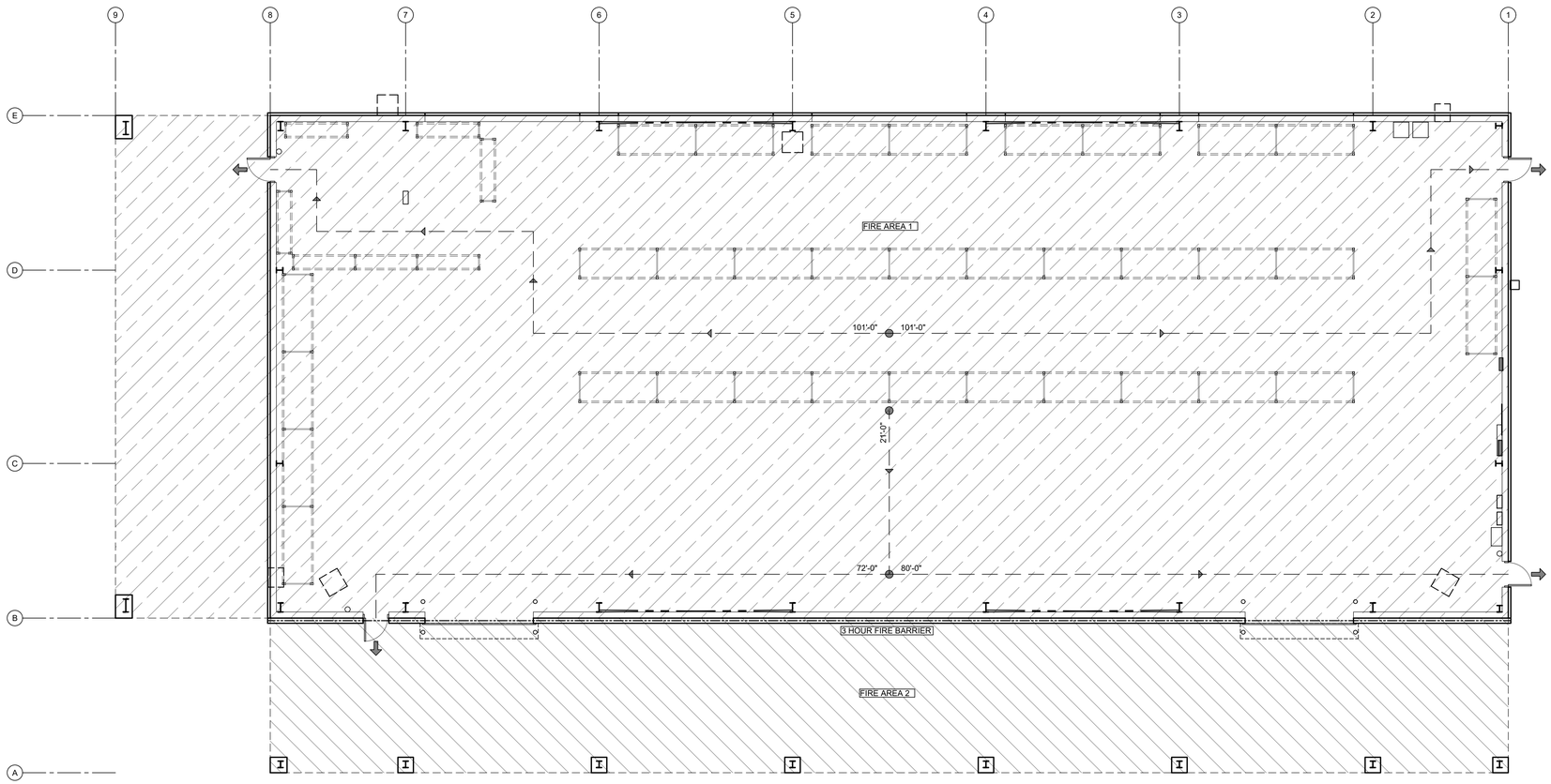
SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

COVER SHEET

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SUBLOCATION:
SHEET T1.00
REV. 0

SHEET SIZE: ARCH-D 24x36



CODE PLAN
SCALE: 1/8" = 1'-0"

DESIGN CODES:
2015 MICHIGAN BUILDING CODE
ANSI A117.1 - 2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
2015 INTERNATIONAL FIRE CODE
2015 MICHIGAN ENERGYCODE
2021 MICHIGAN PLUMBING CODE, PART 7
2021 MICHIGAN MECHANICAL CODE, PART 9A
2015 INTERNATIONAL FUEL GAS CODE
ASHRAE STANDARD 90.1-2013 ZONE 5
FIRE ALARM NFPA 72 2013
2023 MICHIGAN ELECTRICAL CODE - PART 8 RULES

CONSTRUCTION TYPE:	2B
USE GROUP:	S-1
SPRINKLED:	NONE
FIRE AREA 1:	11,715 S.F.
FIRE AREA 2:	3,185 S.F.
ALLOWABLE AREA:	26,000 S.F.
TOTAL AREA:	14,900 S.F.
OCCUPANT LOAD:	
OCCUPANCY DENSITY	1:500
10,400 SF x 1/100 =	21 PEOPLE
TRAVEL DISTANCE TABLE 1017.2	200 FT.

PLUMBING FIXTURES:
PROVIDED AT MODULAR BUILDING PER MPC 403.3.3

BUILDING ENVELOPE REQUIREMENTS:

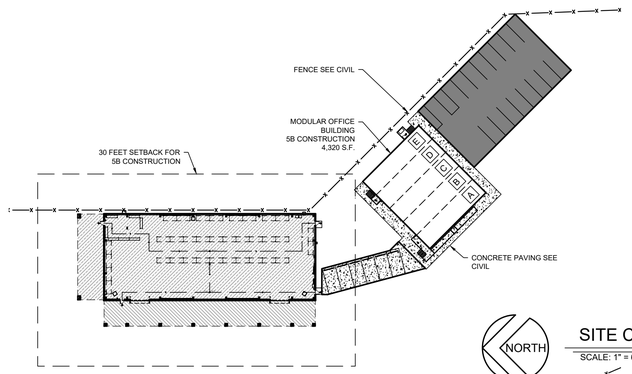
VESTIBULE	NOT PROVIDED; EXCEPTION 8
AIR BARRIER	PROVIDED
VAPOR BARRIER	PROVIDED
ROOF - METAL BUILDING	R-57 w/ THERMAL BLOCK
WALLS - METAL BUILDING	R-30 + THERMAL TAPE
SLAB ON GRADE - UNHEATED	R-15 FOR 24 in

LIFE SAFETY LEGEND

- XXX'-XX" — EGRESS PATH
- XXX'-XX" — COMMON EGRESS PATH
- EXIT DISCHARGE
- DIRECTION OF EGRESS TRAVEL
- 3 HOUR SEPARATION

10' x 4' 2 TIER RACKING - MAXIMUM STORAGE HEIGHT 12'-0"

10' x 2' 2 - 4 TIER RACKING - MAXIMUM STORAGE HEIGHT 10'-0"



SITE CODE PLAN
SCALE: 1" = 60'-0"

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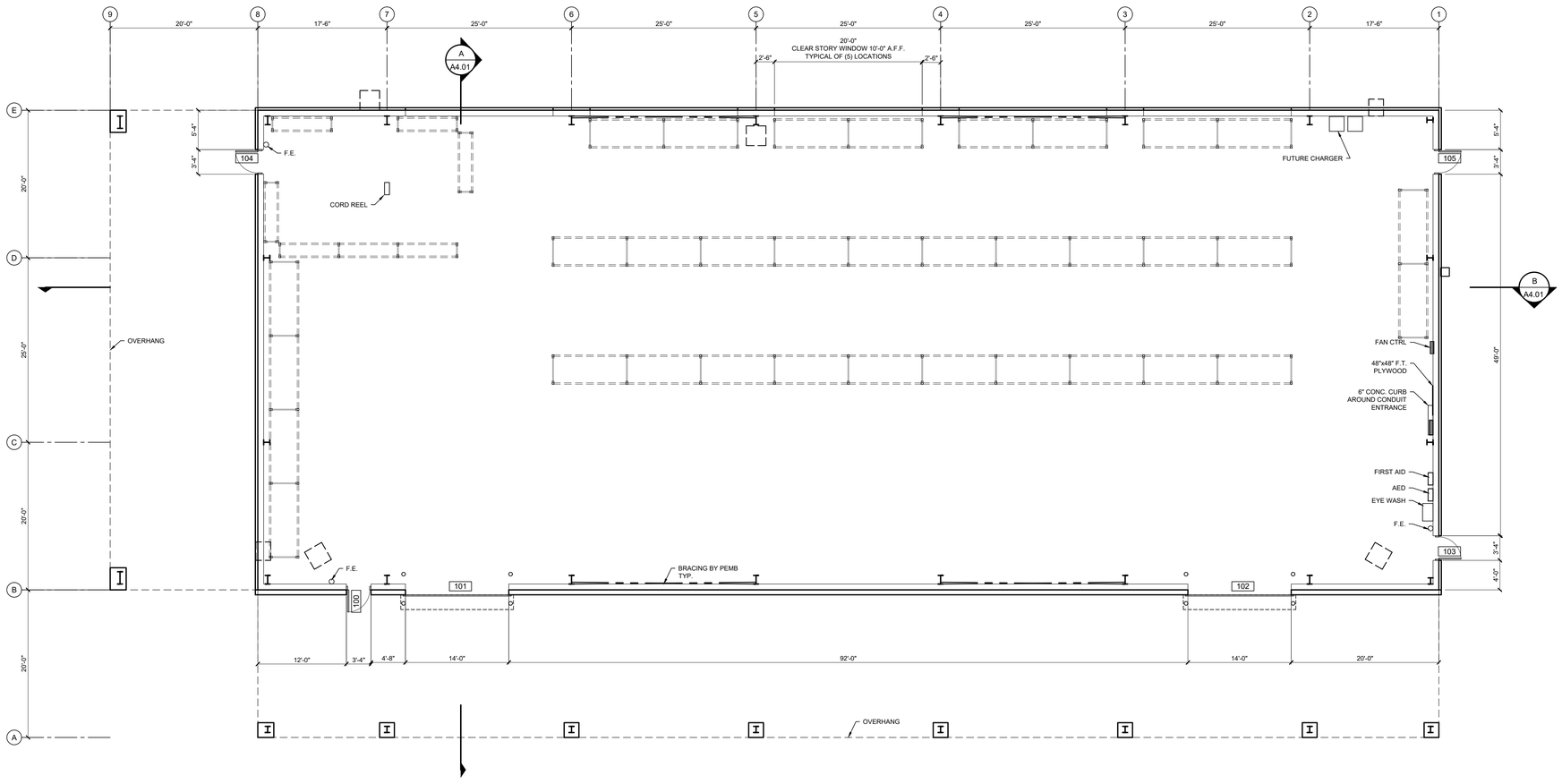
CODE PLAN

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SHEET: A1.00
REV.: 0
SUBLOCATION:

SHEET SIZE: ARCH-D 24x36



NORTH

FLOOR PLAN

SCALE: 1/8" = 1'-0"

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REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
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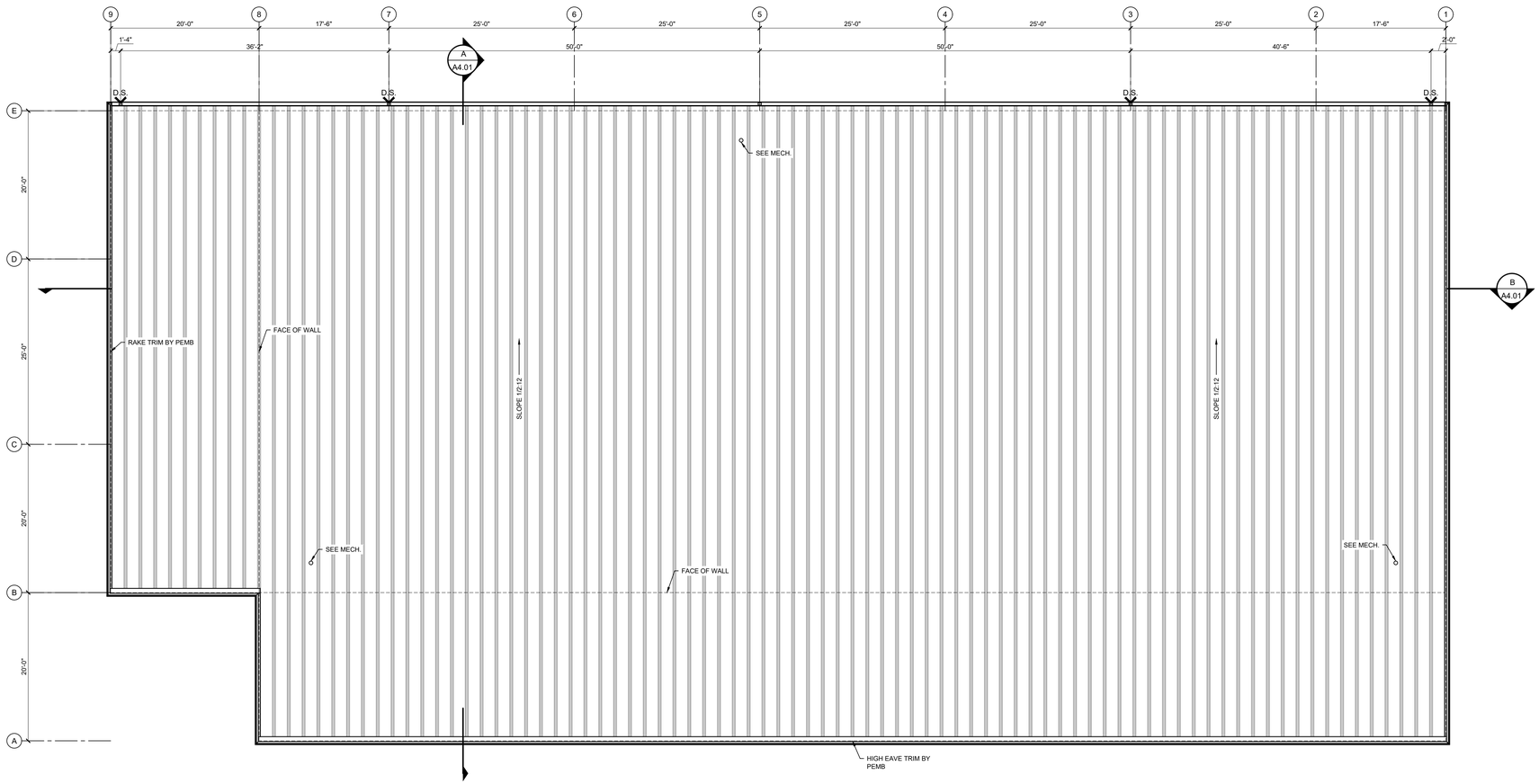
FLOOR PLAN

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SUBLOCATION:
SHEET A1.01
REV. 0

SHEET SIZE: ARCH–D 24x36



NOTES:
1. ROUTE DOWNSPOUTS TO GRADE. PROVIDE 90 ELBOW AT THE BOTTOM ~6" ABOVE GRADE.
2. PROVIDE RIP-RAP ALONG ENTIRE LENGTH OF BUILDING ON THE EAST SIDE. RIP-RAP SHALL START AT THE FACE OF THE BUILDING AND EXTEND TO THE CENTERLINE OF THE DRAINAGE SWALE. ~ 12'-0"

NORTH

ROOF PLAN

SCALE: 1/8" = 1'-0"

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REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
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ROOF PLAN

SCALE: AS NOTED
JOB: PROJ–001149
DRAWING NO.
SUBLOCATION:
SHEET: A1.02
REV.: 0

SHEET SIZE: ARCH-D 24x36

Door Schedule

DOOR NUMBER	Door: Door Size 1 (3'-0"x7'-0")	Door: Door Size 2 (14'-0"x14'-0")	Door: Door Size 3	Door: Door Size 4	Door: Type	Door: Label (minutes)	Door: Material 1 (18 GA. H.M. INSULATED COILING)	Door: Material 2	Door: Material 3	Door: Material 4	Door: Material 5	Door: Material 6	Door: Glass 1 (5/8" TEMPERED INSULATED 1/2" INSULATED GLASS)	Door: Glass 2	Door: Glass 3	Louver Size	Frame: Material 1 (16 GA. H.M. ANGLE TRACK)	Frame: Material 2	Frame: Material 3	Frame: Material 4	Frame: Material 5	WIDTH	Frame: Glass 1 (FIRE RATED GLAZING 5/8" TEMPERED INSULATED)	Frame: Glass 2	Frame: Glass 3	Frame: Glass 4	Frame: Glass 5	Frame: Type	Frame: Label (minutes)	Hardware: HINGE 1 (1-1/2 PR. BUTT HINGES)	HINGE 2	HINGE 3	HINGE 4	HINGE 5	LATCH 6 (STORE/ROOM LOCK)	LATCH 7	CLOSER 8 (CLOSER)	CLOSER 9	MISC 10 (WEATHER STRIPPING)	MISC 11 (THRESHOLD)	MISC 12	MISC 13	MISC 14	MISC 15	MISC 16	ACCESS 17 (CARD READER)	ACCESS 18 (ELECTRIC STRIKE)	ACCESS 19	OH DOOR 20 (ROLLING SHUTTER)	OH DOOR 21 (FUSIBLE LINK)	OH DOOR 22 (SAFETY EDGE)	OH DOOR 23 (PHOTO-ELECTRIC SENSOR)	OH DOOR 24	Notes	Revision
	1	2	3	4			1	2	3	4	5	6	1	2	3		1	2	3	4	5		1	2	3	4	5			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
100	1				A	180	1						1				1					5'-3/4"	1					1	180	1					5		8		11	12					17	18									
101		2				180		2										2											180																				21	22	23	24			
102		2				180		2										2											180																				21	22	23	24			
103	1				A		1						1				1					5-3/4"		2				1		1					5		8		11	12					17	18									
104	1				A		1						1				1					5-3/4"		2				1		1					5		8		11	12					17	18									
105	1				A		1						1				1					5-3/4"		2				1		1					5		8		11	12					17	18									

DOOR & FRAME SPECIFICATIONS:

A. EXTERIOR DOORS
   1. INSULATED HOLLOW METAL WITH 4 INCH X 24 INCH INSULATED SAFETY GLASS VISION PANEL, HOLLOW METAL FRAME, PAINTED FINISH. SDI 108, 1-3/4 INCH THICK. LEVEL 3-EXTRA HEAVY DUTY, MODEL 2, SEAMLESS DESIGN.
B. INSULATED TRANSLUCENT PLASTIC GLAZING:
   1. PREFABRICATED INSULATED TRANSLUCENT PLASTIC GLAZING SYSTEM WITH INTEGRAL TRANSLUCENT INSULATION AND THERMALLY BROKEN ANODIZED ALUMINUM FRAMING, NOMINAL 48 INCHES HIGH.
   2. CRYSTAL EXTERIOR AND WHITE INTERIOR GLAZING COLOR.
   3. IN-LINE SHOJI MUNTIN PATTERN.
   4. GUARDIAN 275-INSUL 24 AS MANUFACTURED BY MAJOR INDUSTRIES OR OWNER APPROVED EQUIVALENT.
C. OVERHEAD DOORS
   1. EXTERIOR: PREFINISHED INSULATED METAL, OVERHEAD DOOR CORPORATION FIREKING 635 SERIES OR EQUIVALENT. NOMINAL 2 INCH THICKNESS, MINIMUM R-VALUE OF 4.5.
      a. 14 FEET WIDE X 14 FEET HIGH.
      b. COILING SHUTTER
      c. 20,000 CYCLE TORSION SPRING.
      d. BLACK ANGLE GUIDES w/ BRUSH SEALS & BOTTOM BAR
      e. ROUND HOOD.
      f. OPERATOR & TENSION SIDE HOOD COVERS
      g. INTERIOR MOUNTED CONTROL STATION.
      h. PRIMARY ENTRAPMENT PROTECTION: SELF-REVERSING FULL WIDTH SAFETY EDGE.
      i. SECONDARY ENTRAPMENT PROTECTION: PHOTO-ELECTRIC SENSOR.
      j. PADLOCK FOR CHAIN SYSTEM BY GENERAL CONTRACTOR.
   2. MOTORIZED OPERATOR: OVERHEAD MODEL RSX FIREKING OPERATOR w/ HOIST, SIDE MOUNT WITH STANDARD THREE BUTTON WALL STATION, REMOTE RADIO OPERATED PUSH BUTTON CONTROL, SAFETY EDGE SENSOR, SAFETY PHOTO EYE DETECTOR AND MANUAL PULL CHAIN DRIVE BACK-UP OPERATION.
      a. WARNING LIGHT: EXTERIOR AND INTERIOR MOUNTED FLASHING LED LIGHT FIXTURES, INTERLOCKED WITH DOOR OPERATOR. MOUNTED AT 8 FEET ABOVE FINISH FLOOR. LAMPS SHALL ILLUMINATE RED WHEN DOOR IS IN FULLY CLOSED POSITION OR PARTIALLY OPEN POSITION. LAMPS SHALL ILLUMINATE FLASHING RED DURING UPWARD AND DOWNWARD OPERATION OF DOOR. LAMPS SHALL ILLUMINATE GREEN WHEN DOOR REACHES FULLY OPEN POSITION. LIFTMASTER MODEL #RGL24LY OR OWNER APPROVED EQUIVALENT.
      b. REMOTE PUSHBUTTON OPERATOR CONTROL, PROGRAMMABLE, BATTERY OPERATED. PROVIDE RADIO OPERATED PUSHBUTTON FOR OVERHEAD DOORS.PROVIDE TWO PUSH BUTTON UNITS FOR EACH DOOR.
D. DOOR HARDWARE:
   1. 4-1/2 INCH X 4-1/2 INCH FULL MORTISE BUTT HINGES, (3) PER DOOR, 630 FINISH FOR EXTERIOR DOORS.
   2. VON DUPRIN EXIT DEVICES, 35 SERIES.
      a. EXTERIOR EXIT DOORS.
      b. LEVER STYLE ENTRY HANDLES, 630 FINISH.
   3. VON DUPRIN ELECTRIC STRIKES.
      a. PROVIDED AND INSTALLED BY SECURITY (ACCESS CONTROL) SYSTEM CONTRACTOR.
   4. CLOSER, OVERHEAD, INTERIOR MOUNT. LCN 4100 SERIES.
      a. CLOSER AT ACCESS CONTROLLED EXTERIOR DOORS.
   5. ALUMINUM THRESHOLD AT EXTERIOR DOORS.
   6. RESILIENT GASKET WEATHER-STRIPPING WITH SWEEP AT EXTERIOR DOORS.
   7. KEYING PER OWNER'S EXISTING MASTER KEY SYSTEM.
      a. SCHLAGE PRIMUS XP WITH EVEREST KEYWAY.
         1) SITE PRODUCTION SUPERVISOR SHALL BE AUTHORIZED TO RECEIVE KEY SHIPMENTS.

FINISHES:

A. SEALED CONCRETE.
   1. GREY SEMI GLOSS FINISH, SLIP RESISTANT. LOW VOC CONTENT. SHERWIN-WILLIAMS GENERAL POLYMERS AQUARMOR S SLURRY SYSTEM. 3460 PRIMER/3460-5150 SLURRY COAT-1/8 INCH/5310 AGGREGATE/3460TOPCOAT.
      a. EMBEDDED BROADCAST AGGREGATE IN TOPCOAT TO PROVIDE SLIP RESISTANT MINIMUM SLIP RESISTANCE RATING SHALL BE GREATER THAN 36 WHEN MEASURED IN ACCORDANCE ASTM E303-93 AND STATIC COEFFICIENT OF FRICTION (COF) SHALL BE 0.6 OR GREATER MEASURED IN ACCORDANCE WITH ASTM C1027-07.
      b. ENTIRE FLOOR SURFACE.
B. PAINTING
   1. EXPOSED SURFACES, INCLUDING CONDUIT, PIPE, DUCTWORK, ETC.
      a. PAINTS AND COATINGS USED INSIDE THE BUILDING ENVELOPE SHALL COMPLY WITH REQUIREMENTS FOR CLASSIFICATION AS LOW VOC CONTENT.
   2. DOORS AND DOOR FRAMES.
   3. PARTITIONS AND WALLS.
   4. EXPOSED STRUCTURAL FRAMING.
   5. WARNING MARKINGS, SAFETY YELLOW.
      a. 4 INCH WIDE SOLID PAINTED LINE.
         1) WORKING CLEARANCE AT ELECTRICAL SWITCHGEAR, ELECTRICAL PANELS AND TRANSFORMERS.
      b. WARNING TEXT.
         1) SAFETY GLASSES REQUIRED. AT EACH ENTRANCE.
         2) KEEP CLEAR. AT ELECTRICAL AND MECHANICAL EQUIPMENT.
      c. WARNING GRAPHICS.
         1) SAFETY GLASSES REQUIRED. AT EACH ENTRANCE.
   6. INSURE THAT ALL FINISHED ITEMS ARE PROTECTED AND DO NOT GET PAINTED. PAINTED ITEMS WILL BE REPLACED AT THE CONTRACTOR'S COST.
   7. PROVIDE LABOR AS REQUIRED TO SWEEP FLOORS, REMOVE ANY TEMPORARY SIGNS, ITEMS OR FIXTURES FROM WALLS, CEILINGS, ETC... PRIOR TO FINAL PAINTING.
   8. FINAL PAINT (TOUCH-UP) THE RENOVATED AREA TO REPAIR ANY DAMAGE ATTRIBUTABLE TO FURNITURE INSTALLATION, OR OTHER TRADES STILL WORKING IN THE FINISHED AREAS. THIS WILL OCCUR JUST PRIOR TO OWNER OCCUPATION OF THE AREA.
   9. IT CABINETS AND BACKBOARDS
      a. TELECOM EQUIPMENT TO HAVE A KEEP CLEAR GRAPHIC AND OUTLINE TO BE PAINTED IN SAFETY YELLOW IN FRONT OF BACKBOARD. YELLOW OUTLINE TO BE WIDTH OF THE BOARD WIDE AND 6' AWAY FROM WALL.
      b. BOARD ON WALL BEHIND COMMUNICATIONS CONDUIT ENTRANCE LOCATION IS NOT REQUIRED TO BE PAINTED WHITE.
C. PAVING SEALANTS
   1. SELF LEVELING URETHANE SEALANT AT ALL JOINTS BETWEEN ASPHALT PAVING AND CONCRETE PAVING.
   2. SELF LEVELING URETHANE SEALANT AT ALL JOINTS BETWEEN ASPHALT OR CONCRETE PAVING AND BUILDING WALL SURFACE.
D. ADHESIVES AND SEALANTS
   1. ADHESIVES AND SEALANTS USED INSIDE THE BUILDING ENVELOPE SHALL COMPLY WITH REQUIREMENTS FOR CLASSIFICATION AS LOW VOC CONTENT

COLOR SELECTIONS FOR:

DOORS AND FRAMES - SHERWIN-WILLIAMS: SW6069 FRENCH ROAST

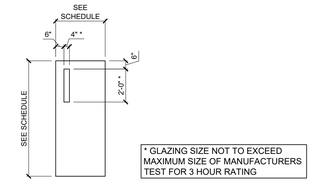
EXTERIOR EXPOSED STEEL - BENJAMIN-MOORE: SUPER WHITE READY MIX #02

INTERIOR EXPOSED STEEL - BENJAMIN-MOORE: SUPER WHITE READY MIX #02, EGGSHELL

CONCRETE PIERS - SAFETY YELLOW

SPECIALTIES:

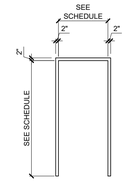
A. PORTABLE FIRE EXTINGUISHERS.
   1. LOCATE EXTINGUISHERS AS INDICATED BELOW.
   2. PROVIDE UNI-STRUT FRAMING BETWEEN GIRTS FOR SUPPORT OF EXTINGUISHER.
      a. 20 LB DRY CHEMICAL 'SENTRY' SERIES ABC FIRE EXTINGUISHERS WITH WALL MOUNTING BRACKET, MODEL NUMBER AA-20-1 AS MANUFACTURED BY ANSUL.
         1). ADJACENT TO EACH EXIT DOOR.
B. FIRST AID STATION
   1. CONSUMERS ENERGY BRANDED WALL MOUNTED FIRST AID KITS. MANUFACTURED BY CHOCTAW-KAUL.
   2. LARGE KIT; MODEL NUMBER PAC-53-CPC.
      a. EQUIPMENT TEAR DOWN AREA.
C. EXTERIOR SIGNS
   1. DIRECTIONAL SIGNS, POST MOUNTED. WHITE REFLECTIVE LETTERING ON CONSUMERS ENERGY BLUE BACKGROUND WITH WHITE REFLECTIVE BORDER.
      a. SMOKING AREA.
   2. INFORMATIONAL SIGNS, POST MOUNTED. WHITE REFLECTIVE LETTERING ON CONSUMERS ENERGY BLUE BACKGROUND WITH WHITE REFLECTIVE BORDER.
      a. ELECTRIC VEHICLE SUPPLY EQUIPMENT.
      b. DOOR NUMBER
   3. TRAFFIC CONTROL SIGNS, MDOT STANDARD FORMAT.
      a. ACCESSIBLE PARKING.
      b. STOP.
      c. YIELD.
      d. ONE WAY.
D. AUTOMATIC EXTERNAL DEFIBRILLATOR
   1. SELF-CONTAINED BATTERY POWERED AED UNIT WITH ON-BOARD DIAGNOSTICS, AUTOMATIC SENSING AND VOICE PROMPT FEATURES
   2. WALL CABINET WITH VIEWING WINDOW , WHITE FINISH WITH WALL SIGN



TYPE-A

DOOR TYPES

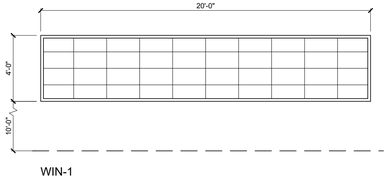
SCALE: 1/4" = 1'-0"



TYPE-1

FRAME TYPES

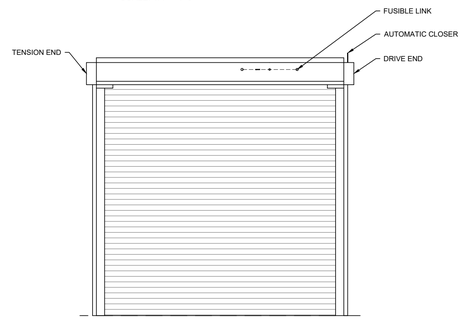
SCALE: 1/4" = 1'-0"



WIN-1

WINDOW ELEVATION

SCALE: 1/4" = 1'-0"



OH DOOR ELEVATION

SCALE: 1/4" = 1'-0"

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

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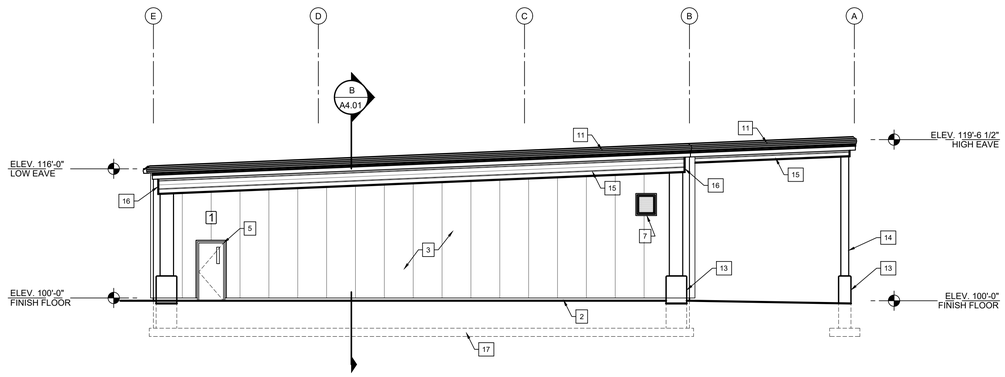
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

DOOR SCHEDULE
FINISHES/ SPECIALTIES

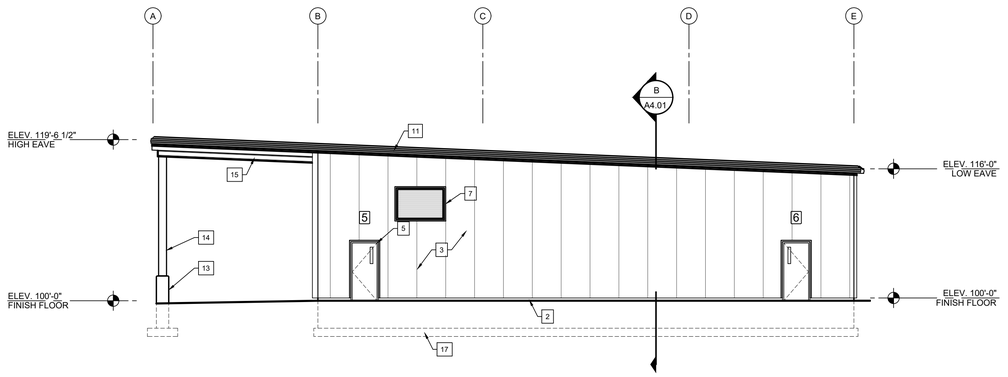
SUBLOCATION:
SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SHEET: A2.01
REV.: 0

SHEET SIZE: ARCH–D 24x36



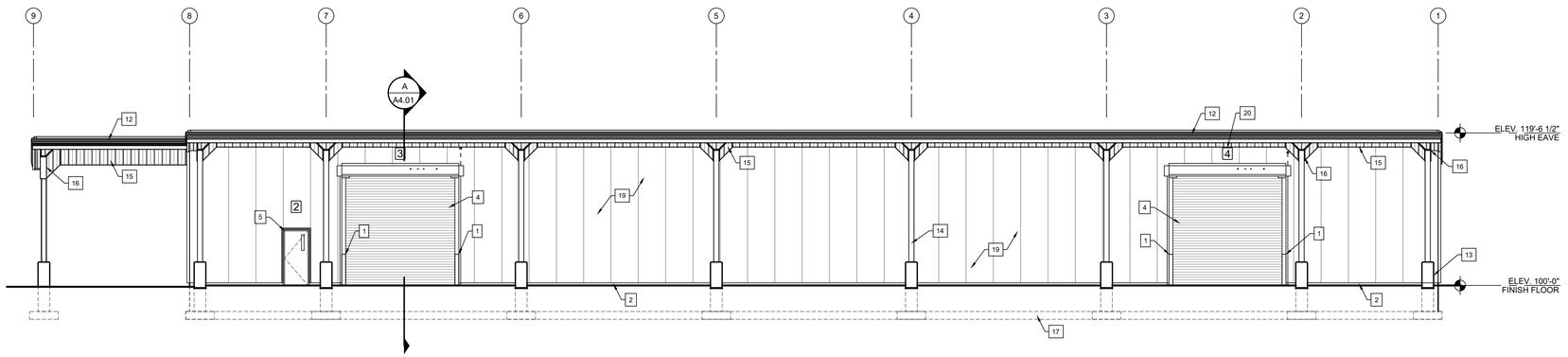
NORTH ELEVATION

SCALE: 1/8" = 1'-0"



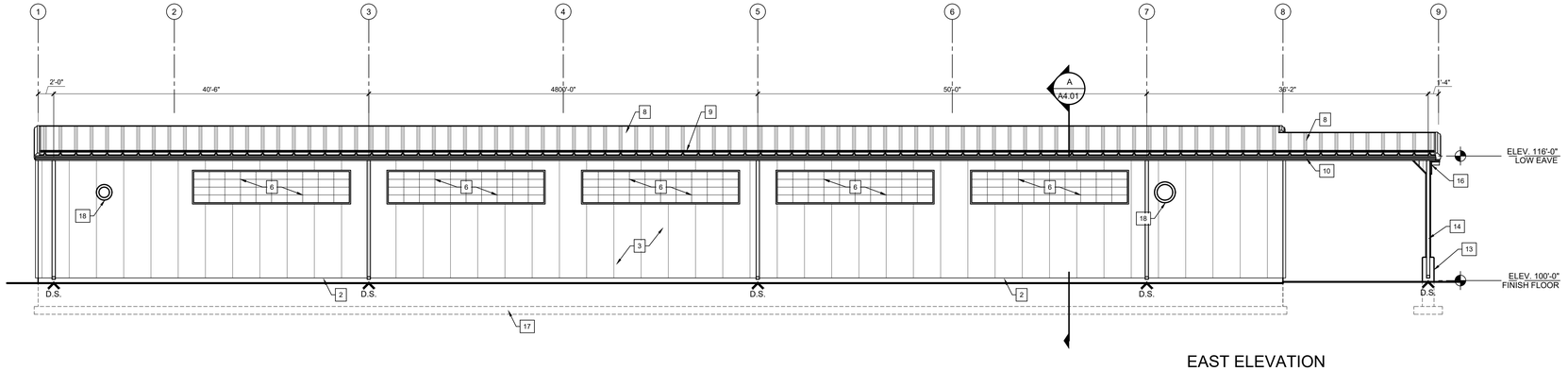
SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



WEST ELEVATION

SCALE: 1/8" = 1'-0"



EAST ELEVATION

SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATIONS KEYNOTES:

1. 4'-0" HIGH 6" Ø CONCRETE FILLED GALV. STEEL GUARD POST w/ PLASTIC SLEEVE COVERS, TYPICAL. COLOR: SAFETY YELLOW.
2. 8" CMU. APPLY ONE COAT OF CLEAR ACRYLIC SEALER OVER CMU. BASF MASTERPEL240 (OR APPROVED EQUAL SILANE/SILOXANE-BASED) INTEGRAL WATER REPELLANT.
3. 4" INSULATED METAL PANEL BY PEMB SUPPLIER
4. FIRE-RATED DOOR, SEE SCHEDULE A2.01.
5. METAL DOOR AND FRAME, SEE SCHEDULE A2.01.
6. INSULATED TRANSLUCENT PLASTIC GLAZING, SEE A2.01.
7. MECHANICAL LOUVER, SEE MECHANICAL PLANS (BOTTOM OF LOUVERS @ 10'-0" A.F.F. (COORDINATE HEIGHTS WITH METAL BUILDING GIRT SPACING.)
8. STANDING SEAM ROOF, PRE-FINISHED 24 GA. PVDF FINISH BY PEMB SUPPLIER.
9. SNOWGUARDS S-5 OR EQUAL w/ MATCHING COLOR RAIL.
10. 24 GA. PRE-FINISHED GUTTER AND DOWNSPOUTS BY PEMB SUPPLIER.
11. 24 GA. PRE-FINISHED RAKE TRIM BY PEMB SUPPLIER.
12. 24 GA. PRE-FINISHED HIGH EAVE TRIM BY PEMB SUPPLIER.
13. CONCRETE PIER PAINTED.
14. PRE-ENGINEERED STEEL FRAME PAINTED.
15. METAL LINER PANEL; 26 GA. PVDF FINISH BY PEMB SUPPLIER.
16. FABRICATED 26 GA. METAL CLOSURES AND TRIM AT CANOPIES TO ELIMINATE LEDGES.
17. CONCRETE FOUNDATION SEE STRUCTURAL.
18. EXHAUST FAN, SEE MECHANICAL, LOCATE A MINIMUM OF 10'-0" A.F.F.
19. 8" 3-HOUR FIRE RATED INSULATED METAL PANELS BY PEMB SUPPLIER.
20. DOOR SIGNAGE SEE A2.01

Pumford CONSTRUCTION
1674 Champagne Drive
Saginaw, Michigan 48604
Phone: (989) 754-6262
Fax: (989) 754-6263
www.Pumford.com

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

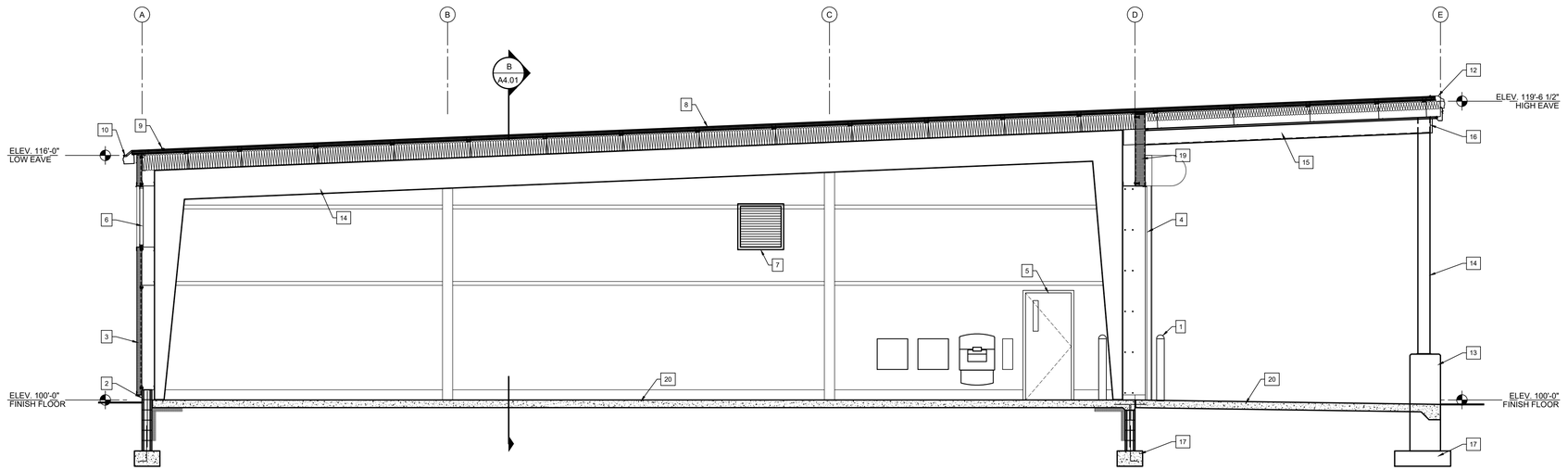
SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

ELEVATIONS

SUBLOCATION:
SCALE: AS NOTED
JOB: PROJ–001149
DRAWING NO.
SHEET A3.01
REV. 0

SHEET SIZE: ARCH–D 24x36

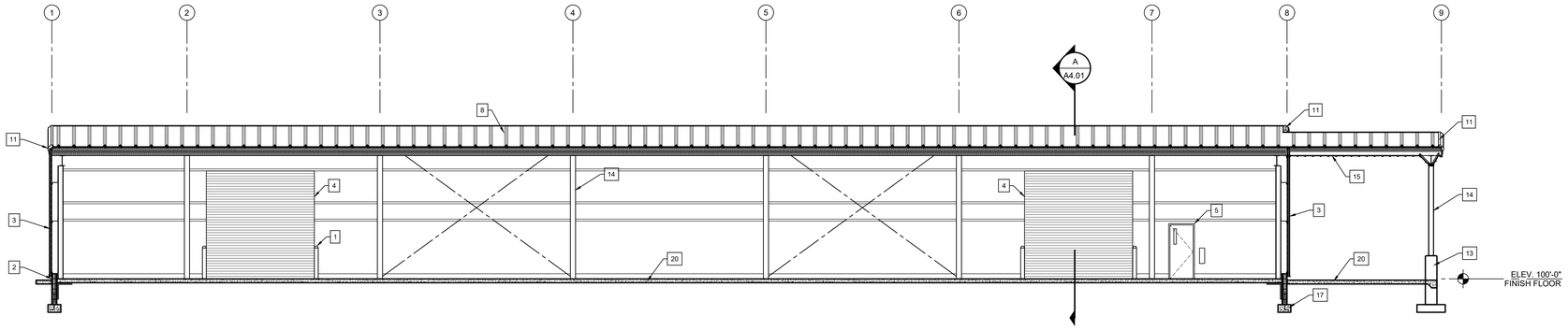


SECTIONS

A4.01 — SCALE: 1/4" = 1'-0"

KEYNOTES:

1. 4'-0" HIGH 6" Ø CONCRETE FILLED GALV. STEEL GUARD POST w/ PLASTIC SLEEVE COVERS, TYPICAL. COLOR: SAFETY YELLOW.
2. 8" CMU. APPLY ONE COAT OF CLEAR ACRYLIC SEALER OVER CMU. BASF MASTERPEL240 (OR APPROVED EQUAL SILANE/SILOXANE-BASED) INTEGRAL WATER REPELLANT.
3. 4" INSULATED METAL PANEL BY PEMB SUPPLIER
4. FIRE RATED DOOR, SEE SCHEDULE A2.01.
5. METAL DOOR AND FRAME, SEE SCHEDULE A2.01.
6. INSULATED TRANSLUCENT PLASTIC GLAZING. SEE A2.01.
7. MECHANICAL LOUVER, SEE MECHANICAL PLANS (BOTTOM OF LOUVERS @ 10'-0" A.F.F. (COORDINATE HEIGHTS WITH METAL BUILDING GIRT SPACING.)
8. STANDING SEAM ROOF, PRE-FINISHED 24 GA. PVDF FINISH BY PEMB SUPPLIER.
9. SNOWGUARDS S-5 OR EQUAL w/ MATCHING COLOR RAIL.
10. 24 GA. PRE-FINISHED GUTTER AND DOWNSPOUTS BY PEMB SUPPLIER.
11. 24 GA. PRE-FINISHED RAKE TRIM BY PEMB SUPPLIER.
12. 24 GA. PRE-FINISHED HIGH EAVE TRIM BY PEMB SUPPLIER.
13. CONCRETE PIER PAINTED.
14. PRE-ENGINEERED STEEL FRAME PAINTED.
15. METAL LINER PANEL; 26 GA. PVDF FINISH BY PEMB SUPPLIER.
16. FABRICATED 26 GA. METAL CLOSURES AND TRIM AT CANOPIES TO ELIMINATE LEDGES.
17. CONCRETE FOUNDATION SEE STRUCTURAL.
18. EXHAUST FAN, SEE MECHANICAL, LOCATE A MINIMUM OF 10'-0" A.F.F.
19. 8" 3-HOUR FIRE RATED INSULATED METAL PANELS BY PEMB SUPPLIER.
20. CONCRETE SLAB SEE STRUCTURAL



SECTION

B
A4.01 — SCALE: 1/8" = 1'-0"

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Saginaw, Michigan 48604
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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

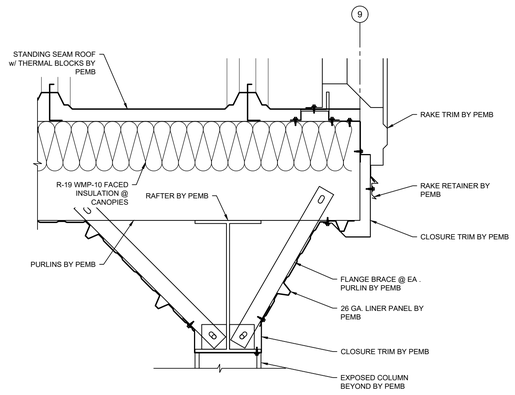
SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

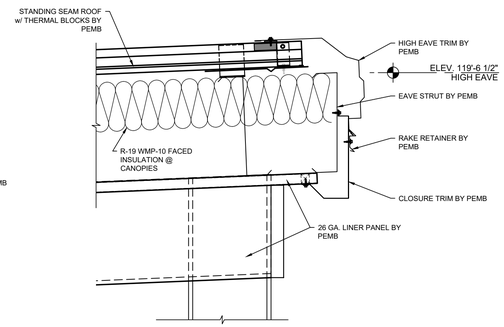
BUILDING SECTIONS

SCALE: AS NOTED
JOB: PROJ–001149
DRAWING NO.
SUBLOCATION:
SHEET: A4.01
REV.: 0

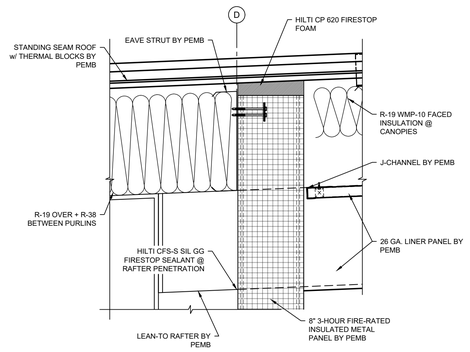
SHEET SIZE: ARCH-D 24x36



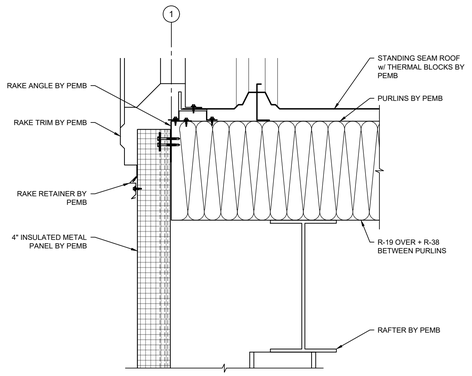
A A4.02 **CANOPY END WALL**
SCALE: 1-1/2" = 1'-0"



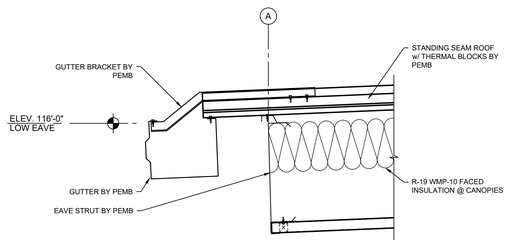
D A4.02 **HIGH EAVE @ CANOPY**
SCALE: 1-1/2" = 1'-0"



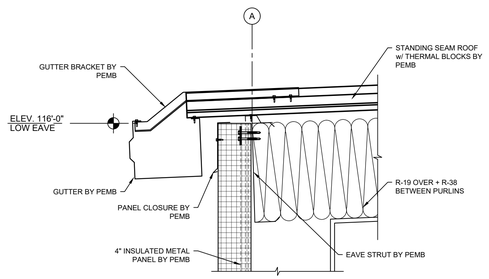
G A4.02 **HIGH EAVE TO CANOPY - 3 HR**
SCALE: 1-1/2" = 1'-0"



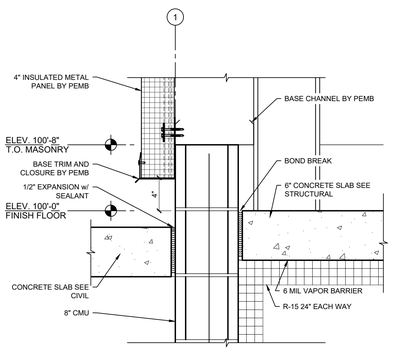
B A4.02 **END WALL**
SCALE: 1-1/2" = 1'-0"



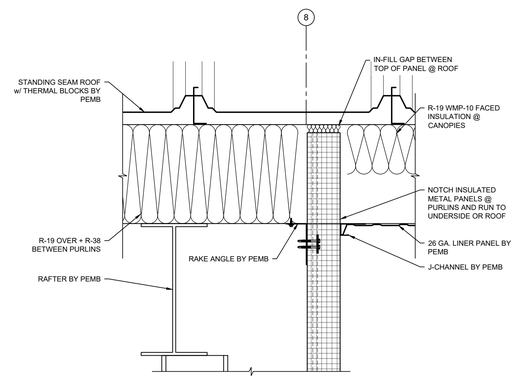
E A4.02 **LOW EAVE @ CANOPY**
SCALE: 1-1/2" = 1'-0"



H A4.02 **LOW EAVE**
SCALE: 1-1/2" = 1'-0"



C A4.02 **BASE OF WALL TYP.**
SCALE: 1-1/2" = 1'-0"



J A4.02 **END WALL TO CANOPY**
SCALE: 1-1/2" = 1'-0"

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Phone: (989) 754-6262
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www.Pumford.com

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

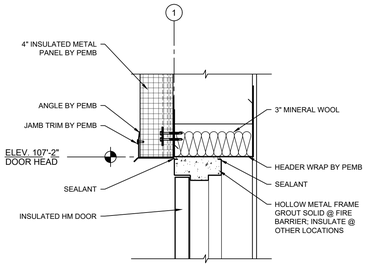
SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

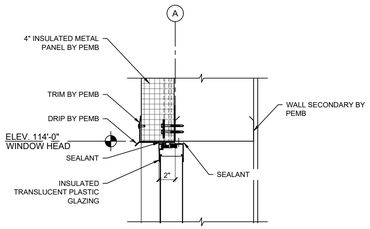
DETAILS

SUBLOCATION:
SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SHEET: A4.02
REV.: 0

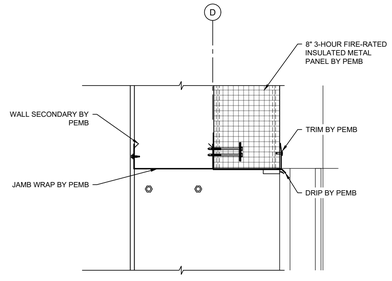
SHEET SIZE: ARCH-D 24x36



A A4.03 — DOOR HEAD
SCALE: 1-1/2" = 1'-0"

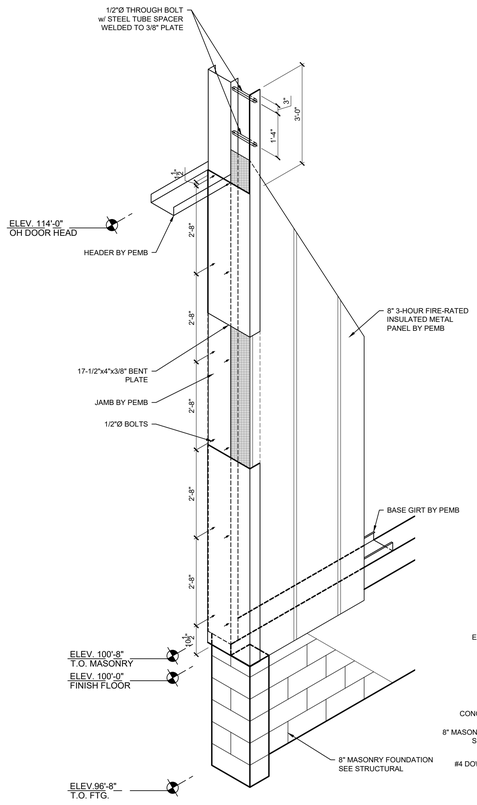


D A4.03 — WINDOW HEAD
SCALE: 1-1/2" = 1'-0"

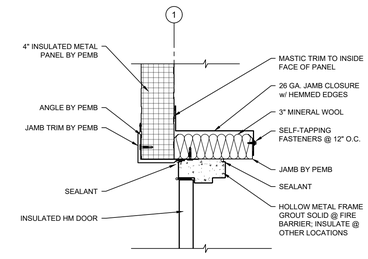


UL DESIGN U415, SYSTEM G

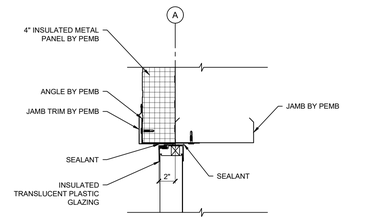
G A4.03 — OH DOOR HEAD
SCALE: 1-1/2" = 1'-0"



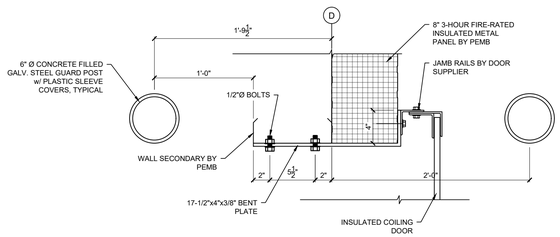
K A4.03 — ISO CUT-AWAY @ OH DOOR
SCALE: 1/2" = 1'-0"



B A4.03 — DOOR JAMB
SCALE: 1-1/2" = 1'-0"

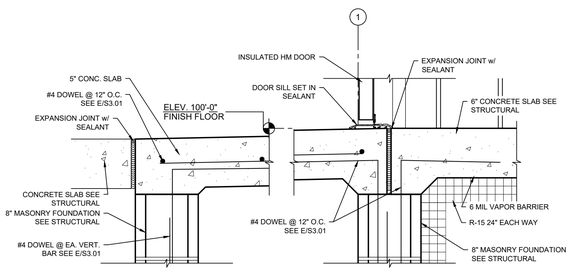


E A4.03 — WINDOW JAMB
SCALE: 1-1/2" = 1'-0"

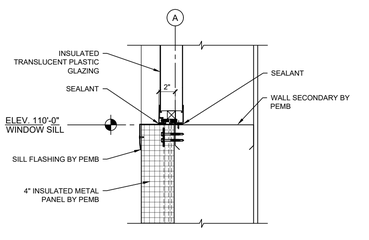


UL DESIGN U415, SYSTEM G

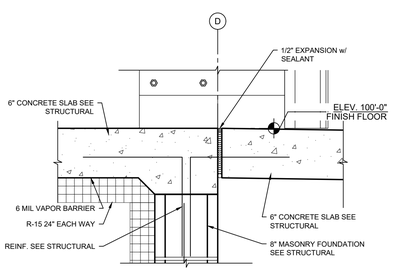
H A4.03 — OH DOOR JAMB
SCALE: 1-1/2" = 1'-0"



C A4.03 — DOOR SILL
SCALE: 1-1/2" = 1'-0"



F A4.03 — WINDOW SILL
SCALE: 1-1/2" = 1'-0"



J A4.03 — OH DOOR SILL
SCALE: 1-1/2" = 1'-0"

1674 Champagne Drive
Saginaw, Michigan 48604
Phone: (989) 754-0262
Fax: (989) 754-0263
www.Pumford.com

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

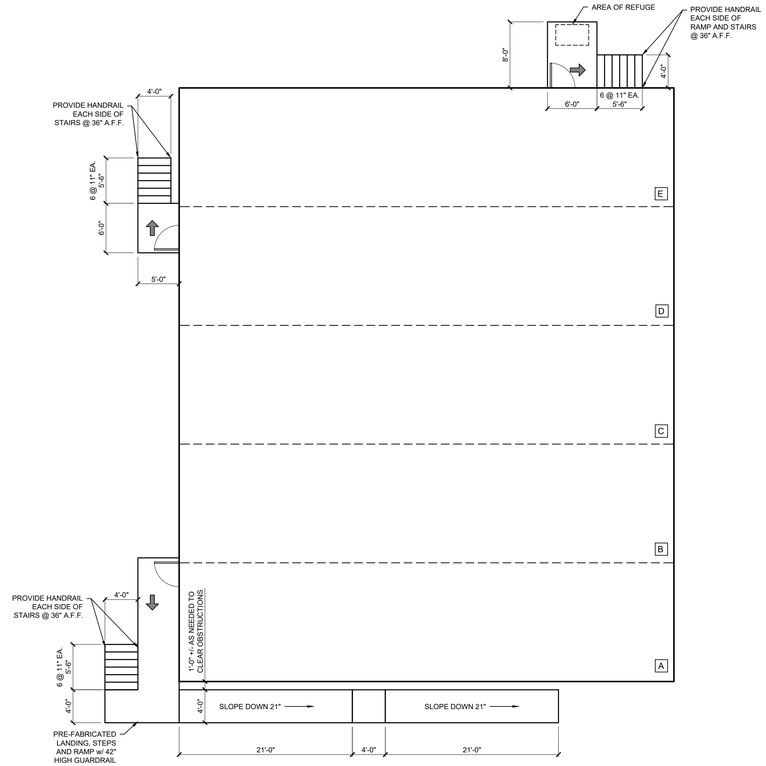
SIGNATURE
NAME: BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

DETAILS

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SUBLOCATION:
SHEET: A4.03
REV.: 0

SHEET SIZE: ARCH–D 24x36



NORTH

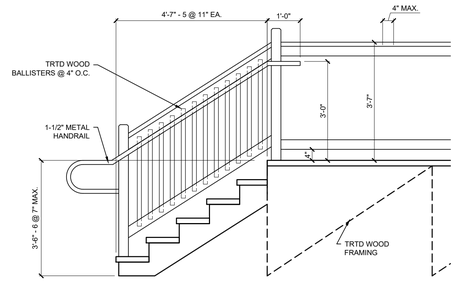
CODE PLAN

SCALE: 1/8" = 1'-0"

DESIGN CODES:
2015 MICHIGAN BUILDING CODE
ANSI A117.1 - 2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
2015 INTERNATIONAL FIRE CODE
2015 MICHIGAN ENERGYCODE
2021 MICHIGAN PLUMBING CODE, PART 7
2021 MICHIGAN MECHANICAL CODE, PART 9A
2015 INTERNATIONAL FUEL GAS CODE
ASHRAE STANDARD 90.1-2013 ZONE 5
FIRE ALARM NFPA 72 2013
2023 MICHIGAN ELECTRICAL CODE - PART 8 RULES

CONSTRUCTION TYPE:	5B
USE GROUP:	B
SPRINKLED:	NONE
AREA:	4,320 S.F.
OCCUPANT LOAD:	
OCCUPANCY DENSITY	1:100
4,320 SF x 1/100 =	44 PEOPLE
TRAVEL DISTANCE TABLE 1017.2	200 FT.

PLUMBING FIXTURES:	REQ	PROVIDED
WATER CLOSETS:		
MALE	1	1
FEMALE	1	1
LAVATORIES:		
MALE	1	1
FEMALE	1	1
DRINKING FOUNTAIN	1	0
SERVICE SINK	1	0



TYPICAL RAIL ELEVATION

SCALE: 1/2" = 1'-0"

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	BDS	BDS	JJ	BDS	P

SIGNATURE
NAME
BRIAN SWEDORSKI
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

MODULAR PLAN

SCALE: AS NOTED
JOB: PROJ–001149
DRAWING NO.
SUBLOCATION:
SHEET: A5.01
REV.: 0

SHEET SIZE: ARCH-D 24x36

GENERAL STRUCTURAL NOTES:

1. THIS BUILDING HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE, 2015 EDITION.
2. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND THE SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES AND OTHER ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTION AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE NOR ISSUE DIRECTION AS TO SAFETY PRECAUTION AND PROGRAMS.
4. THE STRUCTURAL DRAWINGS HEREIN REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR SHALL PROVIDE TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL ALL STRUCTURAL WORK AND CONNECTIONS HAVE BEEN COMPLETED, THE INVESTIGATION, DESIGN, SAFETY, ADEQUECY AND INSPECTION OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS, ETC. IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE METHODS, TECHNIQUES, AND SEQUENCES OF PROCEDURES TO PERFORM THE WORK. THE SUPERVISION OF THE WORK IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
6. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.
7. ALL STRUCTURAL SYSTEMS WHICH ARE TO BE COMPOSED OF COMPONENTS TO BE FIELD ERECTED SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE AND ERECTION IN ACCORDANCE WITH THE SUPPLIER'S INSTRUCTION AND REQUIREMENTS.
8. LOADING APPLIED TO THE STRUCTURE DURING THE PROCESS OF CONSTRUCTION SHALL NOT EXCEED THE SAFE LOAD-CARRYING CAPACITY OF THE STRUCTURAL MEMBERS. THE LIVE LOADINGS USED IN THE DESIGN OF THIS STRUCTURE ARE INDICATED IN THE "DESIGN CRITERIA NOTES". DO NOT APPLY ANY CONSTRUCTION LOADS UNTIL STRUCTURAL FRAMING IS PROPERLY CONNECTED TOGETHER AND UNTIL ALL TEMPORARY BRACING IS IN PLACE.
9. ALL ASTM AND OTHER REFERENCES ARE PER THE LATEST EDITIONS OF THESE STANDARDS, UNLESS OTHERWISE NOTED.
10. SHOP DRAWINGS AND OTHER ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. ALL SHOP DRAWINGS SHALL BE REVIEWED BY THE GENERAL CONTRACTOR BEFORE SUBMITTAL. THE ENGINEER'S REVIEW IS TO BE FOR CONFORMANCE WITH THE DESIGN CONCEPT AND GENERAL COMPLIANCE WITH THE RELEVANT CONTRACT DOCUMENTS. THE ENGINEER'S REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE SOLE RESPONSIBILITY TO REVIEW, CHECK AND COORDINATE THE SHOP DRAWINGS PRIOR TO SUBMISSION. THE CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, DIMENSIONS, ETC.
11. SUBMIT SHOP DRAWINGS IN THE FORM OF DIGITAL (PDF) COPIES. IN NO CASE SHALL REPRODUCTION OF THE CONTRACT DRAWINGS BE USED AS SHOP DRAWINGS. AS A MINIMUM, SUBMIT THE FOLLOWING ITEMS FOR REVIEW: (MIN. REVIEW TIME IS TWO WEEKS)
    a. CONCRETE MIX DESIGN(S).
    b. STRUCTURAL STEEL SHOP DRAWINGS.
    c. PRE-ENGINEERED METAL BUILDING SYSTEM. (SUBMIT FOR RECORD ONLY)
    d. REBAR SHOP DRAWINGS
12. CONTRACTORS SHALL VISIT THE SITE PRIOR TO BID TO ASCERTAIN CONDITIONS WHICH MAY ADVERSELY AFFECT THE WORK OR COST THEREOF.

FOUNDATION:

1. ALL FOOTINGS HAVE BEEN DESIGN BASED UPON AS ASSUMED SOIL BEARING PRESSURE OF 2,000 PSF PER THE GEOTECHNICAL EVALUATION REPORT BY SME DATED APRIL 29, 2024. ALL FOOTINGS SHALL BEAR ON UNDISTURBED, FIRM NATURAL SOIL OR COMPACTED FILL. ALL FOUNDATION EXCAVATIONS SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER / TESTING AGENCY PRIOR TO POURING FOUNDATION CONCRETE.
2. TOP OF FOOTING ELEVATION SHALL BE AS SHOWN ON THE FOUNDATION SCHEDULE. THESE ELEVATIONS ARE A MAXIMUM AND SHALL BE LOWERED AS REQUIRED TO OBTAIN THE REQUIRED DESIGN BEARING PRESSURE.
3. ALL FOUNDATION CONCRETE SHALL OBTAIN A 28 DAY COMPRESSIVE STRENGTH AS SCHEDULED. ALL CONCRETE THAT WILL BE PERMANENTLY EXPOSED TO WEATHER SHALL BE AIR ENTRAINED WITH AN ADMIXTURE THAT CONFORMS TO ASTM C-260.
4. UNLESS OTHERWISE NOTED, THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
    a. CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH - 3"
    b. CONCRETE EXPOSED TO EARTH OR WEATHER:
        #6 THROUGH #18 BARS - 2"
        #5 BAR, W31 OR D31 WIRE & SMALLER - 1 ½"
8. ALL REINFORCING MARKED CONTINUOUS (CONT.) ON THE PLANS AND DETAILS SHALL BE LAPPED 36 x BAR DIAMETERS AT SPLICES UNLESS OTHERWISE NOTED.
9. NO UNBALANCED BACKFILLING SHALL BE DONE AGAINST FOUNDATION WALLS UNLESS WALLS ARE SECURELY BRACED AGAINST OVERTURNING EITHER BY TEMPORARY BRACING OR BY PERMANENT CONSTRUCTION.
10. PRIOR TO COMMENCING ANY FOUNDATION WORK, COORDINATE WORK WITH ANY EXISTING UTILITIES. FOUNDATIONS SHALL BE LOWERED WHERE REQUIRED TO AVOID UTILITIES.
11. UPON COMPLETION OF THE SUB GRADE PREPARATION THE SITE CAN BE RAISED TO THE PROPER ELEVATION WITH PROPERLY PLACED AND COMPACTED ENGINEERED FILL. ALL COMPACTED BACKFILL SHALL BE A CLEAN, UNIFORM GRADED, GRANULAR MATERIAL AND FREE OF FROZEN CHUNKS, ORGANICS, DEBRIS OR OTHER DELETERIOUS MATERIALS. ALL COMPACTED BACKFILL SHALL BE PLACED IN NO MORE THAN 10" LOOSE LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D-1557 (MODIFIED PROCTOR).

CONCRETE:

1. ALL CONCRETE CONSTRUCTION SHALL BE PERFORMED ACCORDING TO THE LATEST APPLICABLE EDITION OF THE ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" AND ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY." HOT WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 305. COLD WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 306.1. FOLLOW ACI 308.1 STANDARD SPECIFICATION FOR CURING CONCRETE.
2. PROVIDE CONCRETE TO THE FOLLOWING CRITERIA:

AGGREGATE TYPE:	NORMAL WEIGHT
AGGREGATE SIZE (MAXIMUM)	1-1/2 INCHES
AIR CONTENT	6 TO 8 PERCENT PER ASTM C-260 (INTERIOR SLAB/FTG. 1.5%)
SLUMP	4-1/2" PLUS OR MINUS 1"

3. BEFORE PLACING CONCRETE REFER TO ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR LOCATION OF PIPE SLEEVES, EMBEDDED ITEMS, OPENINGS, EQUIPMENT PADS, ELECTRICAL CONDUITS, RECESSES, DRAINS, ETC. ALL OPENINGS FOR PIPE, CONDUITS, ETC. SHALL BE SLEEVED MINIMUM SLEEVE SPACING SHALL BE 3 SLEEVE DIAMETERS.
4. ALL CONCRETE SHALL ATTAIN THE FOLLOWING 28 DAY COMPRESSIVE STRENGTHS.

- FOOTINGS, GRADE BEAMS	4000 PSI
- SLAB ON GRADE	4000 PSI
- MEZZANINE	4000 PSI
- PIERS	4000 PSI

5. EXTERIOR SLABS TO HAVE LIGHT BROOM FINISH PERPENDICULAR TO TRAFFIC DIRECTION.
6. ALL REINFORCING STEEL SHALL CONFORM TO ASTM 615, 60 KSI YIELD GRADE BILLET STEEL DEFORMED BARS, UNCOATED FINISH. SPLICES FOR DEFORMED BARS SHALL BE CLASS B WITH APPLICABLE INCREASES FOR BAR SPACING, COVER, TOP BAR EFFECT ETC. PER ACI 318
7. PROVIDE BENT CORNER BARS IN ALL WALLS AND FOOTINGS OF THE SAME SIZE AND NUMBER AS THE CONTINUOUS REINFORCEMENT.
8. WIRE MESH SHALL CONFORM TO ASTM A185 WITH MINIMUM LAPS OF 8". ALL WELDED WIRE FABRIC SHALL BE IN ACCORDANCE WITH ASTM A-185. LAP ADJOINING PIECES AT LEAST ONE FULL MESH.
9. PROVIDED CONCRETE SLABS AS LISTED:
    - INTERIOR SLAB: 6" SLAB REINFORCED WITH (1) LAYER OF 6x6 - W4xW4 WELDED WIRE FABRIC WITH 4,000 PSI MIX CONCRETE OVER A 6 MIL POLYETHYLENE VAPOR BARRIER AND A MIN. OF 6" COMPACTED GRANULAR BASE. EQUAL IN THE AGGREGATE BASE PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS
    - EXTERIOR SLABS:8" SLAB REINFORCED WITH (2) LAYERS OF 6x6 - W4xW4 WELDED WIRE FABRIC WITH 4,000 PSI MIX CONCRETE - REFER TO CIVIL DOCUMENTS FOR EXTERIOR PAVEMENT SECTIONS.
10. ALL CONCRETE ADD MIXTURES SHALL BE IN ACCORDANCE WITH ASTM C494
11. UNLESS OTHERWISE APPROVED, ALL WELDED WIRE FABRIC SHALL BE BLOCKED INTO THE POSITION INDICATED WITH PRECAST CONCRETE BLOCKS HAVING A COMPRESSIVE STRENGTH EQUAL TO THAT OF THE SLAB.
12. WALKWAYS AND OTHER EXTERIOR SLABS ARE NOT INDICATED ON THE STRUCTURAL DRAWINGS. SEE THE SITE PLAN AND ARCHITECTURAL DRAWINGS FOR LOCATIONS, DIMENSIONS, ELEVATIONS, JOINTING DETAILS AND FINISH DETAILS. PROVIDE 4" WALKS REINFORCED WITH 6x6 - W1 .4xW1.4 WWF UNLESS OTHERWISE NOTED.
13. THE USE OF POLYPROPYLENE FIBERS (IN LIEU OF WELDED WIRE FABRIC) IS PROHIBITED WITHOUT THE WRITTEN AUTHORIZATION OF THE ENGINEER.
14. SEE THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DEPRESSED SLAB AREAS AND DRAINS. SLOPE SLAB TO DRAINS WHERE SHOWN.
15. CONCRETE SHALL BE TESTED BY AN INDEPENDENT TESTING AGENCY. A SET OF (4) CONCRETE TEST CYLINDERS SHALL BE MADE AND TESTED FOR COMPRESSION STRENGTH AT 7 AND 28 DAYS FOR EVERY 30 CUBIC YARDS OF CONCRETE CAST. TEST (1) CYLINDER AT 7 DAYS, (2) AT 28 DAYS, AND HOLD ONE A S SPARE. SEE NOTE 2 FOR AIR ENTRAINMENT REQUIREMENTS. ALSO SLUMP AND UNIT WEIGHT TESTS SHALL BE PERFORMED EVERY OTHER TRUCK LOAD.

CONCRETE MASONRY

1. THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING & CONSTRUCTION OF ALL MASONRY:
    A. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES ACI 530
    B. SPECIFICATIONS FOR MASONRY STRUCTURES ACI 530.1
2. ALL MASONRY SHALL HAVE A COMPRESSIVE STRENGTH, F'm = 2500 PSI
3. GROUT SHALL HAVE A 28 DAY STRENGTH OF F'c=3000 PSI, PREMIXED TYPE IN ACCORDANCE WITH ASTM C94 OR MIXED IN ACCORDANCE WITH ASTM C476.
4. ALL CONCRETE MASONRY UNITS SHALL BE ASTM C-90 GRADE N, TYPE I UNITS MEDIUM WEIGHT w/ INTEGRAL WATER REPELLANT UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL DRAWINGS FOR FURTHER DETAILS WITH REGARD TO FACE FINISH.
5. REINFORCING BARS SHALL BE ASTM A615/A615M, GRADE 60, DEFOREMD BILLET BARS, UNCOATED FINISH. LAP MINIMUM 40 BAR DIAMETERS FOR #5 BARS AND SMALLER, LAP MINIMUM 52 BAR DIAMETERS FOR BARS LARGER THAN #5 UNLESS NOTED OTHERWISE.
6. HORIZONTAL WALL REINFORCING: PER ASTM A-82, 9 GA, HOT DIPPED GALVANIZED PER ASTM A-153 (1.5 OZRER SF.), LADDER TYPE, EQUAL TO DUR-A-WAL. BED JOINTS AT 16" O.C. AND AT 1ST AND 2N BED JOINTS AT BOTTOM OF WALL, TOP OF WALL, ABOVE LINTELS AND BELOW SILLS. REINFORCING CONTINUOUS EXCEPT AT VERTICAL CONTROL JOINTS. SIDE RODS LAPPED A MINIMUM OF 6" AT SPLICES. PROVIDE PREFABRICATED CORNERS AND TEES.
7. IN ADDITION TO ALL OTHER REINFORCING IN MASONRY WALLS PROVIDE MINIMUM (1) - #6 EACH SIDE OF MASONRY OPENINGS, CONTROL JOINTS AND AS SHOWN, IN GROUT FILLED BLOCK CORES.
8. VERTICAL BAR REINFORCING: PLACE ACCURATELY AND MECHANICALLY HOLD IN POSITION WHILE GROUTING. GROUTING SHALL BE MECHANICALLY CONSOLIDATED IN PLACE.
9. LAY MASONRY UNITS IN RUNNING BOND WITH 3/8" CONCAVE JOINTS. UNLESS OTHERWISE NOTED
10. PROVIDE COMPLETELY GROUTED UNITS:
    10.1. BELOW GRADE MASONRY
    10.2. UNDER PRECAST FLOOR PLANK BEARING
    10.3. UNDER CAST-IN-PLACE CONCRETE FLOOR BEARING
    10.4. UNDER BRICK VENEER BEARING
    10.5. UNDER ANY CHANGE OF WALL THICKNESS, I.E.: 8" ON TOP OF 12"
    10.6. UNDER STEEL JOIST OR BEAM BEARING.
11. CONTROL AND EXPANSION JOINTS: INSTALL CONTROL AND EXPANSION JOINTS AT THE FOLLOWING MAXIMUM SPACING, UNLESS OTHERWISE INDICATED ON DRAWINGS: (VERTICAL REINFORCEMENT SHALL BE PROVIDED ON BOTH SIDES OF JOINT.)
    11.1. EXTERIOR WALLS: 20 FEET ON CENTER AND WITHIN 24 INCHES ON ONE SIDE OF EACH INTERIOR AND EXTERIOR CORNER.
    11.2. INTERIOR WALLS: 30 FEET ON CENTER.
    11.3. AT CHANGES IN WALL HEIGHT.
    11.4. DO NOT CONTINUE HORIZONTAL JOINT REINFORCEMENT THROUGH CONTROL AND EXPANSION JOINTS.
    11.5. CONCRETE MASONRY: FORM CONTROL JOINT WITH SHEET BUILDING PAPER BOND BREAKER FITTED TO ONE SIDE OF HOLLOW CONTOUR END OF BLOCK UNIT. FILL RESULTANT CORE WITH GROUT FILL. RAKE JOINT AT EXPOSED UNIT FACES FOR PLACEMENT OF BACKER ROD AND SEALANT.
    11.6. SIZE CONTROL AND EXPANSION JOINTS TO PROVIDE MINIMUM 3/8" WIDTH.
    11.7. SEE ARCHITECTURAL DRAWINGS FOR MASONRY CONTROL JOINTS LOCATIONS

SPECIAL INSPECTIONS:

CONCRETE: PROVIDE VERIFICATION AND INSPECTION OF CONCRETE PER 215 MBC TABLE 1705.3

CONCRETE MASONRY: PROVIDE VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION PER 2015 MBC SECTION 1705.4

METAL BUILDING: PROVIDE VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION PER 2015 MBC SECTION 1705.4

LOCATION	BUILDING SEGMENT	MORTAR TYPE	
		RECOMMENDED	ALTERNATIVE
EXTERIOR, ABOVE GRADE	LOAD-BEARING WALLS NON-LOAD BEARING WALLS PARAPET WALLS	N O N	S OR M N OR S S
EXTERIOR, AT OR BELOW GRADE	FOUNDATION WALLS, RETAINING WALLS, MANHOLES, SEWERS, PAVEMENTS, WALKS AND PATIOS	S	M OR N
INTERIOR	LOAD BEARING WALLS NON-LOAD BEARING PARTITIONS	N O	S OR M N

MORTAR SHALL HAVE INTEGRAL WATER REPELLANT

PIER SCHEDULE

MARK	DIMENSIONS W	DIMENSIONS L	REINFORCING BARS	HORIZONTAL TIES	T.O. PIER ELEV.	REMARKS
P-1	1'-8"	1'-6"	(10) #6 BARS	#3 TIES @ 12" (U.N.O)	100'-0"	___
P-2	1'-8"	1'-4"	(8) #6 BARS	#3 TIES @ 12" (U.N.O.)	100'-0"	___
P-3	1'-8"	1'-10"	(10) #6 BARS	#3 TIES @ 12" (U.N.O)	100'-0"	___
P-4	1'-6"	2'-0"	(10) #6 BARS	#4 TIES @ 12" (U.N.O)	100'-0"	___
P-5	1'-10"	2'-0"	(12) #6 BARS	#4 TIES @ 12" (U.N.O)	100'-0"	___
P-6	1'-8"	1'-4"	(8) #6 BARS	#3 TIES @ 12" (U.N.O.)	100'-0"	___
P-7	2'-0"	2'-0"	(14) #6 BARS	#4 TIES @ 12" (U.N.O)	100'-0"	___
P-8	2'-2"	3'-0"	(16) #6 BARS	#3 TIES @ 12" (U.N.O)	103'-0"	___
P-9	2'-2"	2'-0"	(16) #6 BARS	#3 TIES @ 12" (U.N.O)	103'-0"	___
P-10	2'-0"	2'-0"	(14) #6 BARS	#3 TIES @ 12" (U.N.O)	103'-0"	___
P-11	2'-0"	2'-0"	(14) #6 BARS	#3 TIES @ 12" (U.N.O.)	103'-0"	___

NOTES:
1. 3/4" DIA. ANCHOR BOLTS SHALL HAVE MIN. 18" EMBED. ALL ANCHOR BOLTS TO BE ASTM F1554 GR. 36
2. 1" DIA. ANCHOR BOLTS SHALL HAVE A MIN. 24" EMBED. ALL ANCHOR BOLTS TO BE ASTM F1554 GR. 36
3. SEE PIER SECTIONS ON SHEET S3.01 FOR ADDITION SHEAR TIES IN TOP 5".
4. VERIFY TOP OF PIER WITH METAL BUILDING MANUFACTURE BASE PLATE ELEVATION.

FOOTING SCHEDULE

MARK	DIMENSIONS W	DIMENSIONS L	DIMENSIONS D	REINFORCING BARS	T.O. FTG. ELEV. U.N.O.	REMARKS
F-1	4'-6"	4'-6"	1'-0"	(4) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-2	5'-6"	5'-6"	1'-0"	(5) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-3	5'-6"	5'-6"	1'-0"	(7) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-4	7'-6"	7'-6"	1'-0"	(7) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-5	8'-0"	8'-0"	1'-0"	(8) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-6	8'-6"	8'-6"	1'-0"	(8) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-7	9'-0"	9'-0"	1'-0"	(9) #5 BARS EA. WAY TOP & BTM.	96'-8"	——
F-8	1'-6"	CONT.	1'-0"	(2) #5 BARS CONT.	96'-8"	WALL FTG.
F-9	1'-4"	CONT.	1'-0"	(2) #5 BARS CONT.	96'-8"	STOOP

DESIGN CRITERIA:

METAL BUILDING COLLATERAL LOAD: 10 PSF

SNOW LOADS

GROUND SNOW LOAD	PG = 30 PSF
SNOW EXPOSURE FACTOR	CE = 0.9
THERMAL FACTOR, HEATED STRUCTURE	CT = 1.0
THERMAL FACTOR, CANOPY	CT = 1.2
BUILDING CATEGORY	II
IMPORTANCE FACTOR	IS = 1.0
DRIFTED SNOW PER ASCE 7	

WIND LOADS

BASIC WIND SPEED	115 MPH
EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT	±0.18
COMPONENTS AND CLADDING PER ASCE 7	

SEISMIC DESIGN DATA

USE GROUP	II
SITE CLASS	D
SEISMIC DESIGN CATEGORY	B
SEISMIC IMPORTANCE FACTOR	1.0
SEISMIC INFORMATION	Ss: 0.081 S1: 0.045
DESIGN SPECTRAL RESPONSE Sds/Sd1	0.086/ 0.072
BASIC SEISMIC FORCE RESISTING SYSTEM	STEEL ORDINARY CONCENTRICALLY BRACED FRAMES
DESIGN BASE SHEAR	0.01xw
SEISMIC RESPONSE COEFFICIENT	R=2
EARTHQUAKE LOADS CALCULATED PER "EQUIVALENT LATERAL FORCE PROCEDURE"	

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	JWG	JWG	JJ	JWG	P

SIGNATURE

NAME
Jeff Quider

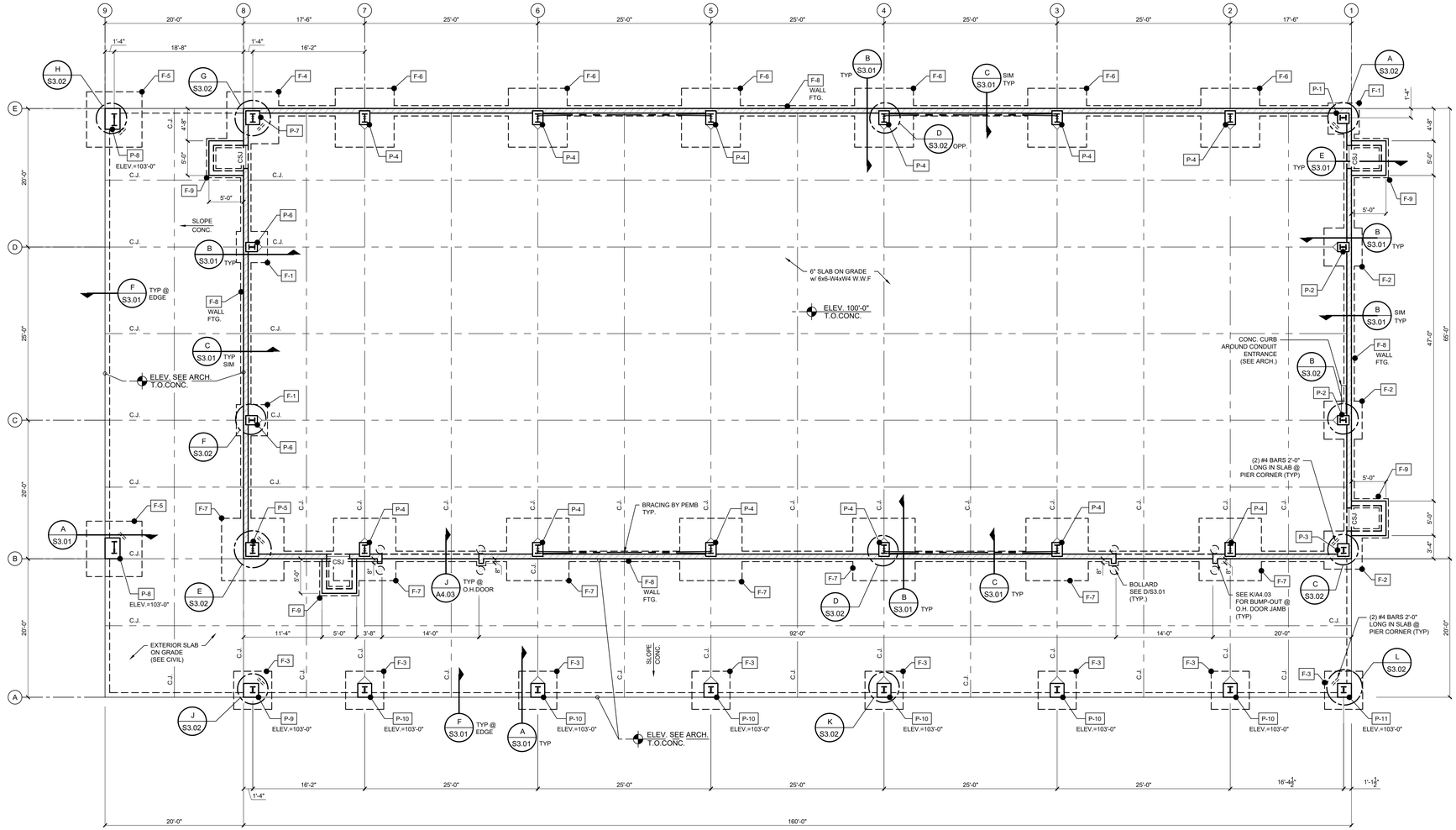
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

GENERAL NOTES AND SCHEDULE

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SUBLOCATION:
SHEET: S1.00
REV.: 0

SHEET SIZE: ARCH-D 24x36



NORTH

FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

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	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	JWG	JWG	JJ	JWG	P

SIGNATURE
NAME: Jeff Quider
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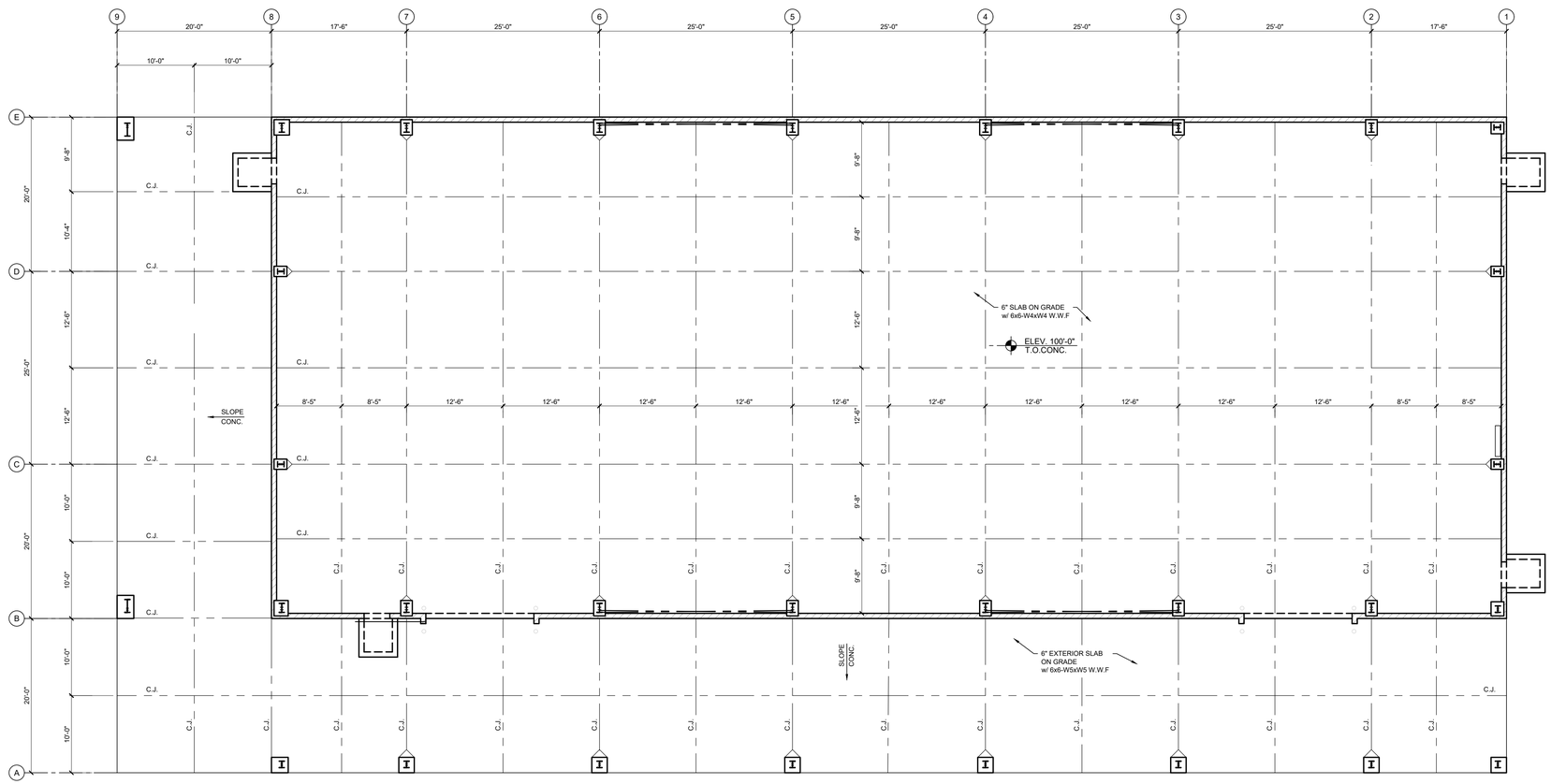
5300 ENTERPRISE DR., LANSING, MI 48911

FOUNDATION PLAN

SUBLOCATION:
SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SHEET: S2.01
REV.: 0

SHEET SIZE: ARCH-D 24x36



NORTH

CONTROL JOINT PLAN

SCALE: 1/8" = 1'-0"

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	JWG	JWG	JJ	JWG	P

SIGNATURE
NAME
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5300 ENTERPRISE DR., LANSING, MI 48911

CONTROL JOINT PLAN

SCALE: AS NOTED
JOB: PROJ-001149
DRAWING NO.
SHEET: S2.02
REV.: 0
SUBLOCATION:

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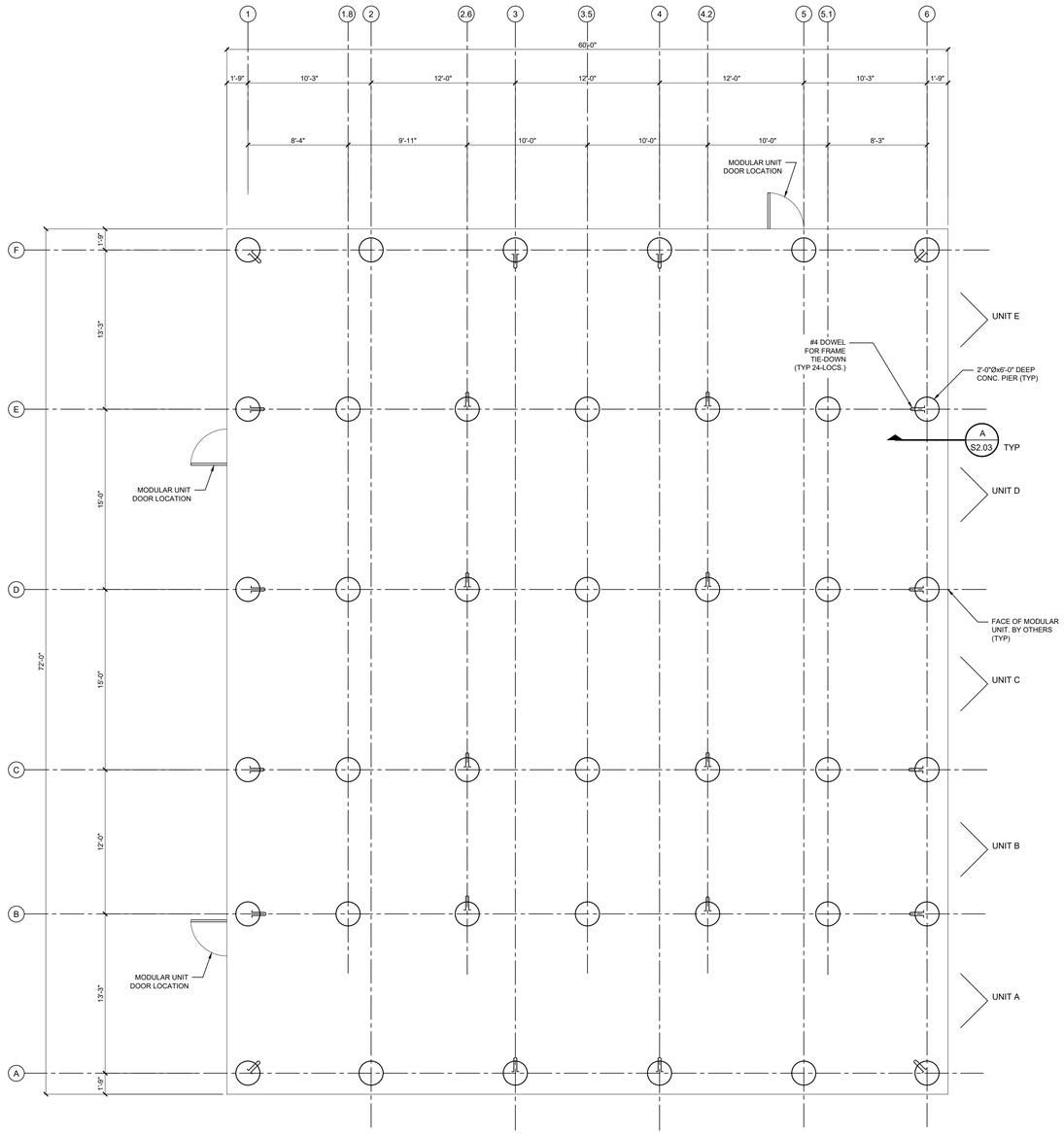
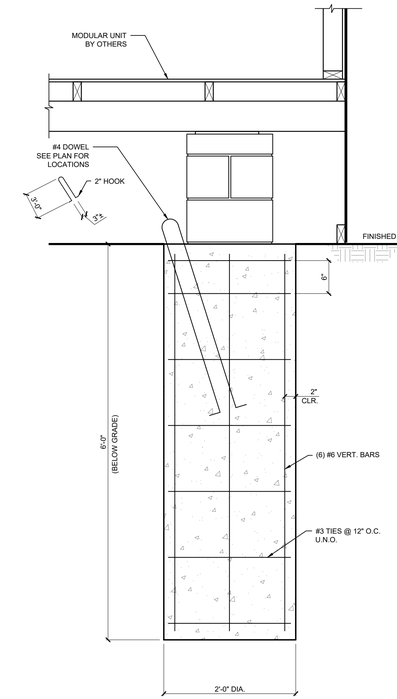


NORTH

MODULAR OFFICE FOUNDATION PLAN

SCALE: 1/8" = 1'-0"



A S2.03 SECTION

SCALE: 1"-1'-0"

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	JWG	JWG	JJ	JWG	P

SIGNATURE

NAME: Jeff Quider

MICHIGAN P.E. No.

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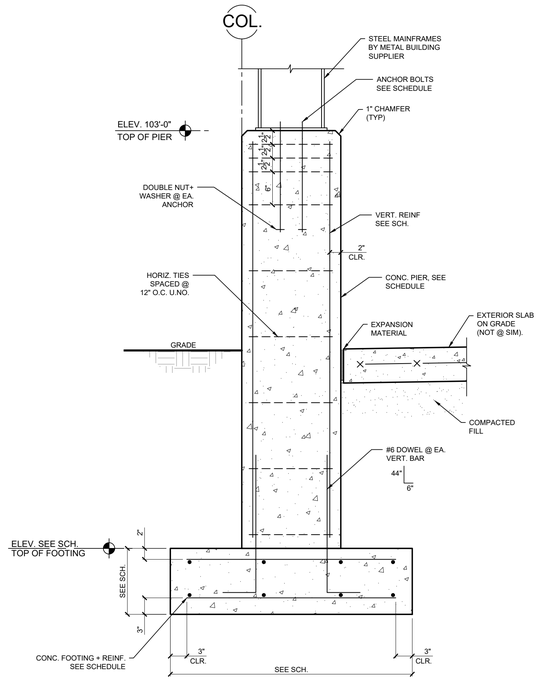
MODULAR OFFICE FOUNDATION PLAN

SUBLOCATION:

SCALE: AS NOTED | DRAWING NO. | SHEET: S2.03 | REV.: 0

JOB: PROJ–001149

SHEET SIZE: ARCH-D 24x36



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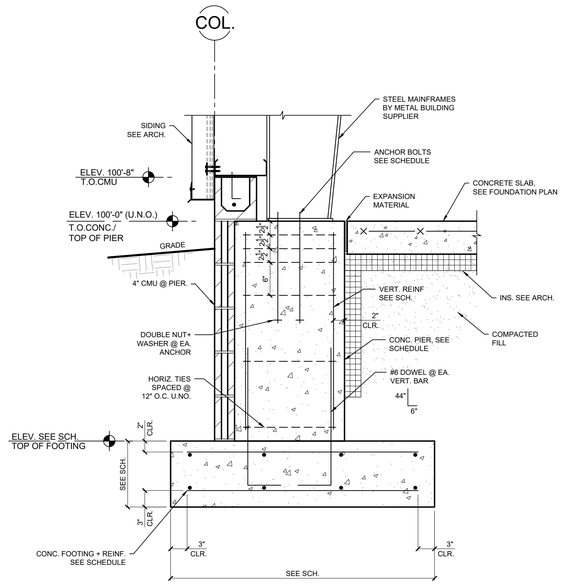

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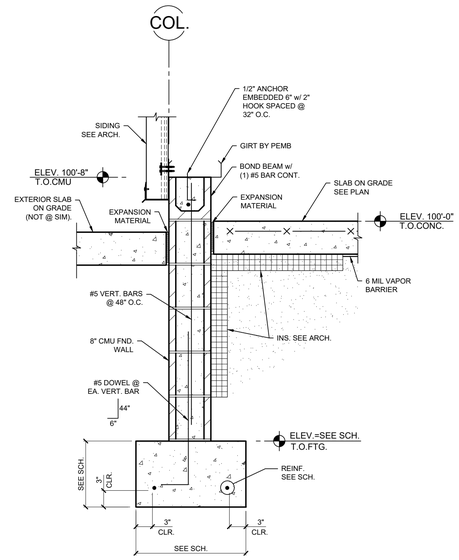

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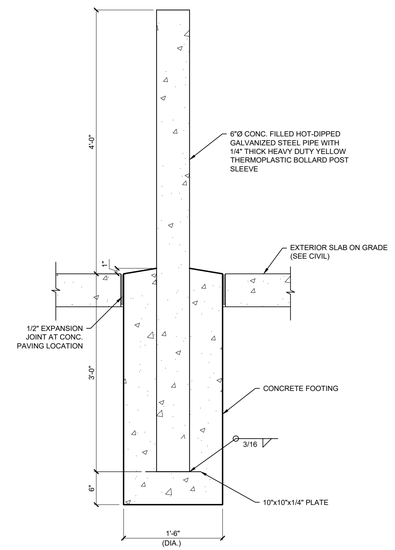

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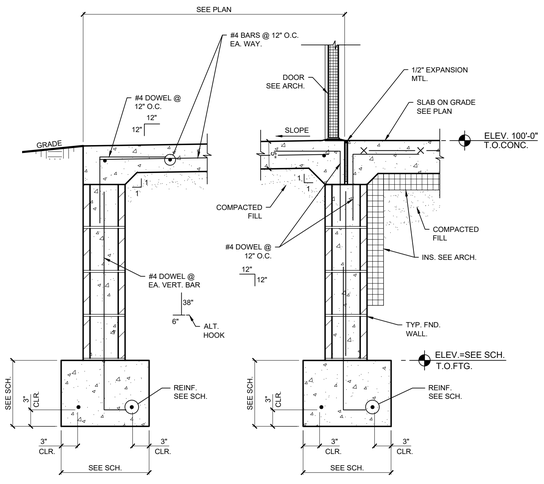

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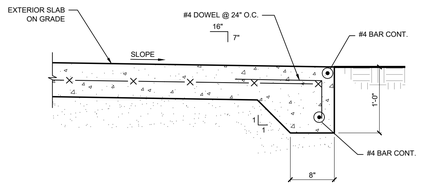

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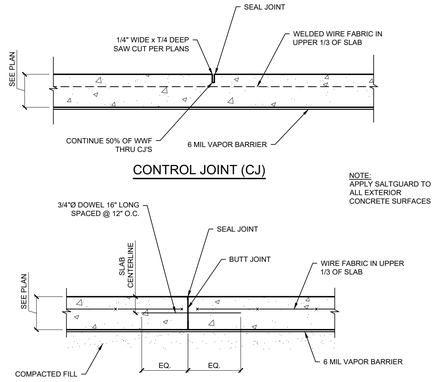

G S3.01 TYP. SLAB ON GRADE
SCALE: 1 1/2"-1'-0"

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
NAME
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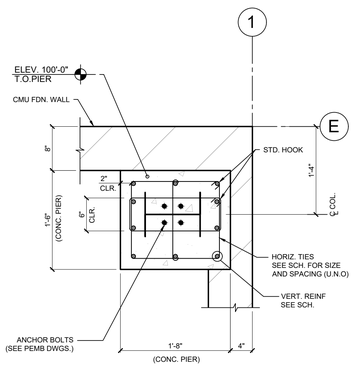
SECTIONS

SCALE: AS NOTED
JOB: PROJ-001149
SUBLOCATION:
DRAWING NO.
SHEET S3.01
REV. 0

SHEET SIZE: ARCH-D 24x36



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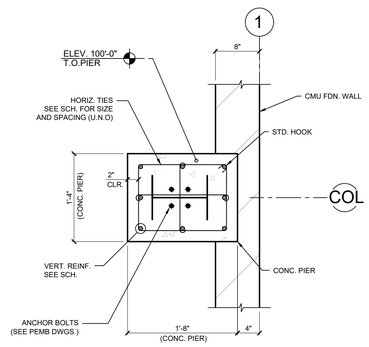

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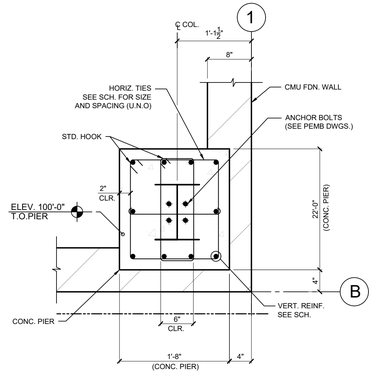

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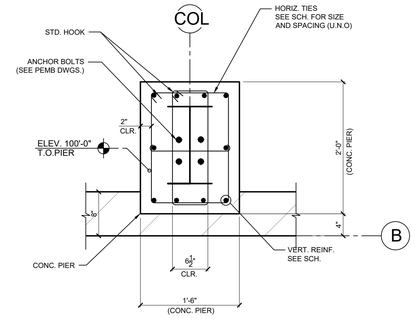

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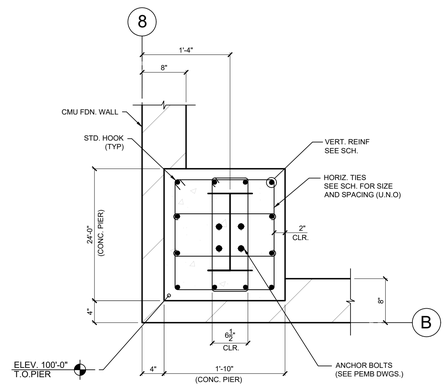

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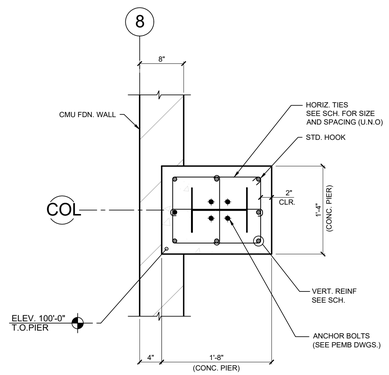

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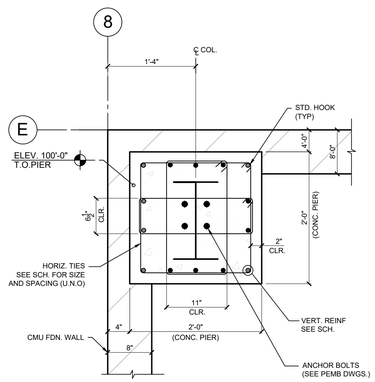

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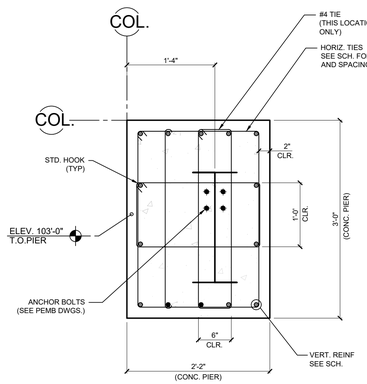

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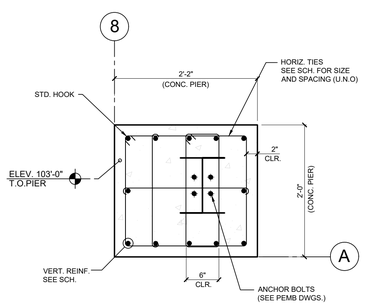

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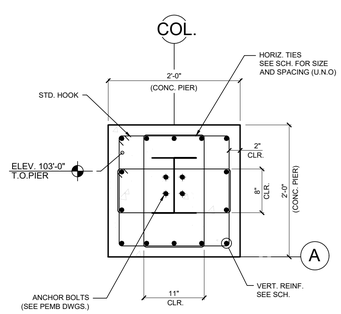

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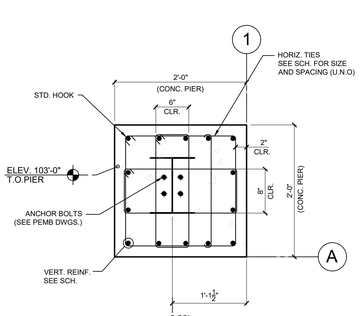

L S3.02 DETAIL (PIER P-11)
SCALE: 1"=1'-0"

Pumford CONSTRUCTION
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Saginaw, Michigan 48604
Phone: (989) 754-6262
Fax: (989) 754-6263
www.Pumford.com

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
0	3/6/25	ISSUED FOR RECORD – GCON SOUTHWEST – PROJ – 001149	JWG	JWG	JJ	JWG	P

SIGNATURE
NAME
Jeff Quider
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST
5300 ENTERPRISE DR., LANSING, MI 48911

PIER DETAILS

SUBLOCATION:
SCALE: AS NOTED
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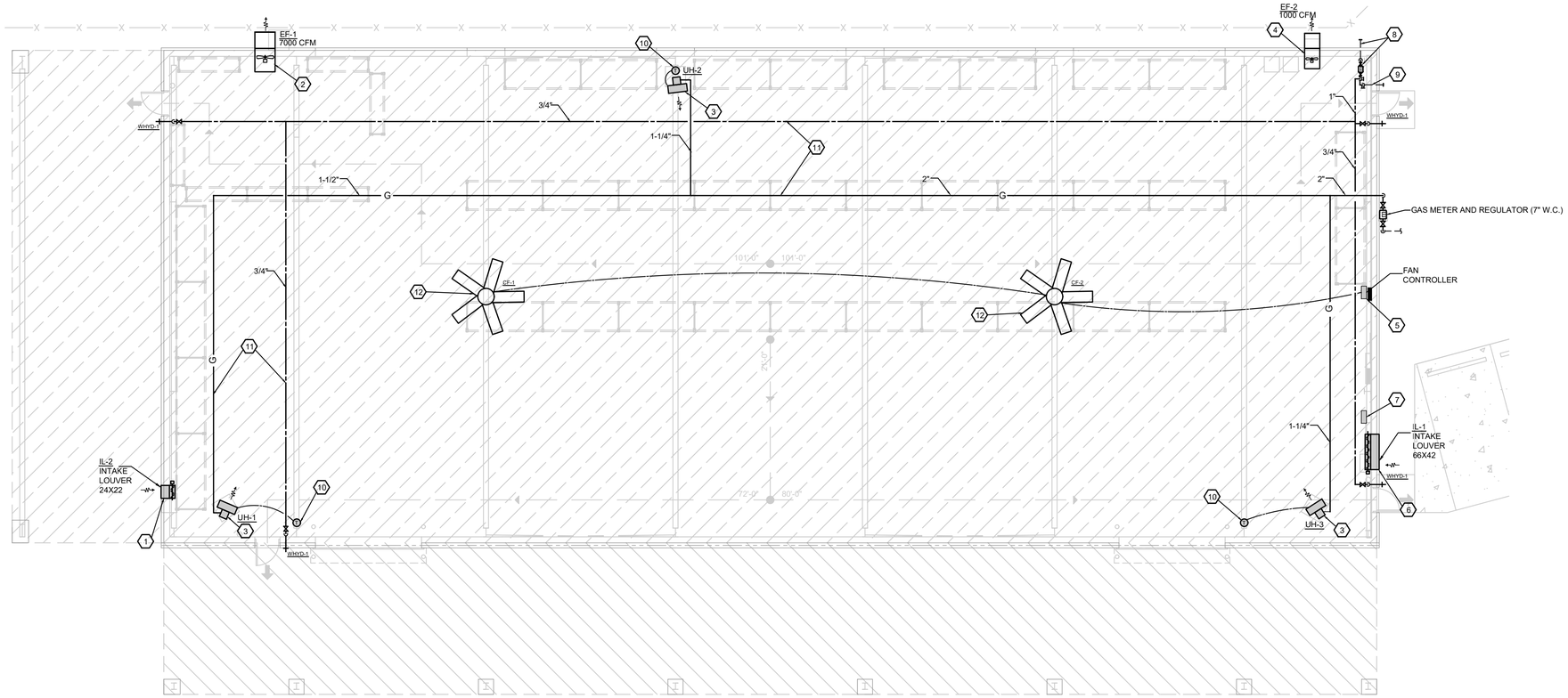
DRAWING NO.
SHEET: S3.02
REV.: 0



FLOOR PLAN - HVAC AND PIPING

NORTH

1/8"=1'-0"

KEYED NOTES

1. INTAKE LOUVER IL-2 SHALL BE INTERLOCKED WITH EXHAUST FAN EF-2 TO OPEN WHENEVER THE EXHAUST FAN OPERATES. INTAKE LOUVER SHALL BE INSTALLED 10'-0" AFF.
2. SIDEWALL EXHAUST FAN EF-1 INSTALLED APPROXIMATELY 10'-0" ABOVE FINISHED FLOOR AND MOUNTED FROM THE WALL. EXHAUST FAN SHALL BE INTERLOCKED WITH INTAKE LOUVER IL-1. EXHAUST FAN SHALL BE PROVIDED WITH WALL MOUNTED SPEED DIAL FOR MANUAL OPERATION. PROVIDE ALL REQUIRED WIRING, CONTROL RELAYS, TRANSFORMERS, ETC. AS REQUIRED.
3. GAS FIRED UNIT HEATER INSTALLED AT 10'-0" ABOVE FINISHED FLOOR AND PER MANUFACTURER'S RECOMMENDATIONS. ROUTE VENT AND COMBUSTION AIR PIPING THRU ROOF AND TERMINATE 24" ABOVE ROOF. UTILIZE CONCENTRIC VENT KIT SUPPLIED BY UNIT HEATER MANUFACTURER. PROVIDE A 7-DAY PROGRAMMABLE THERMOSTAT FOR EACH UNIT HEATER.
4. SIDEWALL EXHAUST FAN EF-2 MOUNTED AT 10'-0" ABOVE FINISHED FLOOR. FAN SHALL BE CONTROLLED BY OCCUPANCY SENSOR TO TURN ON WHENEVER THE SPACE IS OCCUPIED. EXHAUST FAN SHALL BE INTERLOCKED WITH IL-2. PROVIDE ALL REQUIRED WIRING, CONTROL RELAYS, TRANSFORMERS, ETC. AS REQUIRED.
5. HVLS FAN CONTROLLER PROVIDED BY FAN MANUFACTURER. MOUNT AT 48" ABOVE FINISHED FLOOR.
6. INTAKE LOUVER IL-1 SHALL BE INTERLOCKED WITH EXHAUST FAN EF-1 TO OPEN WHENEVER THE EXHAUST FAN OPERATES. INTAKE LOUVER SHALL BE INSTALLED 10'-0" AFF.
7. EXHAUST FAN EF-1 CONTROL DIAL MOUNTED AT 48" ABOVE FINISHED FLOOR.
8. 1" WATER SERVICE ROUTED BELOW GRADE TO CONNECT TO SERVICE PIPING 5'-0" BEYOND BUILDING WALL. THE SITE CIVIL CONTRACTOR SHALL EXTEND TO EXISTING DOMESTIC WATER SERVICE MAIN. COORDINATE INVERT ELEVATIONS WITH SITE CIVIL CONTRACTOR. MINIMUM INVERT ELEVATION SHALL BE 60" BELOW GRADE.
9. 1" DOMESTIC COLD WATER PIPING ROUTED DOWN TO 60" BELOW GRADE AND ROUTED TO CONNECTIONS AT OFFICE BUILDING.
10. 7-DAY PROGRAMMABLE THERMOSTAT FOR UNIT HEATER SHALL BE INSTALLED AT 48" AFF.
11. INSTALL NEW PIPING HIGH IN SPACE, TIGHT TO BOTTOM ROOF STEEL.
12. HVLS FAN INSTALLED AT APPROXIMATELY 12'-0" ABOVE FINISHED FLOOR. SUPPORT FANS FROM STEEL PURLIN.

NATURAL GAS LOAD SUMMARY

		MIN-MAX PRESSURE
UH-1	300 CFH	5"-14" W.C.
UH-2	300 CFH	5"-14" W.C.
UH-3	300 CFH	5"-14" W.C.
GAS SUPPLY REQUIREMENTS	900 CFH	7" W.C.

GENERAL MECHANICAL NOTES

1. PIPING AND DUCTWORK IS PERMITTED WITHIN 3 FEET OF ELECTRICAL PANEL ONLY IF MINIMUM 7 FEET ABOVE FINISHED FLOOR AND NOT ROUTED DIRECTLY ABOVE PANEL, OTHERWISE DUCTWORK OR PIPING SHALL BE 3 FEET FROM FACE OF PANEL. REFER TO ELECTRICAL DRAWING AND COORDINATE WITH ELECTRICAL CONTRACTOR FOR PANEL LOCATIONS.
2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EQUIPMENT INTERLOCKS AND ANY OTHER TEMPERATURE CONTROL WORK.

TEST AND BALANCE NOTE

1. ALL AIR SYSTEMS SHALL BE PROPERLY BALANCED AND TESTED FOR ADHERENCE TO DESIGN FLOW RATES BY INDEPENDENT TESTING AND BALANCING CONTRACTOR.
2. TESTING AND BALANCING CONTRACTOR SELECTION SUBJECT TO OWNER APPROVAL
3. BALANCE REPORTS WILL BE SUBMITTED TO THE OWNER UPON COMPLETION. INCLUDE A SYSTEM MAP FOR REFERENCE.

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	MJV	MJV	GRS	GRS	MAI

SIGNATURE

NAME
GARY STEFFEN

MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST – LANSING
1530 E. JOLLY RD., LANSING, MI 48911

FLOOR PLAN – HVAC AND PIPING

SCALE: AS NOTED
JOB: 240435P
DRAWING NO.
UNIT:
SHEET M1.01
REV. A

SHEET SIZE: ANSI–D 22x34
7/18/2025 1:55 PM RMCCARTHY 1:96
F:\4-PLMF\2024-4102-2024-4102 CE\CO LANSING GCON SOUTHWEST\2024-4102-M-M1 01 HVAC AND PIPING

MECHANICAL SCHEDULES

LOUVER SCHEDULE

INTAKE LOUVERS : GRENHECK #ESD-435 LOUVER/DAMPER EXTRUDED ALUMINUM, 4" DEEP, 35 DEGREE FIXED TYPE BLADES. FRAME SHALL BE 4" DEEP, .081" THICK EXTRUDED ALUMINUM. BLADES SHALL BE .081" THICK EXTRUDED ALUMINUM. BIRDSCREEN SHALL BE PROVIDED ON THE INTERIOR, BE REMOVABLE FOR CLEANING AND BE CONSTRUCTED OF ALUMINUM. LOUVER SHALL CARRY THE AMCA CERTIFIED RATINGS SEAL FOR BOTH WATER PENETRATION AND AIR PERFORMANCE. FURNISH FACTORY FINISH (KYNAR 500) ENAMEL PAINT WITH COLOR MILL ALUMINUM.. EACH LOUVER/DAMPER SHALL BE PROVIDED WITH A 120 VOLT ELECTRIC ACTUATOR MODEL #VCD-23.

HVLS FAN SCHEDULE

CF-1,2:SKYBLADE TURBOPROP SERIES MODEL #TBP-1030. 10' FAN DIAMETER, 120/1/60, 5.2 FLA, 1.35 HP, MAX SPEED 70 RPM, 115 LBS. PROVIDE A DOUBLE YOKE CONTROLLER WHICH INCLUDES FWD/OFF/REV, 0-10 SPEED CONTROLLER, NEMA 4X ENCLOSURE WITH 100' WIRE SUPPLIED BY FACTORY. PROVIDE WITH MOUNTING ACCESSORIES AND ADDITIONAL CONTROL WIRING AS REQUIRED.

PLUMBING SCHEUDLES

WHYD-1: EXTERIOR WALL HYDRANT: ZURN Z-1321-6, EXTERIOR RECESSED BRONZE WALL HYDRANT, AUTOMATIC DRAINING, VACUUM BREAKER BACKFLOW PROTECTOR, FREEZELESS FROST-PROOF WALL HYDRANT WITH LOOSE KEY AND ¾" MALE HOSE THREAD.

TEMPERATURE CONTROL SEQUENCE OF OPERATIONS

EXHAUST FAN EF-1

RUN CONDITIONS: SWITCH WITH SPEED DIAL

THE EXHAUST FAN SHALL OPERATE BY MANUAL CONTROL.

INTAKE LOUVER IL-1

RUN CONDITIONS:

THE INTAKE LOUVER MOTORIZED DAMPER SHALL BE INTERLOCKED WITH EF-1 TO OPEN WHEN EF-1 IS OPERATING.

EXHAUST FAN EF-2

RUN CONDITIONS - OCCUPANCY SENSOR

THE FAN WILL RUN WHEN THE SPACE IS OCCUPIED

INTAKE LOUVER IL-2

RUN CONDITIONS:

THE INTAKE LOUVER MOTORIZED DAMPER SHALL BE INTERLOCKED WITH EF-2 TO OPEN WHEN EF-2 IS OPERATING.

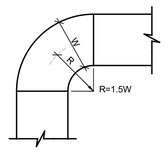
UNIT HEATERS

RUN CONDITIONS - SPACE THERMOSTAT:

THE UNIT SHALL OPERATE WHENEVER THE SPACE TEMPERATURE IS OUTSIDE OF THE USER SPECIFIED SET POINT.

HVLS CEILING FANS

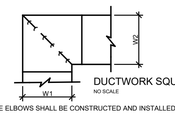
RUN CONDITIONS - OPERATE BY MANUAL WALL SWITCH.



NOTE

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH A SQUARE VANE MITERED ELBOW.
3. NO MITERED ELBOWS WITHOUT VANES SHALL BE INSTALLED.

DUCTWORK RADIUS ELBOW
NO SCALE



NOTE

1 ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.

2 WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.

3 ALL SINGLE THICKNESS VANES SHALL HAVE A 2" RADIUS, 1 1/2" MAXIMUM SPACE BETWEEN VANES AND A 3/4" TRAILING EDGE.

4 WHEN W EQUALS W2 AND W1 IS GREATER THAN 20", VANES SHALL BE DOUBLE VANE TYPE.

DUCTWORK SQUARE VANE ELBOWS
NO SCALE

MECHANICAL SYMBOL LIST

CD	MISC. EQUIP. COND DRAIN PIPING	[A-250']	SUPPLY AIR DIFFUSER - TYPE "A", 250 CFM
V	VENT PIPING	[B-250']	RETURN OR EXHAUST AIR GRILLE - TYPE "B", 250 CFM
	DOMESTIC COLD WATER PIPING		SLOT DIFFUSER
	DOMESTIC HOT WATER PIPING		MANUAL DAMPER
	DOMESTIC HOT WATER RETURN PIPING		MOTORIZED DAMPER
	TRIPLE DUTY VALVE	DSD	DUCT SMOKE DETECTOR
	REDUCER		DUCT PRESSURE SENSOR
	CAP	ABV	ABOVE
	UNION	ACU	AIR CONDITIONING UNIT
	CHECK VALVE	AFF	ABOVE FINISHED FLOOR
	TWO WAY CONTROL VALVE (PNEUMATIC)	AHU	AIR HANDLING UNIT
	THREE WAY CONTROL VALVE (PNEUMATIC)	BF	BARRIER FREE
	ISOLATION BALL VALVE	BFG	BELOW FINISHED GRADE
	FLOW ARROW	CFM	CUBIC FEET PER MINUTE
	FDI AUTOMATIC FLOW LIMITING VALVE	CO	CLEAN OUT
	STRAINER	COND	CONDENSATE
	BUTTERFLY VALVE	EF	EXHAUST FAN
	BALL VALVE	EL	ELEVATION
	VALVE IN RISER	EX	EXISTING
	ELBOW RISING UP	FD	FLOOR DRAIN
	ELBOW DROPPING DOWN	HVLS	HIGH VOLUME LOW SPEED
	TEE WITH PIPE UP	MBD	MANUAL BALANCING DAMPER
	TEE WITH PIPE DOWN	NC	NORMALLY CLOSED
	TEMPERATURE & PRESSURE RELIEF VALVE	NO	NORMALLY OPENED
	THERMOMETER	OA	OUTSIDE AIR
	PIPE ANCHOR	PRV	PRESSURE REGULATING OR REDUCING VALVE
	PIPE GUIDE	PSI	POUNDS PER SQUARE INCH
	SERVICE SINK	PSIG	POUNDS PER SQUARE INCH GAUGE
	FLUSH VALVE WALL MOUNTED	RA	RETURN AIR
	URINAL	RAH	RELIEF AIR HOOD
	LAVATORY OR SINK	RAR	RETURN AIR REGISTER
	FLOOR SINK	RF	RETURN AIR FAN
	FLOOR DRAIN	SA	SUPPLY AIR
	THERMOSTAT OR WALL SENSOR	SAR	SUPPLY AIR REGISTER
	EXHAUST FAN WITH FAN ABOVE (FLOOR PLAN)	SK	SINK
	EXHAUST FAN ON ROOF (ROOF PLAN)	SP	STATIC PRESSURE
		UH	UNIT HEATER
		UNO	UNLESS NOTED OTHERWISE
		V	VENT
		VA	VALVE
		VAV	VARIABLE AIR VOLUME BOX
		VFD	VARIABLE FREQUENCY DRIVE

GAS-FIRED UNIT HEATER SCHEDULE

MARK	SERVING	TYPE	HEATING CAPACITY (BTUH)	AIRFLOW (CFM)	MAX MOUNTING HEIGHT	VOLTS/PH/HZ	AMPS	VENT AND CA SIZE (INCHES)	MANUFACTURER MODEL NUMBER	WEIGHT (LBS)	REMARKS
UH-1,2,3	WAREHOUSE	NATURAL GAS	300,000	4,545	18	120/1/60	8.8	6	MODINE #PTX-300	270	SEE BELOW

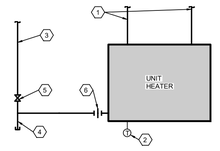
NOTES:
1. DISCONNECT SWITCH SHALL BE MOUNTED AND WIRED BY MANUFACTURER.
2. FURNISH ALL MOUNTING HARDWARE REQUIRED FOR SUSPENED UNIT HEATER INSTALLATION.
3. CONTRACTOR SHALL FURNISH AND INSTALL VENTING AND CONCENTRIC VENT KIT, AS REQUIRED BY MANUFACTURER INSTALL THRU ROOF WITH ALL NECESSARY ASSESSORIES. AS RECOMMEND BY THE MANUFACTURER.
4. PROVIDE EACH UNIT HEATER WITH A 7 DAY PROGAMMABLE THERMOSTAT.
5. PROVIDE WITH STAINLESS STEEL HEAT EXCHANGER, PRESSURE SWITCH, INTEGRATED DIRECT SPARK CONTROL, TWO STAGE GAS VALVE, STEP DOWN TRANSFORMER, CONTROLS RELAY , TWO STAGE DIRECT SPARK INGNITER.
6. INSTALL UNIT HEATERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ALL APPLICABLE CODES.

EXHAUST FAN SCHEDULE

MARK	SERVING	AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (IN. W.G.)	TYPE	MOTOR	BHP	HP	VOLTS/PH/HZ	MANUFACTURER MODEL NUMBER	SONES	WEIGHT (LBS)	NOTES
EF-1	WAREHOUSE	7,000	.125"	SIDEWALL	DIRECT-DRIVE	0.79	1	120/1/60	GREENHECK AER-24-VG	24	78	1,2,3,4,5
EF-2	WAREHOUSE	1,000	.125"	SIDEWALL	DIRECT-DRIVE	0.11	3/4	120/1/60	GREENHECK AER-20-VG	8.7	60	1,2,3,4,6

NOTES:
1. MOTOR TO BE EC MOTOR, DESIGNED FOR FAN APPLICATIONS (GREENHECK VARI-GREEN WITH DIAL ON MOTOR CONTROL).
2. NEMA-1 DISCONNECT SWITCH SHALL BE PROVIDED BY FAN MANUFACTURER. DISCONNECT TO BE INSTALLED AND WIRED BY ELECTRICAL TRADES.
3. PROVIDE BACKDRAFT DAMPER.
4. PROVIDE WITH SHORT WALL HOUSING, FLUSH EXTERIOR, W/ OSHA GUARD, AND WEATHERHOOD WITH BIRD SCREEN. PROVIDE GRAVITY BACKDRAFT DAMPER.
5. PROVIDE WITH WALL MOUNTED VARI GREEN SPEED DIAL TO ALLOW FAN TO BE MANUALLY TURNED ON. EXHAUST FAN SHALL BE INTERLOCKED WITH IL-1.
6. PROVIDE WITH VARIGREEN CONTROLLER. OCCUPANCY SENSOR SHALL ENABLE EXHAUST FAN. EXHAUST FAN SHALL BE INTERLOCKED WITH DAMPER ON INTAKE IL-2.

1. PROVIDE STEEL SUPPORTS AS REQUIRED
2. THERMOSTAT-SEE PLANS AND SCHEDULES TO DETERMINE IF THERMOSTAT IS UNIT MOUNTED OR REMOTE MOUNTED
3. NATURAL GAS SUPPLY PIPING
4. MINIMUM 6" DIRT LEG
5. SHUT-OFF VALVE
6. UNION (TYP)



NOTE:
SEE FLOOR PLANS FOR PIPE SIZES

NATURAL GAS FIRED UNIT HEATER PIPING DETAIL
NO SCALE

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	MJV	MJV	GRS	GRS	MAI

SIGNATURE
NAME
GARY STEFFEN
MICHIGAN P.E. No.

Consumers Energy
GCON SOUTHWEST – LANSING
1530 E. JOLLY RD., LANSING, MI 48911

MECHANICAL SCHEDULES, CONTROLS, SEQUENCE OF OPERATION DETAILS AND SYMBOL LIST

UNIT:
SCALE: AS NOTED
JOB: 240435P
DRAWING NO.
SHEET: M2.01
REV.: A

7/18/2025 1:48 PM RMCCARTHY I:\96 F:\4-PUMP\2024-4102 GCO LANSING GCON SOUTHWEST\2024-4102-M-M2.01 CONTROLS SEQUENCE &CHED DETAILS

SHEET SIZE: ANSI-D 22X34

MECHANICAL SPECIFICATIONS

REFERENCE

INSTRUCTIONS TO BIDDERS, CONDITIONS OF THE CONTRACT, DIVISION 1, AND THIS SECTION SHALL APPLY TO THIS DIVISION.

CODES, PERMITS & INSPECTIONS

CONTRACTOR SHALL SECURE PERMITS, INSPECTIONS AND TESTS, PAY ALL FEES, DEPOSITS, AND COSTS FOR ALL MECHANICAL UTILITIES AND SERVICES INVOLVED AND PRESENT THE OWNER A CERTIFICATE OF INSPECTION AND APPROVAL FROM THE DEPARTMENT HAVING JURISDICTION OVER HIS WORK. SHOULD ANY CHANGE IN THE DRAWINGS AND SPECIFICATIONS BE REQUIRED TO COMPLY WITH ALL APPLICABLE CODES, RULES, REGULATIONS, ETC., CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE SUBMITTING BID. AFTER ENTERING INTO CONTRACT, ALL WORK NECESSARY TO MEET THE REQUIREMENTS SHALL BE COMPLETED WITHOUT ADDITION TO THE CONTRACT AMOUNT. WHERE WORK INDICATED IS MORE THAN REQUIRED BY CODES, ETC., SUCH WORK SHALL BE AS INDICATED.

JOB OBSERVATION

NOTWITHSTANDING ANY REFERENCE TO ANY CODE, RULE OR REGULATION, ENGINEER SHALL HAVE NO RESPONSIBILITY FOR SAFETY ON THE JOB SITE, SHALL HAVE NO RIGHT TO CHANGE OR STOP THE WORK, SHALL NOT CONTROL THE MEANS OF THE WORK, AND SHALL NOT HAVE ANY DUTY TO PROVIDE SUPERVISION OF MEANS, METHODS, PROCESSES OR PROCEDURES OF CONSTRUCTION.

FIRST-CLASS WORKABLE SYSTEMS

FIRST CLASS WORKABLE SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR. IF, IN THE OPINION OF THE CONTRACTOR, CHANGES IN THE DRAWINGS OR SPECIFICATIONS ARE REQUIRED TO PRODUCE FIRST-CLASS WORKABLE SYSTEMS, CONTRACTOR SHALL REQUEST AN INTERPRETATION FROM THE ENGINEER BEFORE PROCEEDING WITH THE WORK. IF THE CONTRACTOR FAILS TO MAKE SUCH A REQUEST, NO EXCUSE WILL THEREAFTER BE ENTERTAINED FOR FAILURE TO PROVIDE FIRST-CLASS WORKABLE SYSTEMS.

DRAWINGS

DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT, DESIGN, AND EXTENT OF THE WORK AND ARE DIAGRAMMATIC. THEY ARE NOT INTENDED TO BE SCALED FOR ROUGH-IN MEASUREMENTS NOR TO SERVE AS SHOP DRAWINGS. THE ENGINEERS AND OWNER RESERVE THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF EQUIPMENT, DUCTWORK, PIPING, ETC. AT THE TIME OF ROUGH-IN WITHOUT ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, LOCATIONS, ETC. FOR ACCURACY AND POSSIBILITY OF INTERFERENCES DUE TO FIELD CONDITIONS AND ACTUAL BUILDING STRUCTURE. FAILURE TO CHECK WILL BE NO REASON FOR ADDITIONAL COMPENSATION.

SHOP DRAWINGS

SUBMIT ELECTRONIC SET OF COMPLETE SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR REVIEW BEFORE FABRICATION OF WORK OR ORDERING OF EQUIPMENT. DRAWINGS MUST BE REVIEWED BY THE ENGINEER BEFORE ORDERING EQUIPMENT. ALL SHOP DRAWINGS REJECTED SHALL BE CORRECTED AND RESUBMITTED TO THE ENGINEER BEFORE ORDERING.

STANDARDS OF INDUSTRY

STANDARDS OF INDUSTRY SHALL BE FOLLOWED WHEN APPLICABLE.

GUARANTEE

CONTRACTOR SHALL GUARANTEE EQUIPMENT, MATERIALS AND WORKMANSHIP IN HIS CONTRACT AND SHALL MAKE GOOD AT HIS OWN EXPENSE ANY DEFECTS WHICH MAY DEVELOP WITHIN ONE YEAR AFTER START-UP OF EACH PIECE OF EQUIPMENT, OCCUPANCY BY OWNER, OR FINAL ACCEPTANCE OF THE JOB, WHICHEVER OCCURS FIRST.

CONTRACTORS RECORD/AS-BUILT DRAWINGS

CONTRACTOR SHALL MAINTAIN AND KEEP AN UP-TO-DATE SET OF "RECORD" DRAWINGS REFLECTING "AS-BUILT" CONDITIONS OF THEIR WORK. CONTRACTOR SHALL INDICATE EXACT DIMENSIONS AND ELEVATIONS FOR ALL UNDERGROUND WORK. UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER THE "RECORD" DRAWINGS.

LOCAL CONDITIONS

BEFORE SUBMITTING BIDS AND/OR PROCEEDING WITH THE PROJECT, THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS, SPECIFICATIONS AND ADDENDA ISSUED FOR THE PROJECT AND SHALL EXAMINE THE PROJECT SITE. THE CONTRACTOR SHALL THOROUGHLY INVESTIGATE THE PROJECT SITE AND BECOME FULLY INFORMED AS TO THE EXTENT OF HIS WORK AND COORDINATION OF THIS WORK WITH ALL OTHER TRADES AND INCLUDE ALL COST TO PERFORM AND COMPLETE WORK FOR THIS PROJECT PER DRAWINGS AND SPECIFICATION AND ALL CODES.

OPERATION AND MAINTENANCE MANUALS

CONTRACTOR SHALL FURNISH TO THE ARCHITECT/ENGINEER TWO (2) COPIES OF AN APPROVED BOUND (3-RING BINDER) BOOK WITH TABS FOR SECTIONS COVERING EACH ITEM OF EQUIPMENT. THESE NOTEBOOKS SHALL INCLUDE SHOP DRAWINGS, MAINTENANCE MANUALS, OPERATING MANUALS AND PARTS LIST AS NECESSARY TO INSTRUCT THE OWNER ON PROPER OPERATION AND USE AS WELL AS MAINTENANCE FOR EACH PIECE OF EQUIPMENT FOR THIS PROJECT. THESE BOOKS SHALL ALSO INCLUDE CONTRACTOR'S, SUBCONTRACTOR'S AND MANUFACTURER'S NAMES, TELEPHONE NUMBERS AND ADDRESSES. MANUALS SHALL ALSO INCLUDE SEQUENCE OF OPERATION, CONTROL EQUIPMENT LITERATURE, WIRING AND CONTROL DIAGRAMS, CERTIFICATES OF GUARANTEES, CERTIFICATES OF INSPECTION, MECHANICAL SYSTEM TEST AND BALANCING REPORTS. THE CONTRACTOR SHALL ACCUMULATE AND SUMMARIZE THE CONTROL AND MAINTENANCE SEQUENCE IN TYPEWRITTEN SHEET TO BE INCLUDED IN THE REPORT. THESE MANUALS SHOULD BE HARD BOUND IN BEST QUALITY BINDERS AND TURNED OVER TO THE ARCHITECT/ENGINEER FOR APPROVAL AT COMPLETION OF PROJECT.

START-UP SERVICE

CONTRACTOR SHALL ARRANGE WITH EQUIPMENT MANUFACTURERS FOR PROVIDING COMPLETE START-UP SERVICE FOR ALL EQUIPMENT ON THIS PROJECT. ALL START-UP SERVICES SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER AND/OR ENGINEER. A WRITTEN REPORT SHALL BE SUBMITTED TO THE ENGINEER STATING DATE OF START-UP, MANUFACTURER APPROVAL OF SYSTEM OPERATION AND INSTALLATION.

CUTTING AND PATCHING

CUTTING AND PATCHING SHALL BE BY TRADES REGULARLY ENGAGED IN THIS TYPE OF WORK, EXCEPT DRILLING OF HOLES SHALL BE DONE BY THE TRADES REQUIRING SAME. STRUCTURAL MEMBERS SHALL NOT BE CUT OR DRILLED.

SALVAGEABLE MATERIAL

SALVAGEABLE MATERIAL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STORED AT LOCATIONS AS DIRECTED BY THE OWNER, EXCEPT THE OWNER RESERVES THE RIGHT TO DESIGNATE CERTAIN ITEMS OF SALVAGEABLE MATERIAL TO BE REMOVED FROM THE PROJECT SITE.

RIGGING AND HOISTING

PERFORM ALL REQUIRED RIGGING, HOISTING, TRANSPORTATION, MOVING, ETC. OF ALL EQUIPMENT, MATERIALS, ETC. TO BE FURNISHED AND/OR INSTALLED AS SHOWN ON DRAWINGS, WHETHER FURNISHED BY THIS CONTRACTOR OR BY THE OWNER OR OTHER TRADES.

STORAGE FACILITY

FURNISH AND MAINTAIN A WEATHERPROOF STORAGE FACILITY ON THE SITE OF ADEQUATE SIZE TO STORE MISCELLANEOUS EQUIPMENT AND/OR MATERIALS TO PREVENT EXPOSURE TO THE WEATHER. LOCATION OF SHED SHALL BE DETERMINED BY THE OWNER AND ARCHITECT/ENGINEER. THE OWNER RESERVES THE RIGHT TO DENY STORAGE OF MATERIALS OR EQUIPMENT IN ANY EXISTING OR NEW BUILDINGS.

PROTECTION FROM DAMAGE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS, EQUIPMENT, ETC. AND ALL WORK INSTALLED BY HIMSELF AND SHALL PROTECT IT FROM DAMAGE UNTIL FINAL ACCEPTANCE OF THIS PROJECT BY THE OWNER.

FURNISH ALL COVERINGS AND PROTECTION FROM DIRT, DUST, RAIN, STORM, HEAT, TRAFFIC, WEAR, ETC. AND ALL POSSIBLE INJURY INCLUDING THAT BY OTHER WORKMEN. ANY EQUIPMENT, WORKMANSHIP, MATERIALS, ETC. DAMAGED PRIOR TO FINAL ACCEPTANCE BY THE OWNER OF THIS PROJECT SHALL BE PROPERLY REPAIRED AT NO EXPENSE TO THE OWNER.

PROTECT ALL PLUMBING FIXTURES AND OTHER EQUIPMENT FROM DAMAGE BY COVERING OR COATING. ANY DENTED, SCRATCHED, RUSTED OR MARRED SURFACE FINISHES WILL NOT BE ACCEPTED.

PROTECT ALL EQUIPMENT, MATERIALS, ETC. FROM FREEZING.

PLUMBING AND PIPING BASIC MATERIALS AND METHODS:

DOMESTIC WATER PIPING, BURIED (MUST BE APPROVED BY GOVERNING AUTHORITIES)

COPPER TUBING: 2" AND SMALLER - ASTM B88, TYPE K, SOFT TEMPER.

FITTINGS: ASME B16.18 CAST BRONZE OR ASME B16.22 WROUGHT COPPER AND BRONZE WITH AWS A5.8, BCUP SILVER BRAZE IF ALLOWED BY CODE, OTHERWISE ASTM B32 SOLDER, LEAD FREE GRADE 95-5 TIN-ANTIMONY OR TIN-SILVER, WITH MELTING RANGE OF 430 TO 535 DEGREES F JOINTS. NO JOINTS SHALL BE LOCATED UNDER FLOOR UNLESS STANDARD PIPE LENGTHS ARE NOT LONG ENOUGH FOR THE ENTIRE LENGTH OF BURY, THEN JOINTS SHALL BE KEPT TO A MINIMUM.

POLYETHYLENE PIPE 1 ½" OR SMALLER

PIPE - POLYETHYLENE (PE) FLEXIBLE PLASTIC, ASTM D2239 RATED 160 PSI MINIMUM.

FITTINGS - PE BARBED INSERT FITTINGS.

JOINTS - STAINLESS STEEL CLAMPS OVER BARBED INSERT FITTINGS.

DOMESTIC WATER PIPING, ABOVE GRADE INSIDE BUILDING (MUST BE APPROVED BY GOVERNING AUTHORITIES).

DOMESTIC WATER PIPING INCLUDES COLD WATER, HOT WATER AND HOT WATER RETURN PIPING.

PIPING: 6" AND SMALLER SHALL BE: COPPER TUBING: ASTM B88, TYPE L, HARD DRAWN, SEAMLESS.

FITTINGS: ASME B16.18 CAST BRONZE TEE TAP OR ASME B16.22 WROUGHT COPPER WITH ASTM B32 SOLDER JOINTS AND LEAD FREE GRADE 95-A TIN - ANTIMONY OR TIN AND SILVER WITH MELTING RANGE 430 TO 535 DEGREES F OR AWS A5BCUP SILVER BRAZE.

NATURAL GAS PIPING, ABOVE GRADE INSIDE BUILDING

NATURAL GAS PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK CARBON STEEL ASTM A53, SEAMLESS WITH BLACK MALLEABLE IRON FITTINGS, 150 PSIG SCREWED ASME B16.3.

NATURAL GAS PIPING 2 1/2" AND LARGER SHALL BE SCHEDULE 40 BLACK CARBON STEEL ASTM A53 SEAMLESS WITH WELDED FITTINGS ASTM A234.

PIPING FOR 1 PSIG OR HIGHER GAS PRESSURE SHALL BE IN ACCORDANCE WITH CODE FOR PRESSURE PIPING ANSI B31.1.

FURNISH LUBRICATED PLUG SHUT-OFF VALVES ON MAIN BRANCHES AND AT DOMESTIC PRESSURE REGULATORS. LOCATE WRENCH NEAR METER. STOP VALVES AT EQUIPMENT AND OUTLETS SHALL BE BALL VALVES WHERE 2" AND SMALLER. GAS PIPING SHALL HAVE DRIPS AT BOTTOM OF RISERS WITH BRANCHES TAKEN FROM TOP OR SIDE OF HORIZONTAL PIPE. CAP ALL GAS PIPE OUTLETS UNTIL CONNECTED TO GAS EQUIPMENT. ALL GAS PIPING SHALL BE RUN IN SPACES WHICH ARE ACCESSIBLE FOR INSPECTION AND SERVICE.

COMPRESSED AIR PIPING

STEEL PIPE: ASTM A53 SCHEDULE 40 BLACK.

FITTINGS: ASME B16.3, MALLEABLE IRON, OR ASTM A234, FORGED STEEL WELDING TYPE.

JOINTS: 1 1/2" AND SMALLER SHALL BE THREADED, 2" AND LARGER SHALL BE WELDED PER ANSI B31.9.

COPPER TUBING: ASTM B88, TYPE L HARD DRAWN.

FITTINGS: ASME B16.18, CAST BRONZE, OR ASME B16.22, WROUGHT COPPER AND BRONZE.

JOINTS: ASTM B32, SOLDER, GRADE 95TA.

COPPER TUBING: ASTM B88, TYPE K ANNEALED.

FITTINGS: ASME B16.26, CAST BRONZE.

JOINTS: FLARED.

VALVES

BALL VALVES:

UP TO AND INCLUDING 2 INCHES: BRONZE ONE PIECE BODY, STAINLESS STEEL BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE WITH BALANCING STOPS, SOLDER OR THREADED ENDS.

OVER 2 INCHES: CAST STEEL BODY, CHROME PLATED STEEL BALL, TEFLON SEAT AND STUFFING BOX SEALS, LEVER HANDLE, OR GEAR DRIVE HANDWHEEL FOR SIZES 10 INCHES AND OVER, FLANGED. DUCTILE IRON BODY, CHROME PLATED CARBON STEEL BALL AND STEM, TFE SEATS, LEVER HANDLE OR GEAR OPERATOR, GROOVED ENDS. VICTAULIC SERIES 726.

PLUG VALVES:

UP TO AND INCLUDING 3 INCHES: BRONZE BODY, BRONZE TAPERED PLUG, FULL PORT OPENING, NON-LUBRICATED, TEFLON PACKING, THREADED ENDS. OPERATOR: ONE PLUG VALVE WRENCH FOR EVERY TEN PLUG VALVES MINIMUM OF ONE.

OVER 3 INCHES: CAST IRON BODY AND PLUG, FULL PORT OPENING, PRESSURE LUBRICATED, TEFLON PACKING, FLANGED ENDS OR GROOVED ENDS IF VICTAULIC GROOVED END FITTINGS ARE USED. DUCTILE IRON BODY AND PLUG, STANDARD PORT OPENING, NON-LUBRICATED ECCENTRIC-TYPE, WELDED-IN NICKEL SEAT, GROOVED ENDS. VICTAULIC SERIES 377. OPERATOR: EACH PLUG VALVE SHALL HAVE A WRENCH HANDLE WITH SET SCREW.

UNIONS

UNIONS OR FLANGES SHALL BE USED AT EQUIPMENT CONNECTIONS. DIELECTRIC CONNECTIONS BETWEEN COPPER AND IRON OR STEEL PIPE SHALL BE MADE WITH DIELECTRIC NIPPLES SIMILAR TO VICTAULIC STYLE 47. A BRASS ADAPTER DIELECTRIC UNION IS NOT ACCEPTABLE.

PLATES AND SLEEVES

PROVIDE AND INSTALL PIPE SLEEVES FOR ALL PIPING AND DUCTS PASSING THROUGH WALLS, FLOORS AND CEILINGS. SLEEVES THROUGH WALLS BELOW GRADE AND AT ALL FLOOR SHALL BE BLACK STEEL. SLEEVES THROUGH WALLS AND CEILINGS MAY BE 20 GAUGE GALVANIZED SHEET METAL. WHERE PIPES ARE INSULATED, SLEEVES SHALL BE LARGE ENOUGH TO PASS THE INSULATION. ALL PENETRATION VOIDS SHALL BE SEALED SMOKE TIGHT WITH NON-COMBUSTIBLE MATERIALS SIMILAR TO 3M OR HILTI FIRESTOP SYSTEMS TO MAINTAIN THE INTEGRITY OF THE FIRE RATED STRUCTURE. IN A NON-FIRE RATED ASSEMBLY, SEAL ALL VOIDS WITH NON-HARDENING SEALANT.

HANGERS AND SADDLES

SHALL BE MODERN PIPE SUPPORTS CORP., GRINNELL/ANVIL, AUTO GRIP OR M-CO. FOR COPPER PIPE WITH STEEL HANGERS, CLEAN AND WRAP PIPE WITH TWO LAYERS OF PLASTIC INSULATING TAPE AT POINTS OF CONTACT. HANGERS FOR PIPING WITH VAPOR BARRIER SEALED INSULATION SHALL BE MULTIPURPOSE PIPE SADDLES FITTING OVER THE INSULATION. WIRE OR PERFORATED STRAP IRON WILL NOT BE PERMITTED FOR PIPE SUPPORTS. HANGERS SHALL BE CLEVIS OR SPLIT RING TYPE WITH VERTICAL ADJUSTMENT AND BEAM CLAMP SIMILAR TO GRINNELL/ANVIL FIG. 260, WITH MAXIMUM SPACING PER ASHRAE STANDARDS:

PIPE SIZE	STEEL PIPE		COPPER PIPE		PVC PIPE	ROD SIZE
1/2 TO 3/4 INCH	6 FEET	5 FEET	4 FEET	3/8"		
1 INCH	7 FEET	5 FEET	4 FEET	3/8"		
1 1/4 INCH	7 FEET	7 FEET	4 FEET	3/8"		
1 1/2 INCH	7 FEET	7 FEET	4 FEET	1/2"		
2 INCH	10 FEET	8 FEET	4 FEET	1/2"		
2 1/2 INCH	11 FEET	9 FEET	4 FEET	5/8"		
3 INCH	11 FEET	9 FEET	4 FEET	5/8"		
3 1/2 INCH	13 FEET	11 FEET	4 FEET	5/8"		
4 INCH	14 FEET	12 FEET	4 FEET	3/4"		
5 INCH	14 FEET	12 FEET	4 FEET	3/4"		
6 INCH	14 FEET	--	4 FEET	3/4"		
8 INCH	16 FEET	--	4 FEET	7/8"		
10 INCH	16 FEET	--	4 FEET	7/8"		
12 INCH	20 FEET	--	4 FEET	1"		
14 INCH	20 FEET	--	4 FEET	1 1/4"		
16 INCH	20 FEET	--	4 FEET	1 1/4"		
18 INCH	20 FEET	--	4 FEET	1 1/4"		

TESTING, FLUSHING AND CLEANING OF PIPING SYSTEMS

NATURAL GAS PIPING SHALL BE TESTED AS RECOMMENDED BY THE LOCAL UTILITY COMPANY.

DOMESTIC WATER PIPING: BEFORE ANY FIXTURES ARE CONNECTED, HYDROSTATICALLY TEST AT 100 PSIG OR 50 PSIG IN EXCESS OF THE WORKING PRESSURE WHICHEVER IS GREATER, AT THE LOWEST POINT IN THE SYSTEM FOR A MINIMUM OF (4) HOURS. THIS PRESSURE TO BE ON PIPING ONLY, NOT ON FIXTURES.

CHLORINATION OF DOMESTIC WATER PIPING:

ALL DOMESTIC WATER PIPING AND EQUIPMENT SHALL BE COMPLETELY FLUSHED OUT AND CHLORINATED BEFORE PLACING SYSTEM IN SERVICE. CHLORINATION PROCEDURE SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL CODES AND STATE DEPARTMENT OF HEALTH. CHLORINE SHALL BE ADDED AT A RATE SUFFICIENT TO PROVIDE A SOLUTION MIXTURE OF AT LEAST 50 PPM AND HELD IN SYSTEM FOR A 24 HOUR RETENTION, AFTER IT SHALL BE FLUSHED OUT UNTIL THE CHLORINE RESIDUAL DOES NOT EXCEED 0.5 PPM.

PIPE INSULATION ON INDOOR SYSTEMS

PIPE INSULATION SHALL BE AS MANUFACTURED BY ARMSTRONG, CERTAINTEED, KNAUF, MANSVILLE OR OWENS-CORNING. OWENS-CORNING NUMBERS ARE GIVEN TO ESTABLISH TYPES. ALL INSULATIONS, COVERINGS, VAPOR BARRIERS, ADHESIVES, ETC. SHALL BE CLASS A, MAXIMUM OF 25 FLAME SPREAD, 35 FUEL CONTRIBUTED AND 50 SMOKE DEVELOPED RATING. INSULATION SHALL HAVE VAPOR BARRIER AND BE UL RATED. INSULATION SHALL BE OWENS-CORNING FIBERGLAS ASJ-SSL II PIPE COVERING WITH FACTORY APPLIED DOUBLE PRESSURE SENSITIVE ADHESIVE SYSTEM TO PROVIDE POSITIVE CLOSURES AND VAPOR BARRIER INTEGRITY.

ALL LONGITUDINAL JOINTS SHALL BE SECURED WITH SELF SEALING LAPS. ALL TRANSVERSE JOINTS SHALL BE SECURED WITH SELF-SEALING BUTT STRIPS. BUTT STRIPS SHALL BE MINIMUM 3" WIDE. APPLY INSULATION TO PIPE WITH ALL JOINTS BUTTED TIGHTLY TOGETHER. FITTINGS, INCLUDING VALVES, FLANGES, UNIONS, ETC. SHALL BE INSULATED WITH THE SAME THICKNESS AS THE REQUIRED PIPE INSULATION AND COVERED WITH ZESTON OR SPEEDLINE PVC FITTING COVER.

PIPE IDENTIFICATION

ALL PIPING SHALL BE IDENTIFIED PER ANSI/OSHA OR OWNER'S STANDARDS WITH COLOR PIPE BANDS, IDENTIFICATION LABELS AND FLOW ARROWS. PIPES SHALL BE BANDED AND LABELED ON 10'-0" CENTERS ON CONTINUOUS LINES, AT EQUIPMENT CONNECTIONS, AT BOTH SIDES OF A WALL THROUGH WHICH PIPE PASSES AT EVERY BRANCH CONNECTION, ON PIPING WITHIN SIGHT OF AN ACCESS DOOR OR PANEL. SHOW SLOPE DIRECTIONAL ARROWS AT EACH IDENTIFICATION POINT. LABELS, FLOW ARROWS AND STENCIL AND PAINT SHALL BE 1" HIGH ON PIPING UP TO 2 1/2" AND SHALL BE 2" HIGH ON PIPE SIZES OF 3" AND LARGER. BANDS SHALL BE 1 1/2" WIDE. LABELS SHALL BE AS MANUFACTURED BY SETON OR W.H. BRADY COMPANY OR EQUAL. VERIFY TYPE, SIZE AND COLORS OF PIPE IDENTIFICATION WITH OWNER.

DUCTWORK

DUCTS, CASINGS, HOUSINGS, ETC. SHALL BE FABRICATED FROM, PRIME QUALITY, HOT DIP GALVANIZED STEEL SHEET AS RECOMMENDED IN THE LATEST ISSUES OF ASHRAE GUIDE AND SMACNA DUCT MANUALS IN VARIABLE AIR VOLUME SYSTEMS, WHEN USED. SUPPLY AIR DUCTS LOCATED BETWEEN AIR HANDLING SYSTEM AND VAV BOXES; DUCT CONSTRUCTION AND INSTALLATION SHALL MEET SMACNA STANDARDS FOR 6" W.C. FOR ALL OTHER SUPPLY AIR DUCTWORK AND EXHAUST AIR, RETURN AIR, OUTSIDE AIR INTAKE AND RELIEF AIR DUCTS, DUCT CONSTRUCTION AND INSTALLATION SHALL MEET SMACNA STANDARDS FOR 2" W.C.

RECTANGULAR DUCTS SHALL HAVE TEES, ELBOWS AND BENDS WITH A MINIMUM THROAT RADIUS OF 1 TIMES THE DUCT WIDTH AND BE OF THE SAME GAUGE AND MATERIAL AS THE STRAIGHT DUCT. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE IF POSSIBLE; MAXIMUM 30 DEGREES DIVERGENCE UPSTREAM OF EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM. WHERE VOLUME BOXES ARE CONNECTED TO DUCT MAIN OR WHERE DIFFUSERS ARE CONNECTED TO DUCT BRANCHES BY ROUND FLEX DUCT, INSTALL DUCT SPIN-IN FITTINGS SUCH AS FLEXMASTER USA, INC. MODEL #FLD WITH DAMPER AND POSITIVE LOCKING WING NUT. SEAL ALL EDGES WITH FIRE RETARDANT DUCT SEALER. FLEXIBLE INSULATED DUCTS (CONNECTIONS FROM MAIN DUCT TO VOLUME BOX AND/OR FROM DUCT BRANCH TO DIFFUSERS) SHALL BE FLEXMASTER USA, INC. TYPE #3. USE MAXIMUM LENGTH OF 5'-0" TO EACH CONNECTION. INSTALL FLEXIBLE DUCT WITH MINIMUM OF BENDS USING LONG RADIUS BENDS ONLY.

PLUMBING PIPING AND EQUIPMENT SUPPORT

ATTACHMENTS OF MECHANICAL EQUIPMENT TO STRUCTURAL MEMBERS ARE THE RESPONSIBILITY OF THE INSTALLING TRADE. STRUCTURAL MEMBERS SHALL NOT BE FIELD CUT, WELDED OR OTHERWISE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER. ATTACHMENT TO STEEL JOIST SHALL BE MADE AT PANEL POINTS. WHEN ROUTING PIPING OR DUCTWORK PERPENDICULAR TO JOIST, A SUPPORT SHALL BE PROVIDED AT EVERY STEEL JOIST; WHEN PARALLEL TO JOIST, A SUPPORT SHALL BE PROVIDED AT NO MORE THAN 6' ON CENTERS OR TWO PANEL BAYS. STRUCTURAL MEMBERS SHALL NOT BE OVERLOADED AS A RESULT OF ATTACHMENTS. ATTACHMENT/EQUIPMENT LOADING FOR ALL TRADES RESULTING IN TOTAL LOAD GREATER THAN AN EQUIVALENT UNIFORM 5 PSF FOR ANY MEMBER SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW. MECHANICAL TRADES MAY CONTACT THE PROJECT STRUCTURAL ENGINEER AS REQUIRED FOR PANEL POINT LOCATION ASSISTANCE AND WELDER CERTIFICATION REQUIREMENTS. ELECTRICAL TRADES ARE STILL RESPONSIBLE FOR DESIGN, LAYOUT, AND FABRICATION AND INSTALLATION OF ELECTRICAL SUPPORTS AND SUPPORT ATTACHMENT METHODS. MECHANICAL TRADES SHALL SUBMIT ATTACHMENT METHODS TO THE STRUCTURAL ENGINEER FOR REVIEW.

DUCT SEALANT

ALL DUCTWORK INCLUDING SUPPLY AIR, OUTSIDE AIR, RETURN AIR, EXHAUST AIR AND RELIEF AIR DUCT SYSTEMS SHALL HAVE ALL JOINTS SEALED. DUCTWORK DESIGNED AT SMACNA 6" PRESSURE SHALL MEET SMACNA CLASS "A" SEAL REQUIREMENTS. DUCTWORK DESIGNED AT SMACNA 2" PRESSURE SHALL MEET SMACNA CLASS "C" SEAL REQUIREMENTS.

DUCT HANGERS

HORIZONTAL STEEL DUCTWORK SHALL BE SUPPORTED BY MEANS OF TRAPEZE BARS AND ROUND STEEL ROD OF SIZES LISTED BELOW. ROUND STEEL RODS SHALL BE ELECTRO-GALVANIZED ALL-THREAD ROD. HANGERS SHALL BE PROVIDED AT BOTH SIDES OF FLAT SIDED DUCTWORK FOR THE FULL HEIGHT OF DUCT. ROUND DUCTWORK SHALL BE PROVIDED WITH A BAND OF THE SAME SIZE AS THE HANGER TO COMPLETELY ENCIRCLE THE DUCT. BAND SHALL BE SECURED TO THE HANGER BY MEANS OF A MINIMUM 3/16" BOLT. MINIMUM DUCT HANGER SIZES SHALL BE AS LISTED BELOW

DUCT SIZE	MIN. UPPER ATTACHMENT RATING	STEEL ROD	MAXIMUM SPACING	NO. OF HANGERS	MINIMUM TRAPEZE SHELF ANGLE
UP TO 16"	750 LBS.	3/8"	10'	2	1 1/2" X 1 1/2" X 3/16"
19" TO 36"	1000 LBS.	3/8"	10'	2	1 1/2" X 1 1/2" X 3/16"
37" TO 120"	3000 LBS.	3/8"	8'	2	2" X 2" X 1/4"

TESTING, ADJUSTING AND BALANCING

TESTING, ADJUSTING AND BALANCING SHALL BE PERFORMED BY AN INDEPENDENT CERTIFIED AGENCY IN ACCORDANCE WITH AABC, ADC, ASHRAE III, NEBB AND SMACNA STANDARDS. FURNISH 5 SETS OF REPORTS OF AIR AND WATER SYSTEMS BALANCE REPORTS TO THE ENGINEER INDICATING DESIGN AND ACTUAL QUANTITIES, NAMEPLATE DATA, ETC.

ACCEPTABLE TEST AND BALANCE CONTRACTORS:

1. HITECH TEST AND BALANCE (FREELAND, MI)
2. ABSOLUTE BALANCE COMPANY (SOUTH LYON, MI)
3. ENVIRO-AIRE/TOTAL BALANCE COMPANY (ST. CLAIR SHORES, MI)
4. ENER-TECH TESTING (HOLLY, MI)
5. INTERNATIONAL TEST AND BALANCE (SOUTHFIELD, MI)

AIR SYSTEMS ADJUST AIR HANDLING, DISTRIBUTION SYSTEMS, AIR INLETS AND OUTLETS, ETC. TO PROVIDE SUPPLY, RETURN, EXHAUST, OUTSIDE AIR AND RELIEF AIR QUANTITIES TO WITHIN 10% OF REQUIRED OR DESIGNED AIR QUANTITIES. VERIFY THAT SYSTEMS ARE COMPLETE AND OPERABLE BEFORE COMMENCING WORK. VERIFY SYSTEMS ARE STARTED AND OPERATING AT A SAFE AND NORMAL OPERATION, TEMPERATURE CONTROL SYSTEMS ARE INSTALLED COMPLETE AND OPERABLE, PROPER THERMAL OVERLOAD PROTECTION IS IN PLACE FOR ELECTRICAL EQUIPMENT, FINAL FILTERS ARE CLEAN AND IN PLACE, DUCT SYSTEMS ARE CLEAN OF DEBRIS, FANS ARE ROTATING CORRECTLY, FIRE AND VOLUME DAMPERS ARE IN PLACE AND IN OPEN POSITIONS, AIR COIL FINS ARE CLEANED AND COMBED, ACCESS DOORS ARE CLOSED AND DUCT END CAPS ARE IN PLACE, AIR OUTLETS ARE INSTALLED AND CONNECTED, DUCT SYSTEM LEAKAGE IS MINIMIZED, ETC. MEASURE AND RECORD ALL AIR MOVING EQUIPMENT, AIR INLETS AND OUTLETS STATIC PRESSURES, RPM'S, ETC.

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	MJV	MJV	GRS	GRS	MAI

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE

NAME
GARY STEFFEN

MICHIGAN P.E. No.
6201060666

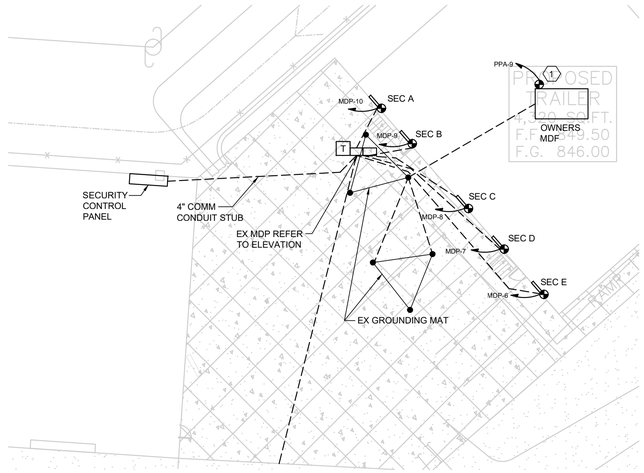
Consumers Energy
GCON SOUTHWEST – LANSING
1530 E. JOLLY RD., LANSING, MI 48911

MECHANICAL SPECIFICATIONS

SCALE: AS NOTED
JOB: 4400111666
DRAWING NO. 3126–TWS–0000
UNIT:
SHEET M3.01
REV. A

7/18/2025 1:51 PM RMCCARTHY 196 F:\41-PLMP\2004-4102\2004-4102 CEGO LANSING GCON SOUTHWEST\2004-4102-MJM-M3.01.RPSC

SHEET SIZE: ANSI-D 22x34



NORTH

ENLARGED PLAN

1/16"=1'-0"

KEYED NOTES

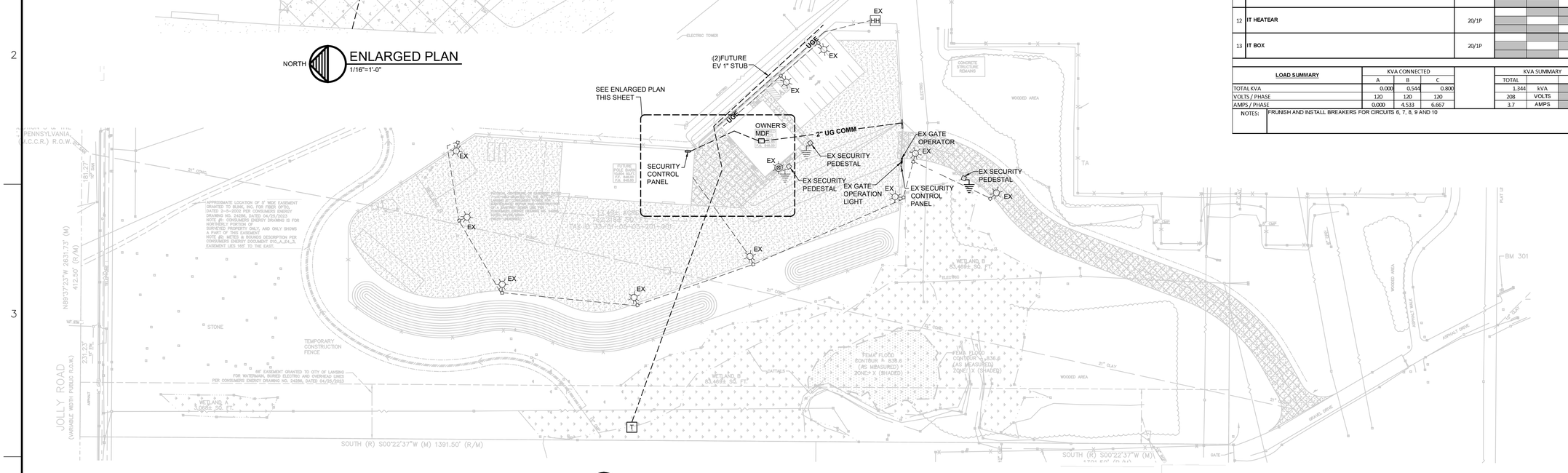
1. FIELD COORDINATE FINAL MDF LOCATION WITH OWNER PRIOR TO CONDUIT ROUGH IN.

UPDATED MDP	MAIN: SIZE & TYPE: 600 A MLO	PANEL LOCATION: SITE
	BUS RATING: 600 A	FEEDER SIZE: 600A
NEMA 3R	VOLTAGE: 120 / 208 V 3 PH 4 W	FED FROM: UTILITY
	MOUNTING: SURFACE	MIN BMS AMPS: 65 KAIC

CKT #	CIRCUIT DESCRIPTION	AMPS / POLES	LOAD (KVA) A	B	C
1	SURGE PROTECTION	30/3P			
2	GATE OPERATOR	20/1			
					0.800
3	OFFICE POWER	200/3P			
4	SITE LIGHTING	20/1		0.544	
5	WAREHOUSE BUILDING	400/3P			
6	SECTION E	200/2P			
7	SECTION D	125/2P			
8	SECTION C	125/2P			
9	SECTION B	125/2P			
10	SECTION A	125/2P			
11	GATE OPERATOR	20/1P			
12	IT HEATEAR	20/1P			
13	IT BOX	20/1P			

LOAD SUMMARY	KVA CONNECTED A	B	C	KVA SUMMARY TOTAL	
TOTAL KVA	0.000	0.544	0.800	1.344	kVA
VOLTS / PHASE	120	120	120	208	VOLTS
AMPS / PHASE	0.000	4.533	6.667	3.7	AMPS

NOTES: FRUNISH AND INSTALL BREAKERS FOR CIRCUITS 6, 7, 8, 9 AND 10



NORTH

ELECTRICAL SITE PLAN

1"=60'-0"

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

SIGNATURE

NAME
JAY W FOX

MICHIGAN P.E. No.
6201058557

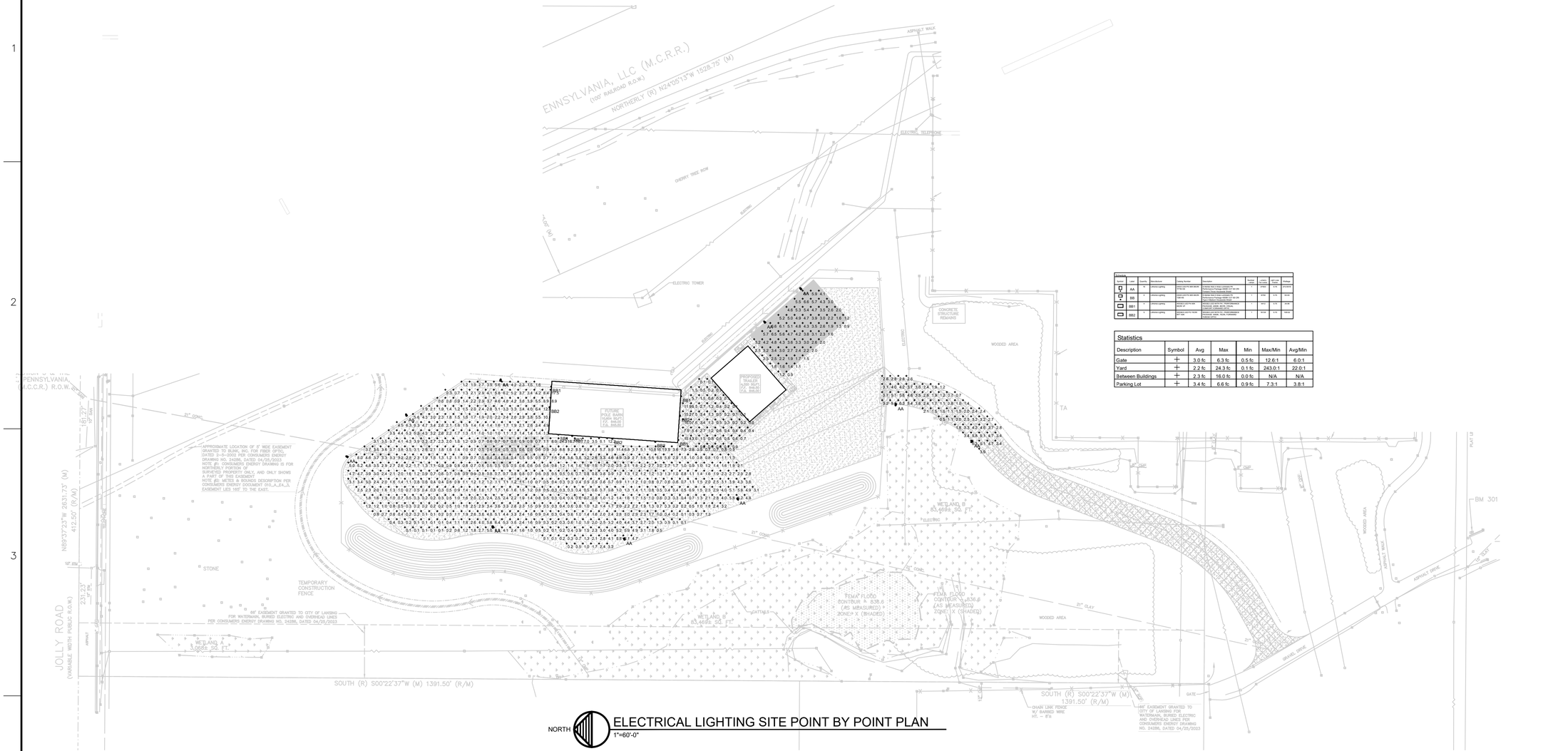
Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

SITE ELECTRICAL PLAN

SCALE: AS NOTED	DRAWING NO. 3126-TWS-0000	SHEET SE1.01	REV. A
JOB: 240435P			UNIT:

7/18/2025 1:51 PM RMCCARTHY 1:96 F:\41-PLMP\2024-4102.2604-4102 CECO LANSING GCON SOUTHWEST\2024-4102-SE-101 SITE PLAN

SHEET SIZE: ANSI–D 22x34



NORTH

ELECTRICAL LIGHTING SITE POINT BY POINT PLAN

1"=60'-0"

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens per Lamp	Light Loss Factor	Wattage
	AA	16	Antrim Lighting	DSX0 LED P5 40K 80CRI VF	Outdoor Area or Site Luminaire, Square Pole, 4 Amp, 4000K CCT, 80 CRI Forward Throw Medium Optic	1	21000	0.9	213.0000
	BB	6	Antrim Lighting	DSX0 LED P5 40K 80CRI T3M HS	Outdoor Area or Site Luminaire, Square Pole, 4 Amp, 4000K CCT, 80 CRI Type III Medium Optic with House Side Shield	1	19000	0.9	192.00
	BB1	4	Antrim Lighting	DSX0 LED P5 40K BBW HS	Outdoor Area or Site Luminaire, Square Pole, 4 Amp, 4000K CCT, 80 CRI, Type III Medium Optic with House Side Shield, Bird Blocker	1	19000	0.9	192.00
	BB2	4	Antrim Lighting	DSX0 LED P5 740C BBW HS	Outdoor Area or Site Luminaire, Square Pole, 4 Amp, 7000K CCT, 70 CRI, Type III Medium Optic with House Side Shield, Bird Blocker	1	19100	0.9	192.00

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Gate	+	3.0 fc	6.3 fc	0.5 fc	12.6:1	6.0:1
Yard	+	2.2 fc	24.3 fc	0.1 fc	243.0:1	22.0:1
Between Buildings	+	2.3 fc	16.0 fc	0.0 fc	N/A	N/A
Parking Lot	+	3.4 fc	6.6 fc	0.9 fc	7.3:1	3.8:1

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	RLM	KJS	JWF	JWF	MAI
A	7/18/25	ISSUED FOR RECORD	DR	BY	CK	APP	CO

SIGNATURE

NAME
JAY W FOX

MICHIGAN P.E. No.
6201058557

Consumers Energy

GCON SOUTHWEST – LANSING
1530 E. JOLLY RD.

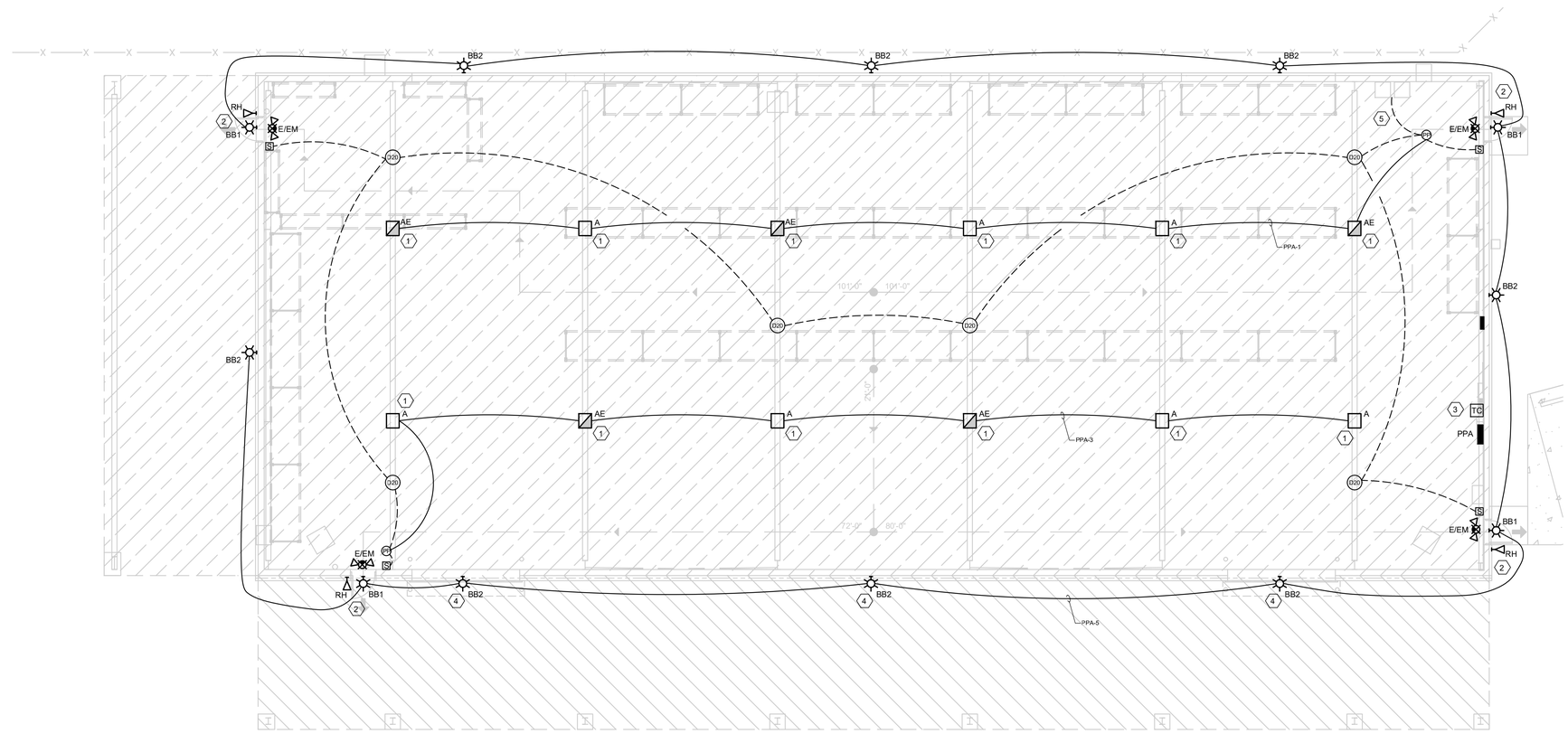
LIGHTING SITE POINT BY POINT PLAN

UNIT:

SCALE: AS NOTED	DRAWING NO.	SHEET	REV.
JOB: 4400111666	3126–TWS–0000	SE1.02	A

7/18/2025 1:50 PM RMCCARTHY 196 F:\4-PLOMT\2024-4102.2004-4102 CECO LANSING GCON SOUTHWEST\2024-4102-E-SE1.02 LIGHTING SITE PT BY PT PLAN

SHEET SIZE: ANSI-D 22x34



NORTH

LIGHTING FLOOR PLAN

1/8"=1'-0"

KEYED NOTES

1. LIGHT FIXTURE TYPES A AND AE SHALL BE MOUNTED TO STEEL ROOF JOIST.
2. PROVIDE REMOTE HEAD EMERGENCY LIGHT AT 8'-0" ADJACENT TO THE DOOR. POWER FROM THE INDOOR EXIT LIGHT
3. FURNISH AND INSTALL AN ASTRONOMICAL TIME CLOCK ABOVE THE PANEL TO CONTROL THE EXTERIOR LIGHTS. PROVIDE CONTROL INPUT TO TIME CLOCK FROM A PHOTO CELL. REFER TO THE EXTERIOR LIGHTING CONTROL DIAGRAM.
4. EXTERIOR WALL PACK LIGHTS TYPE BB2 SHALL BE MOUNTED CENTER ON AND MOUNTED ABOVE THE DOOR. REFER TO ARCHITECTURAL FOR DOOR ELEVATION.
5. EF-2 SHALL BE CONTROLLED BY OCCUPANCY. UTILIZE THE RELAY IN THE POWER PACK FOR CONTROL.

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION
A	LED HIGHBAY FIXTURE. 36,000 LUMEN, 4000K, 0-10 VOLT DIMMING, CABLE SUSPENDED, PREMIUM EFFICIENCY, ACRYLIC FROSTED LENS, GENERAL DISTRIBUTION, 120-277 VOLT WITH A WHITE FINISH. LITHONIA #IBG 36000LM HEF ACL GND MVOLT GZ10 40K 80CRI DWH
AE	SAME AS TYPE "A" EXCEPT WITH A 20 WATT EMERGENCY BATTERY
E/EM	LHQM EMERGENCY LIGHTING TWIN HEAD, 4.3 WATT, MVOLT, WHITE HOUSING WITH RED LETTERING, BATTERY CAPACITY TO FEED "RH" REMOTE HEAD LIHTONIA #LHQM LED R HO M6
RH	EMERGENCY WET LOCATION LISTED REMOTE HEAD. DIE-CAST ALUMINUM, GRAY, WALL MOUNTED, SINGLE 1.5 WATT LAMP HEAD EVENLITE #PRW LED 1 MV HL 12
BB1	WDGE2 LED WALL PACK, 4000 LUMEN, 35 WATT, 4000K, 80CRI, FORWARD THROW DISTRIBUTION, MVOLTN SURFACE MOUNTING BRACKET, PHOTOCELL BUTTON TYPE, DARK BRONZE FINISH LITHONIA #WDGE2 LED P4 40K 80CRI VF MVOLT E DDBXD
BB2	WDGE4 LED WALL PACK 16000 LUMEN, 106 WATT, 4000K, 80CRI, FORWARD THROW DISTRIBUTION, MVOLT, SURFACE MOUNTING BRACKET, PHOTOCELL BUTTON TYPE, DARK BRONZE FINISH. LIHTONIA #WDGE4 P2 40K 80CRI RFT MVOLT SRM PE DDBXD

LIGHTING CONTROL EXECUTIVE SUMMARY

THE FOLLOWING IS A SPACE-BY-SPACE DESIGN INTENT SUMMARY FOR LIGHTING CONTROLS. ALL LIGHTING CONTROL DESIGN IS TO BE IN COMPLIANCE WITH MICHIGAN ENERGY CODE 2015 AND ASHRAE 90.1-2013. COORDINATE OPERATING SCHEDULES AND AUTOMATIC OFF TIME DELAYS WITH OWNER IN PRE-INSTALLATION MEETING. ALL LIGHTING CONTROL CAT 5/6 SHALL BE COLORED PURPLE.

INTERIOR LIGHTING

LIGHTING TO BE CONTROLLED AUTO ON TO 50% AND AUTO OFF BY OCCUPANCY SENSOR AFTER A MAXIMUM 20 MINUTES OF NO OCCUPANCY DETECTION.

EXTERIOR LIGHTING

- LIGHTING CONTROL SHALL BE DONE THROUGH THE PHOTO CELL INPUT.
- SELECT LIGHTING SHALL BE AUTOMATICALLY ON AND OFF BASED UPON PHOTOCELL INPUT AND ASTRONOMICAL TIME CLOCK. COORDINATE SCHEDULE WITH OWNER AND REFER TO THE EXTERIOR LIGHTING CONTROL DIAGRAM.
- MANUAL OVERRIDE SWITCH TO BE A FACTORY MOUNTED SWITCH IN THE CLOCK.

MECHANICAL SYSTEMS

LIGHTING WIRING METHODS

1. EXIT LIGHTS SHALL OPERATE 24-7 AND ARE EQUIPPED WITH A BATTERY RATED FOR 90 MINUTES, WIRE THE EXIT LIGHT TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY SWITCHING.
2. HALF-TONE SHADED FIXTURES REPRESENTS THE FIXTURE IS AN EMERGENCY LIGHT AND EQUIPPED WITH AN EMERGENCY BATTERY PACK.
3. CONFIRM LIGHT FIXTURE LAYOUT WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND ARCHITECTURAL DETAILS FOR LOCATION AND MOUNTING DETAILS.
4. MC CABLE IS ONLY ACCEPTABLE AS A FINAL WIRING CONNECTION TO RECESSED LIGHTING INSTALLED IN ACCESSIBLE CEILINGS. MC CABLE LENGTH SHALL NOT EXCEED 6'-0".
5. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR FOR LIGHTING CIRCUITS. THE USE OF THE RACEWAY FOR A GROUNDING PATH IS NOT ACCEPTABLE FOR THIS PROJECT.
6. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIRE STOPPING PENETRATIONS THRU FIRE RATED WALLS FOR THEIR WORK.
7. SMALL ROOMS SUCH AS STORAGE ROOM, INDIVIDUAL TOILET ROOMS, JANITORS CLOSET, DATA CLOSET AND OFFICES SHALL HAVE WALL SWITCH TYPE OCCUPANCY SENSORS SWITCHES TO AUTOMATICALLY CONTROL THE LIGHTS AS NOTED AND SPECIFIED ON THE DRAWINGS.
8. OCCUPANCY SENSORS, POWER PACKS AND CONTROLS ARE SHOWN DIAGRAMMATICALLY. INFRARED SENSORS MUST REMAIN AT A MINIMUM OF 4'-0" AWAY FROM ANY MECHANICAL HEAT DIFFUSER TO ELIMINATE FALSE TRIPS. CIRCUIT LINES ARE SHOWN FROM SWITCHES TO LIGHT FIXTURES TO COMMUNICATE SWITCHING CONFIGURATION ONLY. ALL SENSORS, POWER PACKS AND WIRING MUST BE WIRED PER MANUFACTURER'S WIRING METHOD.
9. A SINGLE POWER PACK CAN HAVE MULTIPLE SWITCHES WIRED TO THE DEVICE PROVIDED THAT THE FIXTURES BEING CONTROLLED BY THESE SWITCHES ARE ON THE SAME CIRCUIT. TWO POWER PACKS ARE REQUIRED IF A SECOND CIRCUIT IS INTRODUCED. REFER TO MANUFACTURER'S WIRING METHODS. POWER PACKS AND OR OCCUPANCY SENSORS SHALL INCLUDE A HVAC RELAY AS SCHEDULED AND NOTED ON THE DRAWINGS FOR THE BUILDING AUTOMATION SYSTEM CONNECTION. BUILDING AUTOMATION WIRING SHALL BE COMPLETED AS PART OF THE TEMPERATURE CONTROL CONTRACTOR'S BID.

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

SIGNATURE
NAME
JAY W FOX
MICHIGAN P.E. No.
6201058557

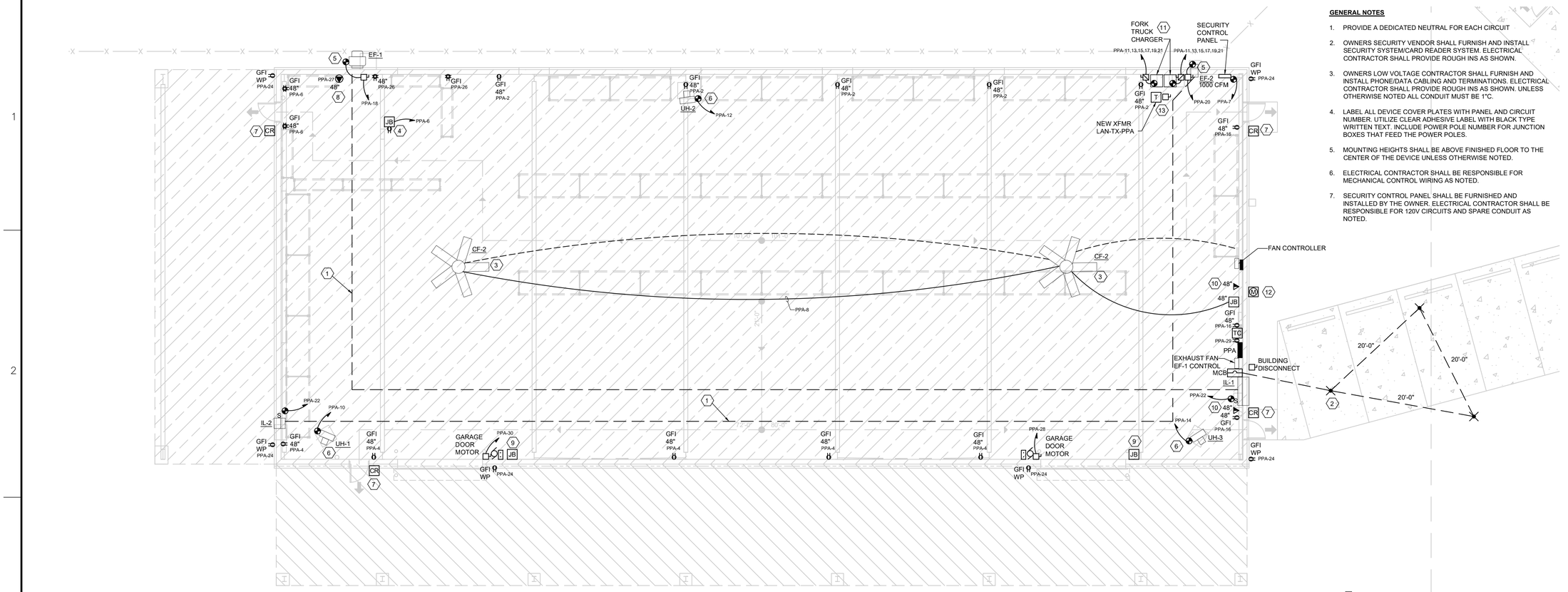
Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

LIGHTING FLOOR PLAN

UNIT:

SCALE: AS NOTED	DRAWING NO.	SHEET	REV.
JOB: 240435P	3126-TWS-0000	E1.01	A

7/18/2025 1:54 PM RMCCARTHY 196 F:\41-PUMP\2024\4102 2024-4102 GEOD LANSING (GCON SOUTHWEST)\03\E\4102-E1.01 LIGHTING PLAN



NORTH

POWER AND SYSTEMS FLOOR PLAN
1/8"=1'-0"

GENERAL NOTES

1. PROVIDE A DEDICATED NEUTRAL FOR EACH CIRCUIT
2. OWNERS SECURITY VENDOR SHALL FURNISH AND INSTALL SECURITY SYSTEM/CARD READER SYSTEM. ELECTRICAL CONTRACTOR SHALL PROVIDE ROUGH INS AS SHOWN.
3. OWNERS LOW VOLTAGE CONTRACTOR SHALL FURNISH AND INSTALL PHONE/DATA CABLING AND TERMINATIONS. ELECTRICAL CONTRACTOR SHALL PROVIDE ROUGH INS AS SHOWN. UNLESS OTHERWISE NOTED ALL CONDUIT MUST BE 1"C.
4. LABEL ALL DEVICE COVER PLATES WITH PANEL AND CIRCUIT NUMBER. UTILIZE CLEAR ADHESIVE LABEL WITH BLACK TYPE WRITTEN TEXT. INCLUDE POWER POLE NUMBER FOR JUNCTION BOXES THAT FEED THE POWER POLES.
5. MOUNTING HEIGHTS SHALL BE ABOVE FINISHED FLOOR TO THE CENTER OF THE DEVICE UNLESS OTHERWISE NOTED.
6. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MECHANICAL CONTROL WIRING AS NOTED.
7. SECURITY CONTROL PANEL SHALL BE FURNISHED AND INSTALLED BY THE OWNER. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR 120V CIRCUITS AND SPARE CONDUIT AS NOTED.

KEYED NOTES

1. THE EXHAUST FAN AND LOUVER SHALL BE INTERLOCKED TOGETHER. EXAMPLE: EF-1 WITH IL-1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR LOW VOLTAGE CABLE AND TERMINATION ON BOTH PIECES OF EQUIPMENT. RUN LOW VOLTAGE CABLE IN CONDUIT.
2. FURNISH AND INSTALL A GROUNDING ELECTRODE TEST WELL ON THIS GROUNDING ROD FOR THE PURPOSE TO BE ABLE TO MEASURE RESISTANCE TO GROUND OF THE ELECTRODE
3. PROVIDE POWER TO THE FAN. ALSO FURNISH AND INSTALL CONDUIT AND CONTROL CONDUCTORS TO THE FAN CONTROLLER PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
4. MOUNT RECEPTACLE AND BOX IN THE RAFTER SPACE. CIRCUIT IS DESIGNATED FOR A CORD REEL FURNISHED BY OTHERS, INSTALLED BY ELECTRICAL CONTRACTOR.
5. PROVIDE POWER TO THE EXHAUST FAN. ALSO FURNISH AND INSTALL CONDUIT. NEMA-1 DISCONNECT SWITCH SHALL BE PROVIDED BY MANUFACTURER. DISCONNECT TO BE INSTALLED AND WIRED BY ELECTRICIAN.
6. PROVIDE POWER TO THE UNIT HEATER. DISCONNECT SWITCH SHALL BE FURNISHED AND WIRED BY MANUFACTURER.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE A SPARE 1" CONDUIT TO THE SECURITY CONTROL PANEL AND SPARE JUNCTION BOX FOR THE CARD READER. MOUNTED BY OTHERS.
8. FURNISH AND INSTALL A NEMA L5-30 125V RATED RECEPTACLE WITH BOX IN THIS AREA.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE A SPARE 1" CONDUIT FROM THE JUNCTION BOX TO THE SECURITY CONTROL PANEL.
10. FURNISH AND INSTALL A JUNCTION BOX WITH A 1" SPARE CONDUIT STUBBED NEXT TO THE SECURITY CONTROL PANEL.
11. ELECTRICAL CONTRACTOR SHALL PROVIDE THE FINAL TERMINATION AND FUSED DISCONNECT FOR THE OWNER FURNISHED CONTRACTOR INSTALLED FORK TRUCK CHARGERS. COORDINATE MOUNTING OF ALL EQUIPMENT TO ENSURE PROPER ELECTRICAL WORKING SPACE.
12. ELECTRICAL CONTRACTOR SHALL PROVIDE GROUNDING FOR THE WATER METER AS DETAILED ON THE GROUNDING PLAN. FIELD COORDINATE THE FINAL WATER METER LOCATION PRIOR TO ROUGH IN.
13. TRAPEZE MOUNT TRANSFORMER ABOVE THE FORK TRUCK CHARGERS. MAINTAIN A 25' MAXIMUM WIRE LENGTH FROM NON FUSED TRANSFORMER DISCONNECT TO WIRE TAP ON SECONDARY SIDE OF TRANSFORMER.

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

SIGNATURE
NAME
JAY W FOX
MICHIGAN P.E. No.
6201058557

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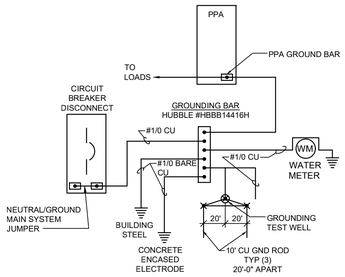
1530 E. JOLLY RD., LANSING, MI 48911

POWER AND SYSTEMS FLOOR PLAN

SCALE:	AS NOTED	DRAWING NO.	SHEET	REV.
JOB:	240435P	3126-TWS-0000	E2.01	A

UNIT:

SHEET SIZE: ANSI-D 22X34
7/18/2025 1:53 PM RMCCARTHY 196
F:\41-PUMP\3204-4102.2\04-4102 CE\CO LANSING GCON SOUTHWEST\3204-4102-E-E2.01 POWER AND SYSTEMS PLAN



✕ EXOTHERMIC CONNECTION TO GROUND ROD

• MECHANICAL CONNECTION

GROUNDING CONDUCTORS FROM THE: BUILDING STEEL, CONCRETE ENCASED ELECTRODE, GROUNDING MAT, MAIN BUILDING DISCONNECT AND THE WATER METER ALL SHALL BE BARE COPPER GROUNDING CONDUCTORS.

ALL BRANCH LOAD GROUNDING SHALL BE DONE WITH GREEN JACKETED INSULATED WIRE.

GROUNDING/BONDING DIAGRAM

GENERAL POLE BASE NOTES:

1. CONNECT THE GROUND WIRE TO THE POLE'S GROUND LUG. THE POLE'S BASE PLATE AND ANCHOR BOLTS FORM THE GROUND PATH CONTINUITY.
2. PROVIDE WATERTIGHT CONNECTORS FOR ALL POLES. USE "BUCHANAN" 82 SERIES FUSED TAP AND RUN AND "BUCHANAN" 65 SERIES FUSED BREAKAWAY.
3. POLE/LIGHT FIXTURE SHALL BE EPA RATED FOR GEOGRAPHIC AREA. LIGHTING MANUFACTURER SHALL SUPPLY PROPER POLE GAGE SIZES. LIGHT POLE BASE DEPTH AND DIAMETER SHOWN MEETS THE GEOGRAPHIC WIND LOAD. ANY DEVIATION REQUIRES REVIEW BY THE STRUCTURAL ENGINEER.
4. 3'-0" ABOVE GRADE.
5. BASE DETAIL MIN OF 7'-0" BELOW GRADE FOR 20' POLES. ADJUST THE BASE DEPTH WITH OTHER POLE HEIGHTS. OBTAIN REVIEW BY THE PROJECT STRUCTURAL ENGINEER.
6. USE THE CONCRETE BASE CENTERLINE DIMENSION FOR THE 36" SETBACK DISTANCE FROM THE CURBS EDGE.
7. LIGHT POLE BASE SHALL BE PROVIDED BY ARCHITECTURAL TRADES.

TYPICAL LIGHT POLE BASE DETAIL

NO SCALE

PRELIMINARY LOAD SUMMARY	
LIGHTING	6.964 KVA
RECEPTACLES	4.5 KVA
HVAC	7.99 KVA
MISCELLANEOUS LOADS	1.860 KVA
FORK TRUCK CHARGERS	31.89 KVA
TOTAL CONNECTED LOAD	53.246 KVA @ 208 3 PHASE 4 WIRE = 147.8 AMPS
SITE CONNECTED LOAD	171.89 KVA @ 208V 3PH 4 WIRE = 477.7 AMPS

NEW
PNL PPA

MAIN: SIZE & TYPE: **400** A **MLO**
BUS RATING: **400** A
VOLTAGE: **120 / 208** V **3** Ø, **4** WIRE
MOUNTING: **SURFACE**

PANEL LOCATION: **WAREHOUSE**
FEEDER SIZE: **400**
FED FROM: **MDP**
MIN RMS AMPS: **10 KAIC**

CKT #	CIRCUIT DESCRIPTION	LOAD (KVA) A	B	C	AMPS / POLES	CKT #	LOAD TYPE		CKT #	AMPS / POLES	LOAD (KVA) A	B	C	CIRCUIT DESCRIPTION	CKT #
1	INTERIOR LIGHTS EAST	1.284			20/1	1	L	R	2	20/1	0.900			EAST WALL RECEPTS	2
3	INTERIOR LIGHTS WEST		1.284		20/1	3	L	R	4	20/1		0.900		WEST WALL RECEPTS	4
5	EXTERIOR LIGHTS			0.776	20/1	5	L	R	6	20/1			0.900	NORTH RECEPT, CORD REEL	6
7	POLE BARN SECURITY PNL	0.100			20/1	7	O	H	8	20/1	1.248			CF-1, CF-2	8
9	TRAILER MDF		0.100		20/1	9		H	10	20/1		1.056		UH-1	10
11	FORK TRUCK TRANSFORMER			10.630	110	11	O	H	12	20/1			1.056	UH-2	12
13	FORK TRUCK TRANSFORMER	10.630			/	13	O	H	14	20/1	1.056			UH-3	14
15	FORK TRUCK TRANSFORMER		10.630		3P	15	O	R	16	20/1		54.72.54		SOUTH WALL RECEPTS	16
17	SITE LIGHTS			1.810	20	17	L	H	18	30/1			1.920	EF-1	18
19	SITE LIGHTS	1.810			/2P	19	L	H	20	25/1	1.656			EF-3	20
21	SPARE				20/1	21		O	22	20/1		1.800		IL-1, IL-2	22
23	SPARE				20/1	23		R	24	20/1			1.080	EXTERIOR RECEPTS	24
25	SPARE				20/1	25		R	26	20/1	0.720			ROOF RECEPTS	26
27	SPARE				20/1	27		O	28	30/1		1.840		GARAGE DOOR MOTOR	28
29	SPARE				20/1	29		O	30	30/1			1.840	GARAGE DOOR MOTOR	30
31	SPARE				20/1	31			32						32
33	SPARE				20/1	33			34						34
35	SPARE				20/1	35			36						36
37	SPARE				20/1	37			38						38
39	SPARE				20/1	39			40						40
41	SPARE				20/1	41			42						42

LOAD SUMMARY		KVA CONNECTED A	B	C
RECEPTACLES	R	1.620	0.900	1.980
LIGHTING	L	3.094	1.284	2.586
HVAC	H	3.960	1.056	2.976
OTHER	O	10.730	14.270	12.470
EXISTING	E	0.000	0.000	0.000
TOTAL KVA		19.404	17.510	20.012
VOLTS / PHASE		120	120	120
AMPS / PHASE		161.700	145.917	166.767

KVA SUMMARY TOTAL		DEMAND	
	4.500		4.500
	6.964	1.000	6.964
	7.992	0.950	7.592
	37.470	1.000	37.470
	0.000	1.000	0.000
	56.926		56.526 TOTAL ESTIMATE KVA
	208		208 SYSTEM VOLTAGE
	158.015		156.906 AMPS

NOTES:

TRANSFORMER SCHEDULE (LAN-TX-PPA)

30 KVA, 208V PRIMARY, 480V SECONDARY, TRAPEZE MOUNTED, INDOOR ENCLOSURE, COPPER, 150 DEGREE TEMP RISE, 3.43% IZ, 0.81 X/R RATIO. SQUARE D #EXN30T

ELECTRICAL SYMBOLS

LIGHTING

- 2'x4' LIGHT FIXTURE, TYPE INDICATED
- HALF SHADED FIXTURES ARE EMERGENCY FIXTURES
- 2'X2' LIGHT FIXTURE, TYPE INDICATED
- DOWNLIGHT OR SURFACE LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE, TYPE INDICATED
- WALL MOUNTED LIGHT FIXTURE, TYPE INDICATED
- EXIT LIGHT
- MOUNTED EXIT LIGHT
- EMERGENCY LIGHTING FIXTURE
- REMOTE HEAD EMERGENCY LIGHT FIXTURE

LIGHTING CONTROLS

- LOW VOLTAGE ON/OFF BUTTON SWITCH ACUITY #NPODMA SERIES OR EQUAL
- POWER RELAY PACK WITH MECHANICAL FAN RELAY ACUITY #NPP16 D SERIES OR EQUAL
- DUAL TECH, CEILING MOUNTED, LARGE-MOTION DETECTION, 2000 SQFT RADIAL COVERAGE SENSOR ACUITY #NCM PDT 10 SERIES OR EQUAL
- PHOTOCELL

POWER

- GFCI RECEPTACLE
- CIRCUIT BREAKER DISCONNECT
- DEVICE CONNECTION
- SPECIAL RECEPTACLE NEMA CONFIGURATION NOTED
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT
- JUNCTION BOX
- CARD READER ROUGH IN
- TIME CLOCK INTERMATIC #ET90115CE OR EQUAL
- PANELBOARD
- SINGLE PHASE MOTOR
- PUSH BUTTON STATION
- HOMERUN CIRCUIT
- GROUND
- ELECTRIC VEHICLE CHARGING STATION

ABBREVIATIONS

WP	DENOTES WEATHER PROOF
AFF	ABOVE FINISH FLOOR
EC	ELECTRICAL CONTRACTOR
EX	EXISTING
GFI	GROUND FAULT CIRCUIT INTERRUPTER
WR	WEATHER RESISTANT
MDP	MAIN DISTRIBUTION PANEL
PP	POWER PANEL
GND	GROUND
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
MAU	MAKE-UP AIR UNIT
IL	INTAKE LOUVER
CF	CEILING FAN

MacMILLAN ASSOCIATES
CONSULTING ENGINEERS
714 EAST MIDLAND STREET• BAY CITY, MICHIGAN 48706
(989) 894-4300 F (989) 894-9930 www.macmillanassociates.com

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

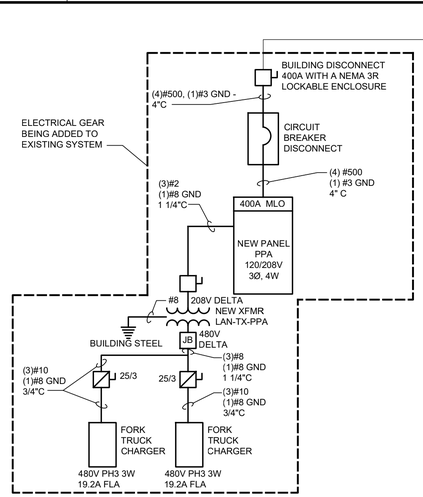
SIGNATURE
NAME: JAY W FOX
MICHIGAN P.E. No.: 6201058557

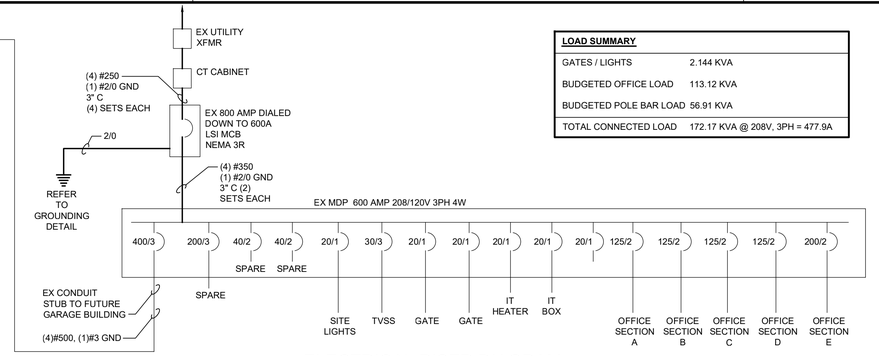
Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

ELECTRICAL INFORMATION

SCALE: AS NOTED
JOB: 240435P
DRAWING NO.: 3126-TWS-0000
SHEET: E3.01
REV.: A
UNIT:

SHEET SIZE: ANSI-D 22x34
7/18/2025 1:52 PM RMCCARTHY 196
F:\41-PUB\P3026\41002\2024-4102 GCON LANSING GCON SOUTHWEST\3026-4102-E-E3.01 ELECTRICAL INFORMATION





ELECTRICAL RISER DIAGRAM

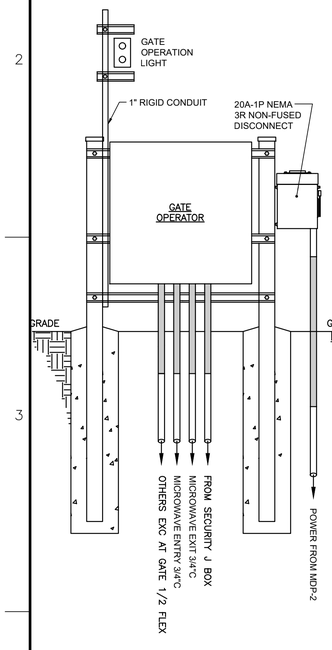
LOAD SUMMARY	
GATES / LIGHTS	2.144 KVA
BUDGETED OFFICE LOAD	113.12 KVA
BUDGETED POLE BAR LOAD	56.91 KVA
TOTAL CONNECTED LOAD	172.17 KVA @ 208V, 3PH = 477.9A

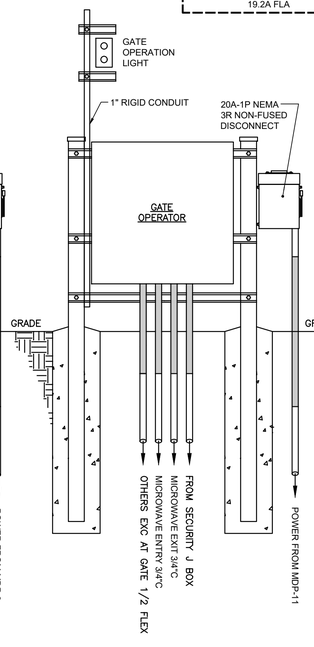
DISTRIBUTION PANEL MDP SCHEDULE

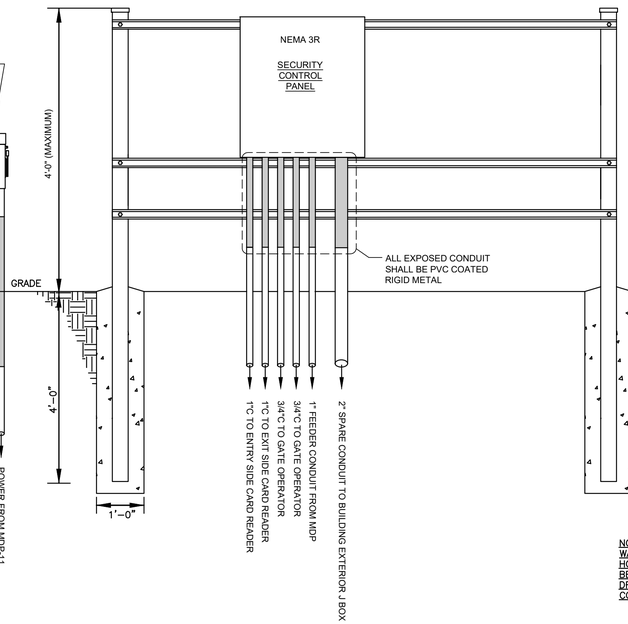
DEAD FRONT SURFACE MOUNTED WITH HINGED LOCKABLE DOOR, PLASTIC CIRCUIT DIRECTORY SLEEVE, SOLID NEUTRAL, SOLID GROUND, BOTTOM FEED, VERTICAL STACKED BUSSING WITH REINFORCED POLYESTER INSULATION BETWEEN PHASES, PLUG ON BREAKERS, 600A MCB, 208V 3 PHASE. 45" OF MOUNTING SPACE. PLATED COPPER BUSSING, FACTORY PAINTED FINISH AND A NEMA 3R ENCLOSURE. SQUARE D #I-LINE OR EQUAL.

IT CABINET SCHEDULE

HOFFMAN MANUF ELC 1207060P - COMPLINE OSP 25RU WALL MOUNT CABINET. INCLUDES M6 CAGE NUTS & M6 T-30 TORX PAN HEAD SCREWS. EGPACT2 - GLAND PLATE EGBB2 - 12-POSITION, DOUBLE LUG BUSS GROUND BAR. MOUNT OUTLETS IN BOTTOM OF CABINET.

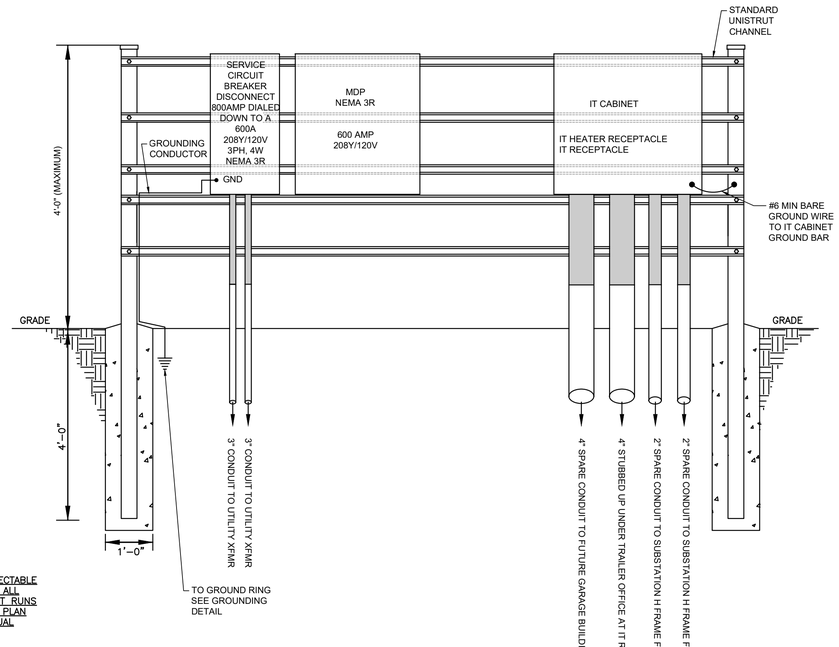






INSTALLATION ELEVATION FOR GATE EQUIPMENT RACK
NO SCALE

NOTE: PROVIDE DETECTABLE WARNING TAPE FOR ALL HORIZONTAL CONDUIT RUNS BELOW GRADE. SEE PLAN DRAWINGS FOR ACTUAL CONDUIT SIZES



UTILITY SERVICE RACK ELEVATION
NO SCALE

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

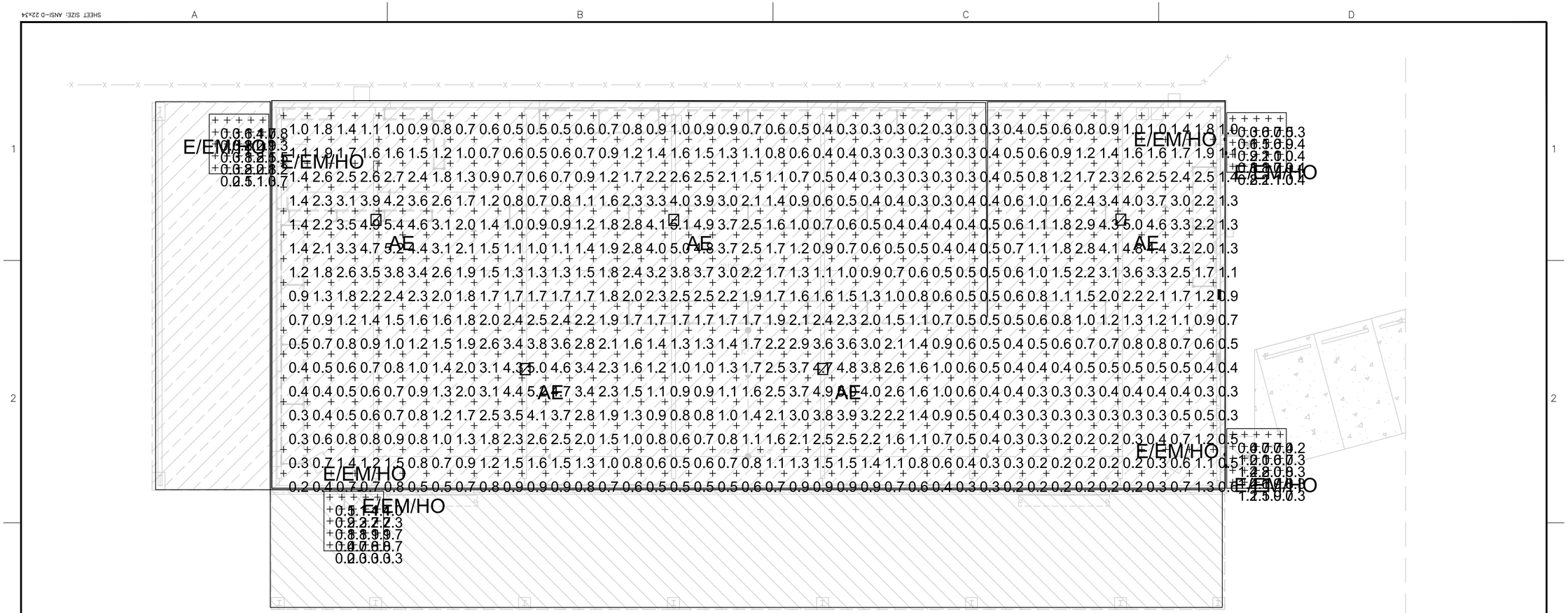
SIGNATURE
NAME
JAY W FOX
MICHIGAN P.E. No.
6201058557

Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

GATE DETAILS

UNIT:
SCALE: AS NOTED
JOB: 240435P
DRAWING NO. 3126-TWS-0000
SHEET E3.02
REV. E

SHEET SIZE: ANSI-D 22x34
7/18/2025 1:45 PM RMCCARTHY 196
F:\4-PLMP\2024-4102.2024-4102 CECO LANSING GCON SOUTHWEST\2024-4102-E3.02 ELECTRICAL GATE DETAILS



NORTH

EMERGENCY LIGHTING POINT BY POINT PLAN

1/8"=1'-0"

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
EM - North Exit	+	1.2 fc	2.9 fc	0.2 fc	14.5:1	6.0:1
EM - South East Exit	+	1.0 fc	2.1 fc	0.3 fc	7.0:1	3.3:1
EM - South West Exit	+	1.2 fc	2.8 fc	0.2 fc	14.0:1	6.0:1
EM - Warehouse	+	1.5 fc	5.4 fc	0.2 fc	27.0:1	7.5:1
EM - West Exit	+	1.2 fc	2.7 fc	0.2 fc	13.5:1	6.0:1

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	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

SIGNATURE

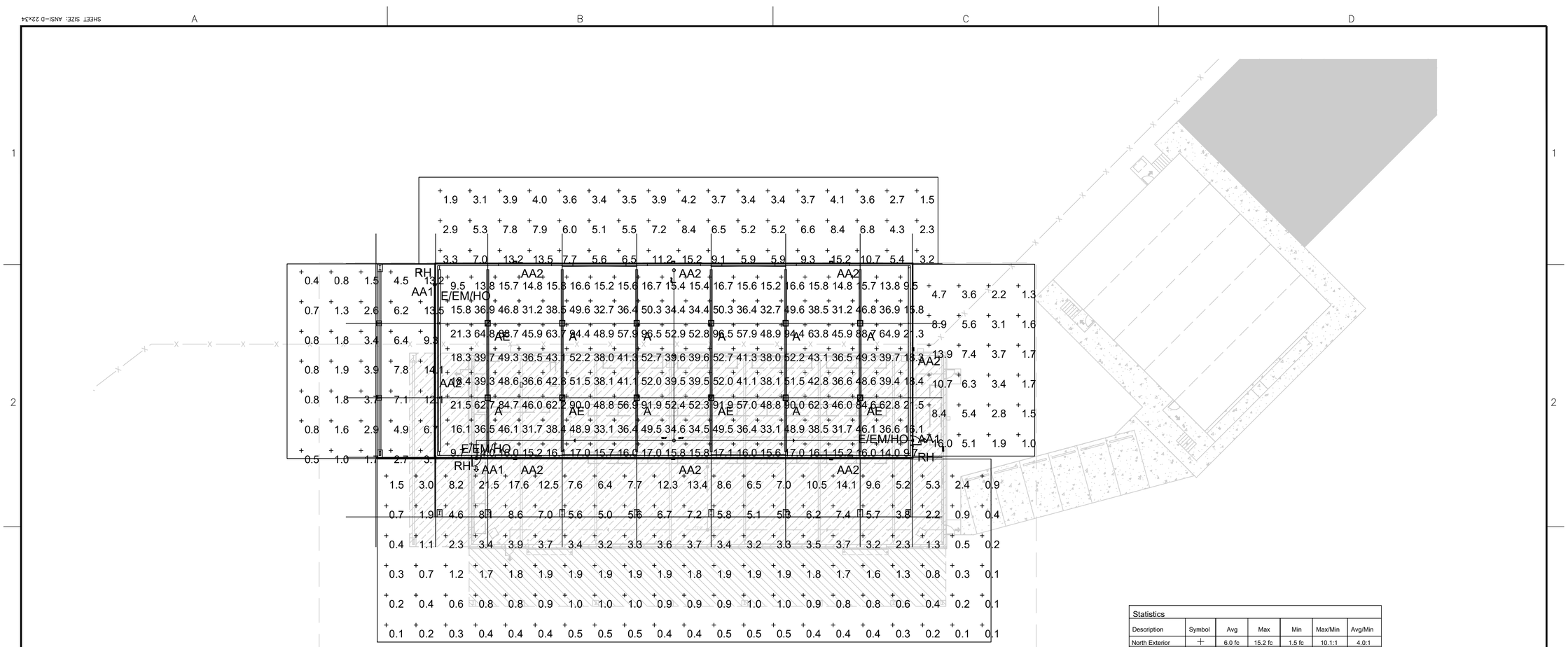
NAME
JAY W FOX
MICHIGAN P.E. No.
6201058557

Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

EMERGENCY LIGHTING
POINT BY POINT PLAN

SCALE: AS NOTED
JOB: 240435P
DRAWING NO. 3126-TWS-0000
SHEET E4.01
REV. A
UNIT:

7/18/2025 1:52 PM RMCCARTHY 196 F:\4-PLMP\3024-4102\2004-4102 GEGO LANSING GCON SOUTHWEST\3024-4102-E4.01 EMERGENCY LIGHTING POINT BY POINT PLAN



Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
North Exterior	+	6.0 fc	15.2 fc	1.5 fc	10.1:1	4.0:1
South Exit	+	3.1 fc	21.5 fc	0.1 fc	215.0:1	31.0:1
Warehouse	+	39.0 fc	96.5 fc	9.5 fc	10.2:1	4.1:1
West Exit	+	4.2 fc	14.1 fc	0.4 fc	35.3:1	10.5:1
East Exit	+	5.1 fc	16.0 fc	1.0 fc	16.0:1	5.1:1

NORTH

NORMAL LIGHTING POINT BY POINT PLAN

1/16"=1'-0"

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0.0" 0.5" 1.0" 1.5" 2.0"

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	A	7/18/25	ISSUED FOR RECORD	RLM	KJS	JWF	JWF	MAI

SIGNATURE

NAME
JAY W FOX

MICHIGAN P.E. No.
6201058557

Consumers Energy
GCON SOUTHWEST
1530 E. JOLLY RD., LANSING, MI 48911

NORMAL LIGHTING
POINT BY POINT PLAN

SCALE:	AS NOTED	DRAWING NO.	SHEET	REV.
JOB:	240435P	3126-TWS-0000	E4.02	A

UNIT:

7/18/2025 1:51 PM RMCCARTHY 196 F:\41-PUMP\3204-4102.2\04-4102 CE\01 LANSING GCON SOUTHWEST\3204-4102-E-E4.02 NORMAL LIGHTING POINT BY POINT PLAN

SHEET SIZE: ANSI-D 22x34

SHEET SIZE: ARCH–D 24x36

AS BUILT

Consumers Energy

GAS CONSTRUCTION SOUTHWEST

1530 E. JOLLY ROAD

CITY OF LANSING, INGHAM COUNTY, MICHIGAN

(SITE ENTRANCE NEAR 5411 ENTERPRISE DR, LANSING, MI 48911)

LEGEND

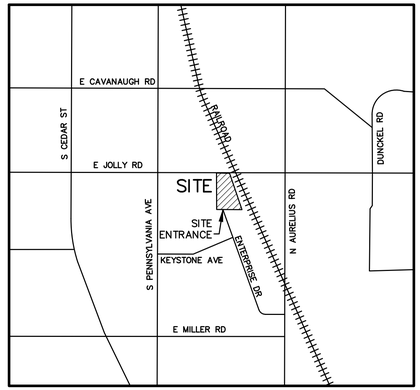
IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	Y.D.
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY, HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26065C0142D DATED AUGUST 16, 2011.

PERMIT / APPROVAL SUMMARY

DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL
9/15/2023	12/14/2023	CITY SITE PLAN



LOCATION MAP
NO SCALE

NORTH

SCHEDULE OF DRAWINGS

SHEET	DESCRIPTION	SUBMITTAL 15	30	60	90	100	BIDS	CONST.	BULLETIN 1	2	3	4	5	6	AS BUILT
		N/A	4/24/23	7/19/23	8/16/23	8/30/23	10/11/23	02/22/24	04/10/24	05/03/24	07/02/24	07/03/24	08/15/24	09/23/24	03/31/25
C-0.0	COVER SHEET			X	X	X	X	X						X	X
C-1.1	TOPOGRAPHIC SURVEY			X	X	X	X	X							X
C-1.2	TOPOGRAPHIC SURVEY			X	X	X	X	X							X
C-2.1	DEMOLITION PLAN			X	X	X	X	X						X	X
C-2.2	DEMOLITION PLAN			X	X	X	X	X						X	X
C-3.1	DIMENSION AND PAVING PLAN		X	X	X	X	X	X			X		X	X	X
C-3.2	DIMENSION AND PAVING PLAN				X	X	X	X			X		X	X	X
C-3.3	ROADWAY SECTIONS					X	X	X							X
C-4.1	GRADING PLAN			X	X	X	X	X						X	X
C-4.2	GRADING PLAN			X	X	X	X	X						X	X
C-4.3	ROADWAY PLAN & PROFILE						X	X							X
C-5.1	SOIL EROSION AND SEDIMENTATION CONTROL PLAN			X	X	X	X	X						X	X
C-5.2	SOIL EROSION AND SEDIMENTATION CONTROL PLAN			X	X	X	X	X						X	X
C-5.3	SESC DETAILS				X	X	X	X							X
C-6.1	UTILITY PLAN			X	X	X	X	X			X			X	X
C-6.2	UTILITY PLAN			X	X	X	X	X		X	X			X	X
C-7.1	DRAINAGE AREA PLAN			X	X	X	X	X						X	X
C-7.2	DETENTION BASIN CALCULATIONS			X	X	X	X	X						X	X
C-8.0	NOTES AND DETAILS			X	X	X	X	X							X
C-8.1	DETAILS			X	X	X	X	X							X
C-8.2	DETAILS			X	X	X	X	X			X			X	X
L-1.0	LANDSCAPE PLAN			X	X	X	X	X						X	X
L-1.1	LANDSCAPE PLAN					X	X	X						X	X
L-1.2	LANDSCAPE DETAILS			X	X	X	X	X							X
L-2.1	LANDSCAPE SPECIFICATIONS				X	X	X	X							X
L-2.2	LANDSCAPE SPECIFICATIONS				X	X	X	X							X
SE1	ELECTRICAL SITE PLAN				X	X	X	X	X			X		X	
SE2	LIGHTING POINT BY POINT CALCULATIONS				X	X	X	X				X		X	
E1	GATE DETAILS				X	X	X	X						X	
E2	ELECTRICAL DETAILS					X	X	X							

AS BUILT DATE MARCH 31, 2025
AB= AS BUILT LENGTH, QUANTITY AND/OR ELEVATION

PEA GROUP

PROJECT NARRATIVE

THE CONSUMERS ENERGY GAS CONSTRUCTION (GCON) BEGAN IN 2012 AND CONSISTS OF A 25–YEAR LONG STATE–WIDE PROJECT TO REPLACE 2,600 MILES OF AGING NATURAL GAS PIPELINES ACROSS MICHIGAN.

IN ORDER TO SUPPORT LOCAL PIPE REPLACEMENT PROJECTS THROUGHOUT THE INGHAM COUNTY AREA, CONSUMERS ENERGY IS PROPOSING SITE IMPROVEMENTS AT 1530 E. JOLLY ROAD TO SERVE AS A LOCAL CONSTRUCTION HUB.

PROPOSED IMPROVEMENTS INCLUDE MODULAR OFFICE BUILDING, BARN, SITE PERIMETER SECURITY FENCING WITH GATED ACCESS, ASPHALT PAVEMENT, GRAVEL STORAGE YARD, PARKING LOT LIGHTING, LANDSCAPING, AND STORM WATER MANAGEMENT SYSTEM IMPROVEMENTS.

THE 18–ACRE SITE IS ZONED "IND–1 SUBURBAN INDUSTRIAL" AND IS PARTIALLY DEVELOPED. THE SITE IS OWNED BY CONSUMERS ENERGY. PARCEL ID 33–01–05–03–201–001

WETLAND BUFFER STATEMENT:
THE SITE IMPROVEMENTS SHOWN ON THIS PLAN PROVIDE A 15' (MINIMUM) NO–DISTURBANCE BUFFER FROM THE STREAM LOCATED ON THE SUBJECT PROPERTY. THE BUFFER IS INTENDED TO DEMONSTRATE AVOIDANCE OF NATURAL SITE FEATURES AND COMPLIANCE WITH THE RULES AND REQUIREMENTS OF EGLE PART 303 WETLANDS PROTECTION AND PART 301 INLAND LAKES AND STREAMS.

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

DESIGN TEAM

OWNER
CONSUMERS ENERGY
ONE ENERGY PLAZA
JACKSON, MICHIGAN 49201
CONTACT: RYAN SCHMOEKEL
EMAIL: RYAN.SCHMOEKEL@CMSENERGY.COM

CIVIL ENGINEER
PEA GROUP
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BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
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EMAIL: SPERUSKI@PEAGROUP.COM

ELECTRICAL ENGINEER
MACMILLAN ASSOCIATES
714 E. MIDLAND STREET
BAY CITY, MICHIGAN 48706
CONTACT: JAY FOX
PHONE: 989.894.4300
EMAIL: JFOX@MACMILLANASSOCIATES.COM

LANDSCAPE ARCHITECT
PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: JANET EVANS
PHONE: 844.813.2949
EMAIL: JEVANS@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

COVER SHEET

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C–0.0
REV. 0

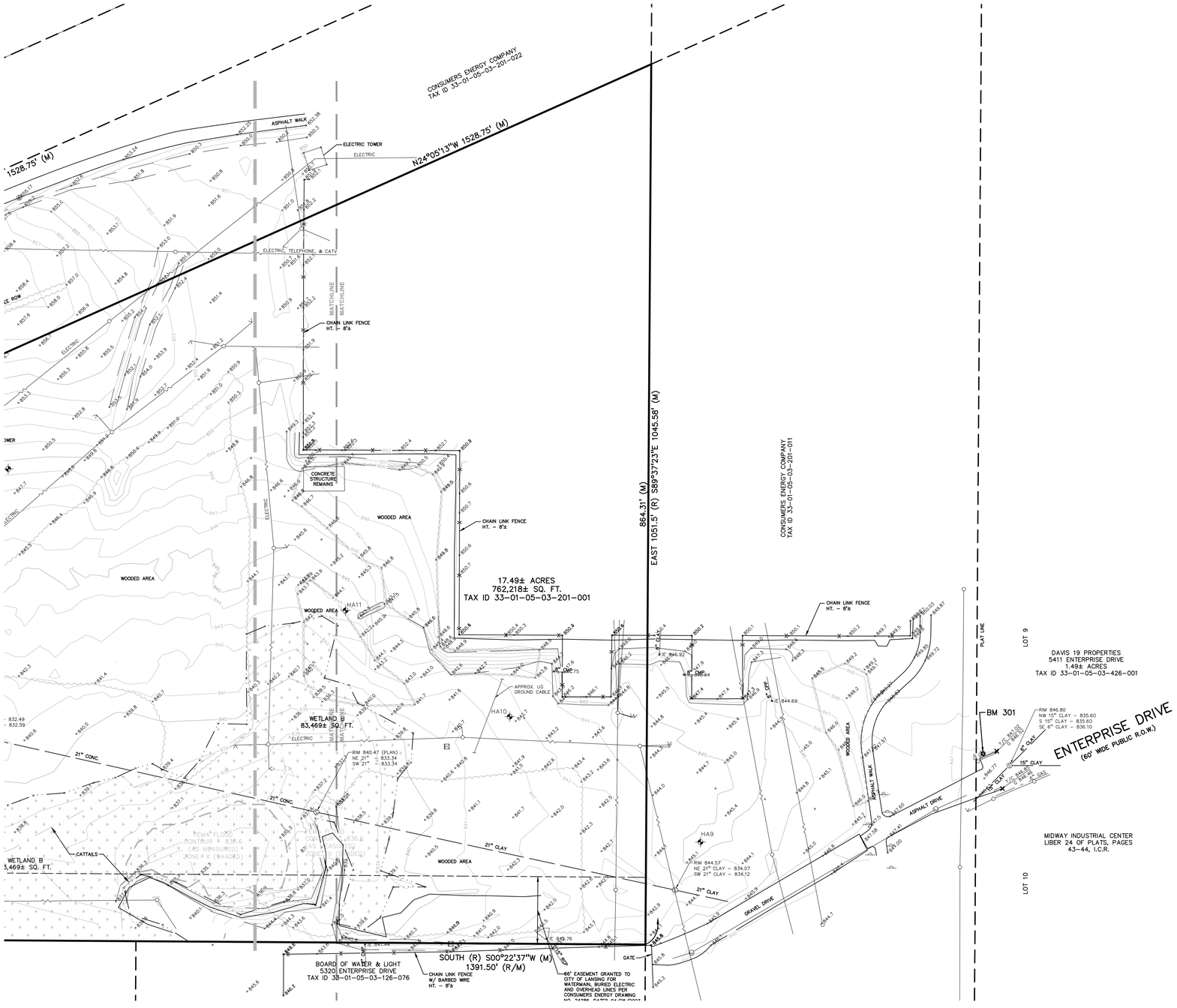
S:\PROJECTS\2022\2022–0966 CE 2022 ERP LANSING\CMS\AS BUILT\C–0.0 COVER–22–0966.dwg

SHEET SIZE: ARCH-D 24x36

LEGEND:

- EX. OH, ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND

- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C — RECORDED / MEASURED / CALCULATED
- HAND AUGER LOCATION



LEGEND

	EXISTING	PROPOSED
IRON FOUND / IRON SET / NAIL FOUND / NAIL & CAP SET		
BRASS PLUG SET / MONUMENT FOUND / MONUMENT SET		
SEC. CORNER FOUND		
R RECORDED / M MEASURED / C CALCULATED		
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE		
UNDERGROUND UTILITY AS MARKED		
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE		
GAS MAIN, VALVE & GAS LINE MARKER		
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE		
SANITARY SEWER, CLEANOUT & MANHOLE		
STORM SEWER, CLEANOUT & MANHOLE		
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN		
WATER VALVE BOX		
DISTRIBUTION LINE		
SERVICE LINE		
STATIC LINE		
46KV LINE		
138KV LINE		
SPOT ELEVATION		
CONTOUR LINE		
FENCE		
STREET LIGHT		
SIGN		
HAND AUGER LOCATION		
CONCRETE		
ASPHALT		
GRAVEL		

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26065C0142D DATED AUGUST 16, 2011

BENCHMARKS
(NAVD 88, GPS DERIVED)

BM 300 – Chiseled "+" on the East bolt of the Southeast bolt pattern on the base of tower pole along the South right of way line of Jolly Road.
Elevation: 844.75

BM 301 – Top bolt on fire hydrant at the Northeast end of Enterprise Drive.
Elevation: 849.42

REFERENCE DRAWINGS:

GAS	CONSUMERS ENERGY
SANITARY SEWER	CITY OF LANSING
STORM SEWER	CITY OF LANSING

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0 25 50 100
SCALE: 1" = 50'

PEA GROUP
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BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

TOPOGRAPHIC SURVEY

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET: C-1.2
REV.: 0

S:\PROJECTS\2021\2022-0996 CE 2022 ERP LANSING\DWG\AS BUILT\C-1.0 TOPO 22-0996.dwg

SHEET SIZE: ARCH-D 24x36

BENCHMARKS
(NAVD 88, GPS DERIVED)

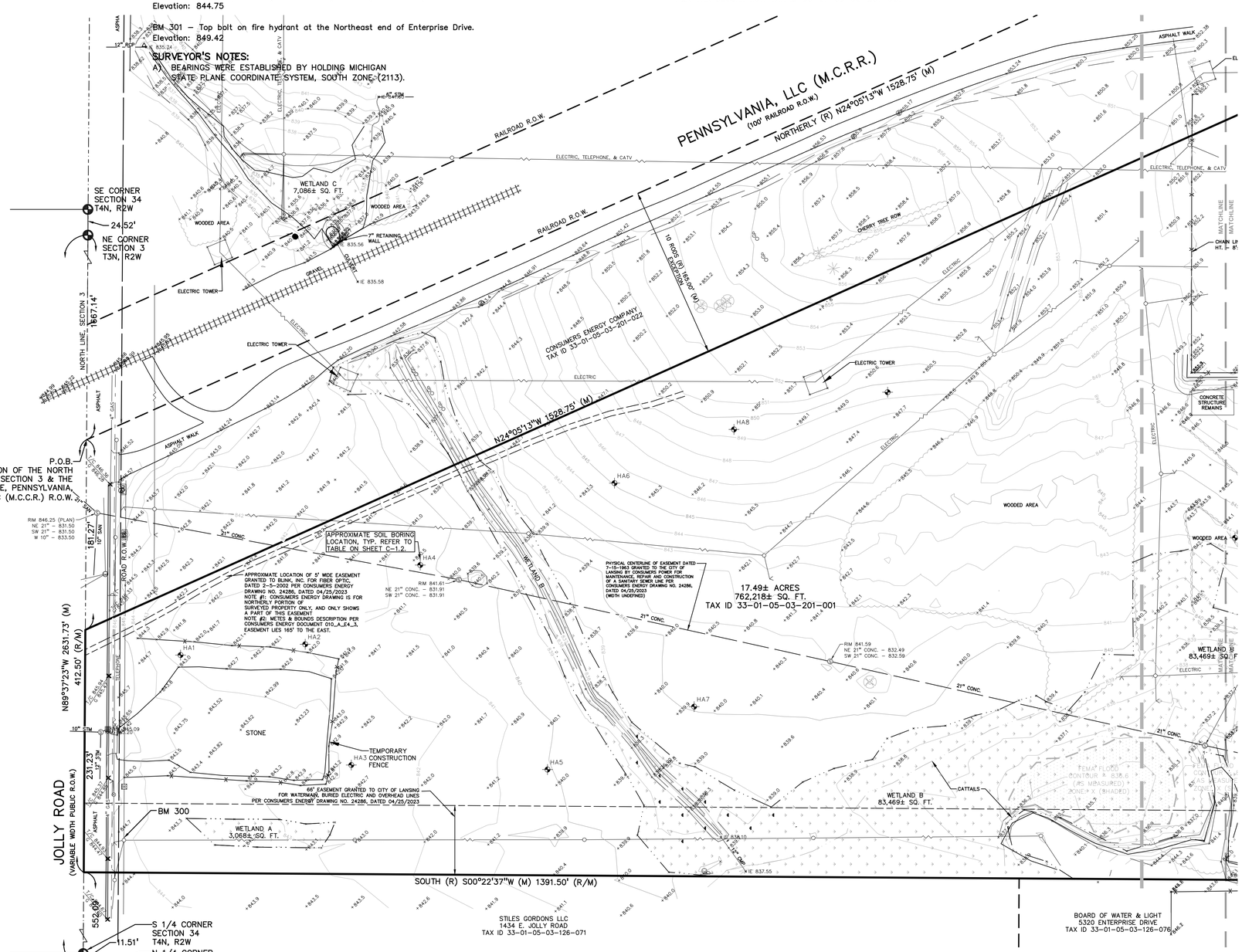
BM 300 – Chiseled "+" on the East bolt of the Southeast bolt pattern on the base of tower pole along the South right of way line of Jolly Road. Elevation: 844.75

BM 301 – Top bolt on fire hydrant at the Northeast end of Enterprise Drive. Elevation: 849.42

SURVEYOR'S NOTES:
A) BEARINGS WERE ESTABLISHED BY HOLDING MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, (2113).

LEGAL DESCRIPTION
BEGINNING INTERSECTION N LINE SEC 3 & W LINE MC RR R/W, TH W ON SEC LINE 412.5 FT, S 1391.5 FT, E 1051.5 FT TO SAID R/W, N'LY TO BEG EXC A 10 R STRIP OF LAND W OF & ADJACENT TO MC RR R/W; SEC 3 T3N R2W

PER TAX DESCRIPTION TAX ID 33-01-05-03-201-001



LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	
CONTOUR LINE	
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY / HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26065C0142D DATED AUGUST 16, 2011

FLOODPLAIN:
(Per Flood Insurance Rate Map Number 26065C0141D & 26065C0142D. Revised Date August 16, 2011)

OTHER FLOOD AREAS
ZONE X – Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS
ZONE X – Area to be determined outside of the 0.2% annual chance floodplain.

SCALE: 1" = 50'

811 Know what's below. Call before you dig.

CAUTION!! THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

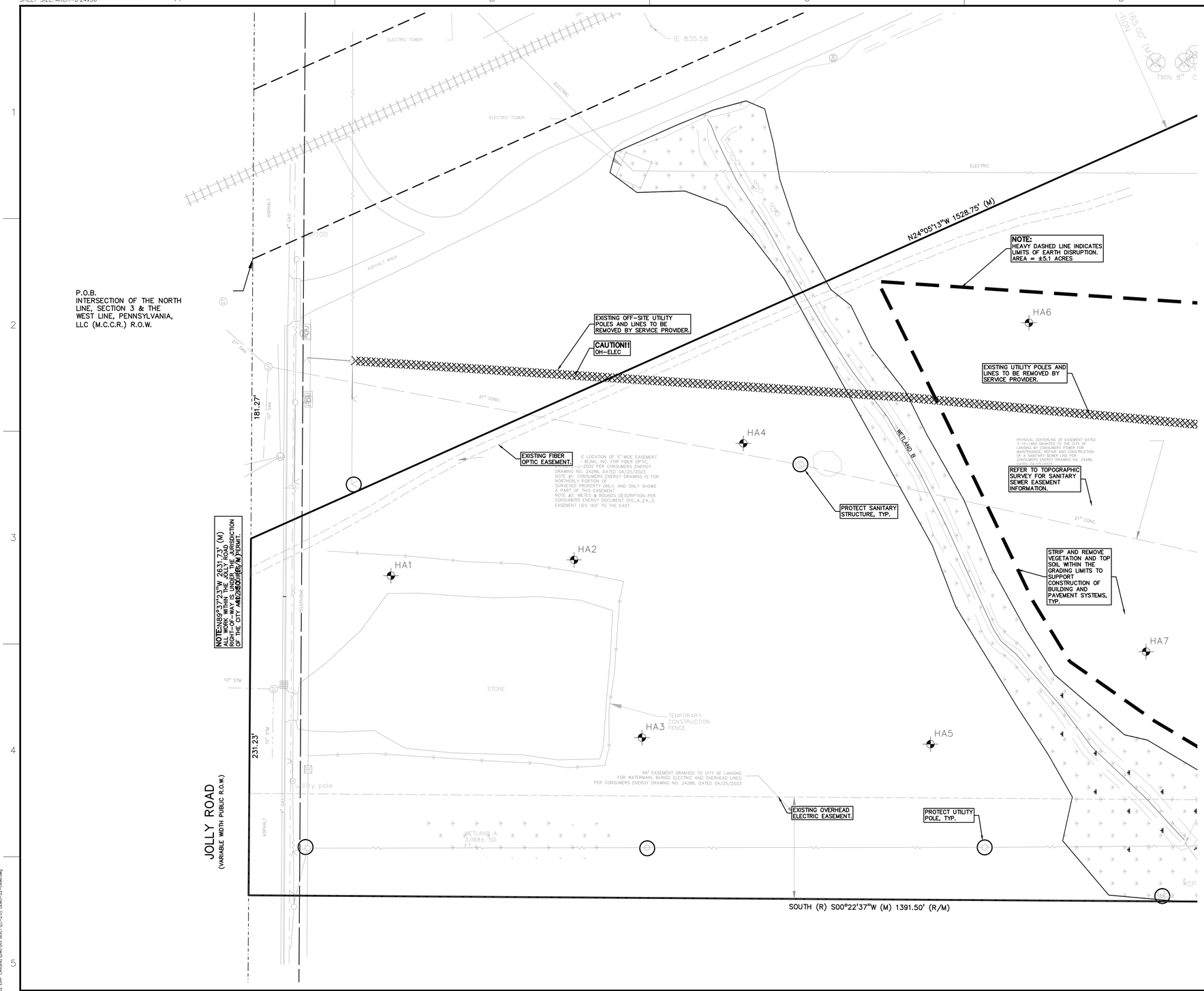
Consumers Energy
GCON SOUTHWEST – LANSING

TOPOGRAPHIC SURVEY

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-1.1
REV. 0

S:\PROJECTS\2022\2022-0996 (E 2022 DPP LANSING\DWG\AS BUILTs\C-1.0 TOPO 22-0996.dwg

SHEET SIZE: ARCH-D 24x36



LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	C.O.
STORM SEWER, CLEANOUT & MANHOLE	C.O.
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	Y.D.
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46KV LINE	
138KV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY / HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	STD DUTY

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26065C0142D DATED AUGUST 16, 2011

DEMOLITION LEGEND:

ITEM TO BE PROTECTED	
ITEM TO BE REMOVED	
CURB/FENCE REMOVAL	
CONCRETE PAVEMENT AND SIDEWALK REMOVAL	
AREA OR ITEMS TO BE REMOVED	
UTILITY REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

1. ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
2. ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
3. STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED BETWEEN THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR TO UTILIZE TEMPORARY FENCE PANELS AS NEEDED TO KEEP THE EXISTING FENCED AREA SECURE THROUGHOUT CONSTRUCTION.
4. SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
5. REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
7. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
8. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITIES HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
9. REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
10. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

811 Know what's below. Call before you dig.

0 15 30 60
SCALE: 1" = 30'

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE AND RELY UPON FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

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EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	PEA
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

DEMOLITION PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-2.1
REV. 0

S:\PROJECTS\20221\2022-0996 DE 2023 ENP J:\WORK\DWG\AS BUILTs\C-2.01 DEMO-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

BUILDING DEMOLITION:
REMOVE EXISTING BUILDING REMNANTS AND ALL ASSOCIATED FOOTINGS, FOUNDATIONS, SLABS, UTILITY LEADS ETC. CONTRACTOR TO ENSURE THAT ALL UTILITIES ARE OUT OF SERVICE PRIOR TO START OF REMOVALS. COORDINATE ALL UTILITY REMOVALS WITH THE APPROPRIATE UTILITY COMPANY. BACKFILL ALL FOOTING/FOUNDATION EXCAVATIONS WITH M.D.O.T. CLASS II GRANULAR MATERIAL COMPACTED TO 95% MAX DRY UNIT WEIGHT (ASTM D-1557).

NOTE:
HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION.
AREA = ±5.1 ACRES

STRIP AND REMOVE VEGETATION AND TOP SOIL WITHIN THE GRADING LIMITS TO SUPPORT CONSTRUCTION OF BUILDING AND PAVEMENT SYSTEMS, TYP.

STRIP AND REMOVE VEGETATION AND TOP SOIL WITHIN THE GRADING LIMITS TO SUPPORT CONSTRUCTION OF BUILDING AND PAVEMENT SYSTEMS, TYP.

17.49± ACRES
762,218± SQ. FT.
TAX ID 33-01-05-03-201-001

CAUTION!!
UNDERGROUND UTILITIES

REMOVE TREE.

DEMOLITION LEGEND:
- ITEM TO BE PROTECTED
- ITEM TO BE REMOVED
- CURB/FENCE REMOVAL
- CONCRETE PAVEMENT AND SIDEWALK REMOVAL
- AREA OR ITEMS TO BE REMOVED
- UTILITY REMOVAL
- ASPHALT REMOVAL
- TREE REMOVAL

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY, HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26065C0142D DATED AUGUST 16, 2011.

SOUTH (R)
S00°22'37"W
(M) 1391.50'
(R/M)

SCALE: 1" = 30'

811 Know what's below. Call before you dig.

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	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

DEMOLITION PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-2.2
REV. 0

S:\PROJECTS\2022\2022-0996 CE 2022 DEP LANSING\DWG\AS BUILT\C-2.0 DEMO-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.

SIGN LEGEND:

'BARRIER FREE PARKING' SIGN	1
'VAN ACCESSIBLE' SIGN	2
'NO TURN AROUND' SIGN	3

REFER TO DETAIL SHEET FOR SIGN DETAILS

LEGEND

IRON FOUND, IRON SET, NAIL FOUND, NAIL & CAP SET, BRASS PLUG SET, MONUMENT FOUND, MONUMENT SET, SEC. CORNER FOUND
R RECORDED, M MEASURED, C CALCULATED

EXISTING / PROPOSED

ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
UNDERGROUND UTILITY AS MARKED
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN, VALVE & GAS LINE MARKER
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER, CLEANOUT & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
WATER VALVE BOX
DISTRIBUTION LINE
SERVICE LINE
STATIC LINE
46kV LINE
138kV LINE
SPOT ELEVATION
CONTOUR LINE
FENCE
STREET LIGHT
SIGN
HAND AUGER LOCATION
CONCRETE
ASPHALT
GRAVEL

SITE DRIVE TYPICAL SECTION B-B
NOT TO SCALE

SITE LIGHTING, TYP. REFER TO ELECTRICAL PLANS.
CHAIN LINK SECURITY FENCE FENCE WITH BARBED WIRE, TYP. REFER TO DETAIL ON SHEET C-8.1.
EX OH ELEC, TYP.
CONNECT TO EX. FENCE.
CONCRETE JERSEY BARRIERS, TYP.
5' MIN.
3' MAX.
CONCRETE STRUCTURE REMAINS
CONEX STORAGE
BARRIER FREE PARKING SPACES AND SYMBOLS TO BE MARKED USING 4" BLUE STRIPING, TYP.
CONCRETE PARKING BUMPER. REFER TO DETAIL ON SHEET C-8.1
SIGN, TYP. REFER TO LEGEND ON THIS SHEET.
4" DIAGONAL YELLOW STRIPING AT 48" O.C. FOR NO PARKING AREA.
PROVIDE 4" YELLOW STRIPING FOR STANDARD PARKING SPACES, TYP.
STANDARD DUTY ASPHALT PAVEMENT, TYP. REFER TO DETAIL ON SHEET C-8.1
INDICATES NUMBER OF PARKING SPACES, TYP.
SWALE TO DIRECT UPHILL WATER AROUND PROPOSED IMPROVEMENTS.
EXISTING OVERHEAD ELECTRIC TO REMAIN.
NEW POLE BY SERVICE PROVIDER.
RELOCATED OVERHEAD ELECTRIC BY SERVICE PROVIDER.
PROPOSED TRAILER 4,320 SQ.FT. F.F. 849.50 F.G. 846.00
DOOR
MECHANICAL UNIT
ELEC., TYP.
FUTURE POLE BARN 10,604 SQ.FT. F.F. 846.00 F.G. 845.50
OVERHEAD DOOR
OVERHEAD CANOPY, TYP.
160.67'
17.49± ACRES
762,218± SQ. FT.
TAX ID 33-01-05-03-201-001
WOODED AREA
GRAVEL SURFACE WITH GEOGRID FOR ROADWAY, TYP. REFER TO DETAIL ON SHEET C-8.1 FOR MATERIAL COMPOSITION. REFER TO SPEC ON SHEET C-8.0
GRAVEL SURFACE FOR STORAGE YARD, TYP. REFER TO DETAIL ON SHEET C-8.1 FOR MATERIAL COMPOSITION.
FLAG POLE AND BASE. REFER TO DETAIL ON SHEET C-8.1
REFER TO ARCH. PLANS FOR RAMPS, LANDINGS, AND STEPS TO ACCESS TRAILER, TYP. PROVIDE SHOP DRAWING FOR OWNER APPROVAL.
SITE LIGHT ADDED A/B
HEAVY DUTY CONCRETE PAVEMENT, TYP. REFER TO DETAIL ON SHEET C-8.1.
3'X3' CONCRETE COLLAR AT CLEANOUT. REFER TO DETAIL ON SHEET C-8.1.
8'X8' CONCRETE COLLAR AT MANHOLE. REFER TO DETAIL ON SHEET C-8.1.
RIM 841.59
NE 21" CONC. = 832.49
SW 21" CONC. = 832.59
EX. SANITARY SEWER, TYP.
EX. SANITARY SEWER MANHOLE, TYP. TO BE RECONSTRUCTED. REFER TO UTILITY PLANS
DETENTION BASIN
DETENTION BASINS WITH EQUALIZATION PIPE FOR IMPROVED SITE AREAS. REFER TO SHEETS C-7.1 TO C-7.3 FOR INFORMATION.
WETLAND B 83,469± SQ. FT.
CATTAILS
EX. CULVERT TO REMAIN.
IE 838.10
12" RCP
IE 837.55
RIM 840.47 (PLAN)
NE 21" = 833.34
SW 21" = 833.34
FEMA FLOOD CONTOUR = 836.6 (AS MEASURED) ZONE: X (SHADED)
8'X5' CONCRETE SLAB FOR FENCE GATE, TYP. REFER TO DETAIL ON SHEET C-8.1.
TWO-WAY SPLIT GATE. REFER TO DETAIL ON SHEET C-8.2. PROVIDE SHOP DRAWINGS FOR OWNER APPROVAL.
8" CMP IE 844.75
FENCE A/B
APPROX. UG GROUND CABLE
CARD READER WITH BOLLARDS. REFER TO DETAIL ON SHEET C-8.1
ELEC. HAND HOLE A/B
KNOX BOX MOUNTED PER FIRE DEPARTMENT STANDARDS.
TYPICAL ROAD CROSS SECTION. REFER TO DETAIL THIS SHEET AND CROSS SECTIONS ON SHEET C-3.3.
30' WIDE EASEMENT FOR SANITARY SEWER
GRAVEL SURFACE WITH GEOGRID FOR ROADWAY, TYP. REFER TO DETAIL ON SHEET C-8.1 FOR MATERIAL COMPOSITION. REFER TO SPEC ON SHEET C-8.0
EXISTING OVERHEAD ELECTRIC EASEMENT.
RIM 844.57
NE 21" CLAY = 834.02
SW 21" CLAY = 834.16
8" CMP IE 846.64
8" CMP IE 844.69
IE 846.92
IE 842.76
IE 841.44
12" RCP
GRAVEL DRIVE
GATE
CHAIN LINK FENCE W/ BARBED WIRE HT. = 8'±
SOUTH (R)
S00°22'37"W
(M) 1391.50'
(R/M)

SCALE: 1" = 30'

811 Know what's below. Call before you dig.

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

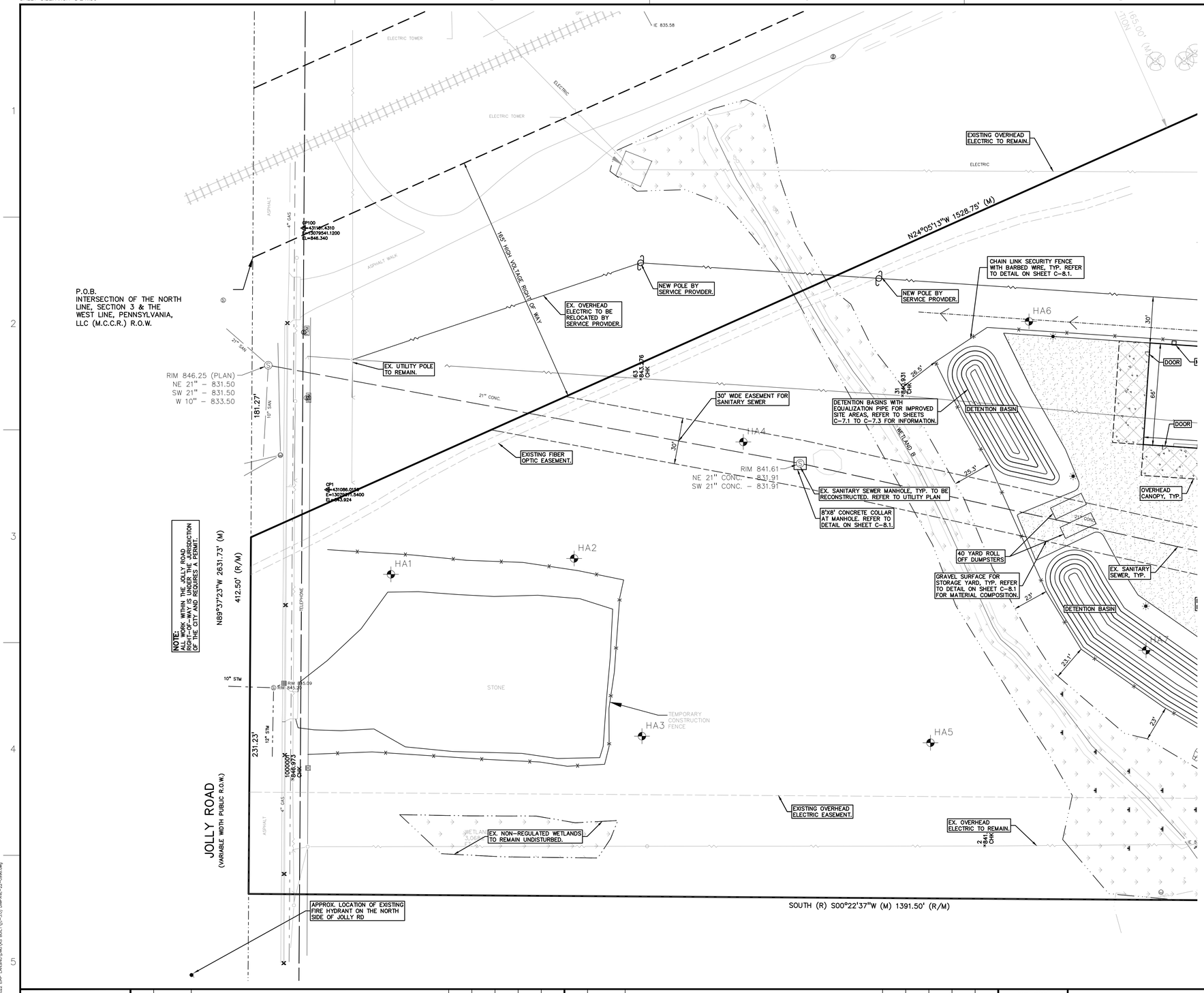
Consumers Energy
GCON SOUTHWEST – LANSING

DIMENSION AND PAVING PLAN

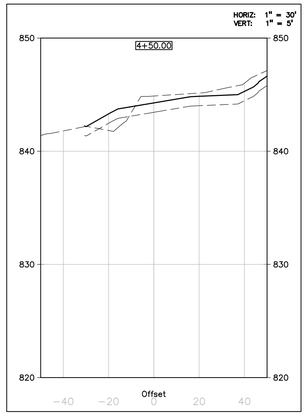
SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET: C-3.2
REV.: 0

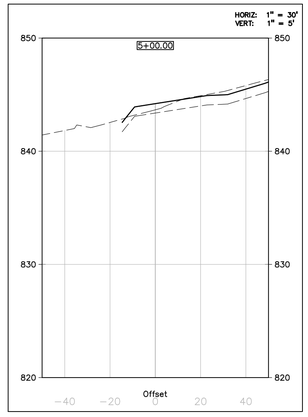
S:\PROJECTS\2021\2021-0906 CE 2022 ESP LANSING\DWG\AS BUILTs\C-3.0 DIMPAVE-22-0906.dwg

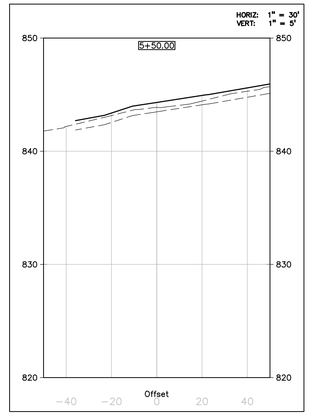
SHEET SIZE: ARCH-D 24x36

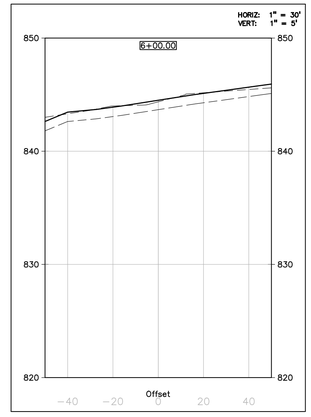

P.O.B.
INTERSECTION OF THE NORTH LINE, SECTION 3 & THE WEST LINE, PENNSYLVANIA, LLC (M.C.C.R.) R.O.W.
CP100
431187.4310
E=507954.1200
EL=846.340
CP1
431086.0116
E=1302987.5400
EL=843.924
RIM 846.25 (PLAN)
NE 21" - 831.50
SW 21" - 831.50
W 10" - 833.50
181.27'
N24°05'13"W 1528.75' (M)
165' HIGH VOLTAGE RIGHT OF WAY
EXISTING OVERHEAD ELECTRIC TO REMAIN.
NEW POLE BY SERVICE PROVIDER.
EX. OVERHEAD ELECTRIC TO BE RELOCATED BY SERVICE PROVIDER.
EX. UTILITY POLE TO REMAIN.
CHAIN LINK SECURITY FENCE WITH BARBED WIRE, TYP. REFER TO DETAIL ON SHEET C-8.1.
30' WIDE EASEMENT FOR SANITARY SEWER
EXISTING FIBER OPTIC EASEMENT.
DETENTION BASINS WITH EQUALIZATION PIPE FOR IMPROVED SITE AREAS, REFER TO SHEETS C-7.1 TO C-7.3 FOR INFORMATION.
DETENTION BASIN
EX. SANITARY SEWER MANHOLE, TYP. TO BE RECONSTRUCTED. REFER TO UTILITY PLAN
8'X8' CONCRETE COLLAR AT MANHOLE. REFER TO DETAIL ON SHEET C-8.1.
RIM 841.61
NE 21" CONC. - 831.91
SW 21" CONC. - 831.91
HA1
HA2
HA3
HA4
HA5
HA6
DOOR
OVERHEAD CANOPY, TYP.
40 YARD ROLL OFF DUMPSTERS
GRAVEL SURFACE FOR STORAGE YARD, TYP. REFER TO DETAIL ON SHEET C-8.1 FOR MATERIAL COMPOSITION.
EX. SANITARY SEWER, TYP.
NOTE: WORK WITHIN THE JOLLY ROAD RIGHT-OF-WAY IS UNDER THE JURISDICTION OF THE CITY AND REQUIRES A PERMIT.
N89°37'23"W 2631.73' (M)
412.50' (R/M)
231.23'
JOLLY ROAD
(VARIABLE WIDTH PUBLIC R.O.W.)
STONE
TEMPORARY CONSTRUCTION FENCE
EXISTING OVERHEAD ELECTRIC EASEMENT.
EX. NON-REGULATED WETLANDS TO REMAIN UNDISTURBED.
EX. OVERHEAD ELECTRIC TO REMAIN.
APPROX. LOCATION OF EXISTING FIRE HYDRANT ON THE NORTH SIDE OF JOLLY RD
SOUTH (R) S00°22'37"W (M) 1391.50' (R/M)
ELECTRIC TOWER
ELECTRIC
ASPHALT
ASPHALT WALK
4" GAS
21" SAN
10" SAN
21" CONC.
TELEPHONE
10" STM
12" STM
WETLAND B
WETLAND A
RIM 845.09
IE 835.58
IE 843.76
IE 843.93
IE 844.31
IE 844.97
IE 845.27
IE 846.97
IE 846.93
IE 846.97
IE 847.31
IE 847.31
IE 847.31

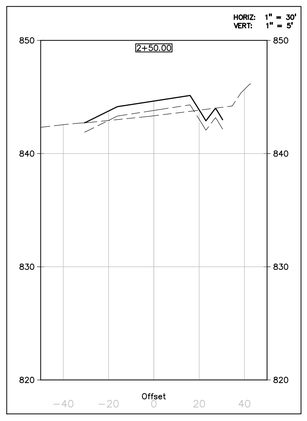
SHEET SIZE: ARCH–D 24x36

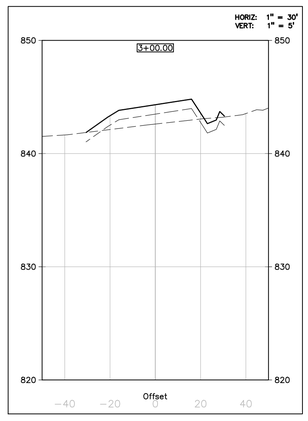


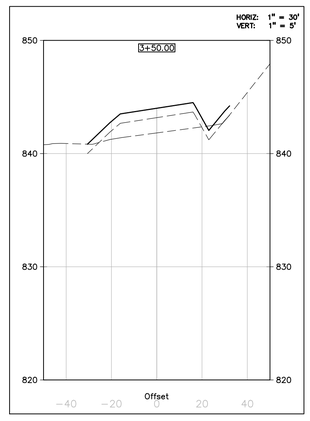


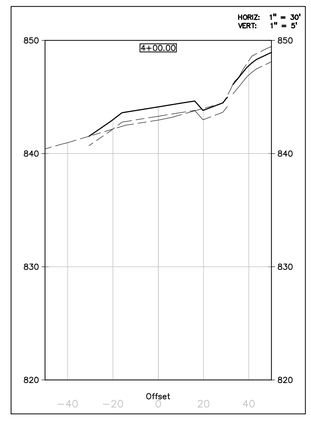


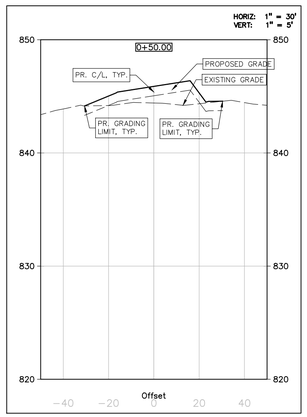


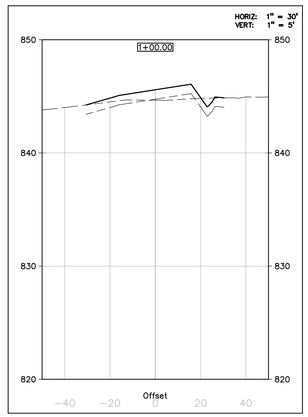


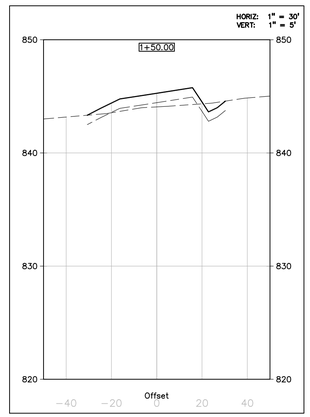


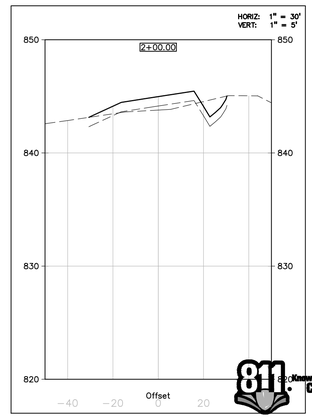












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EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE

NAME
SCOTT PERUSKI

MICHIGAN P.E. No.
6201060666

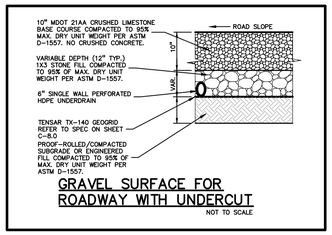
Consumers Energy
GCON SOUTHWEST – LANSING

ROADWAY SECTIONS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C–3.3
REV. 0

S:\PROJECTS\2022\2022-0966.2E 2023 DRP LMOPs\DWGs\E BaLTV\C-133 SECTIONS-22-0966.dwg

SHEET SIZE: ARCH-D 24x36



GRAVEL SURFACE FOR ROADWAY WITH UNDERCUT

NOT TO SCALE

BULLETIN #2 SUMMARY:

- REPRESENTS WORK SCOPE CHANGES FROM 0+00 TO 3+50.
- A FUTURE BULLETIN WILL ADDRESS DESIGN CHANGES BEYOND 3+50.
- THE ROADWAY ALIGNMENT AND WIDTH WAS NOT CHANGED.
- THE GRADING LIMITS WERE NOT CHANGED.
- CURRENT ROADWAY GROUND ELEVATIONS AS OF 4/30/24 ARE CONSIDERED AT OR NEAR THE TARGET DEPTH AFTER TOP SOIL STRIPPING PER CONTRACT DOCS.
- 1X3 STONE FILL IS REQUIRED TO MEET THE REVISED DESIGN SUBGRADE BELOW THE TOP GRAVEL SURFACE. AN UNDERDRAIN HAS BEEN ADDED TO THE DESIGN. REFER TO DETAIL ABOVE.
- THE ROADWAY LOW POINT AND CULVERT WERE MOVED FROM STATION 3+05± TO 3+48±.
- A NEW 12" RCP CULVERT WAS ADDED AT STATION 0+25± TO PASS OFFSITE FLOWS BENEATH ROADWAY.
- THE ROADWAY HAS A PROPOSED SWALE ON THE EAST SIDE ONLY.
- THE SWALE WAS SHIFTED AWAY FROM THE ROAD BY 2' TO LESSEN ADJACENT GRADE SLOPES.
- THE SWALE WAS LOWERED TO ACCOMMODATE THE EXISTING 6" CLAY DRAIN TILE THAT WAS UNCOVERED DURING MASS GRADING.

GRADING LEGEND:

- 886.91 — EXISTING SPOT ELEVATION
- 822.50 — PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- 870 — EXISTING CONTOUR
- 822 — PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	G = GUTTER GRADE
T/P = TOP OF PAVEMENT	F.G. = FINISH GRADE
T/S = TOP OF SIDEWALK	RIM = RIM ELEVATION
T/W = TOP OF WALL	B/W = BOTTOM OF WALL

REFER TO GRADING NOTES ON SHEET C-8.0

EARTHWORK BALANCING NOTE:

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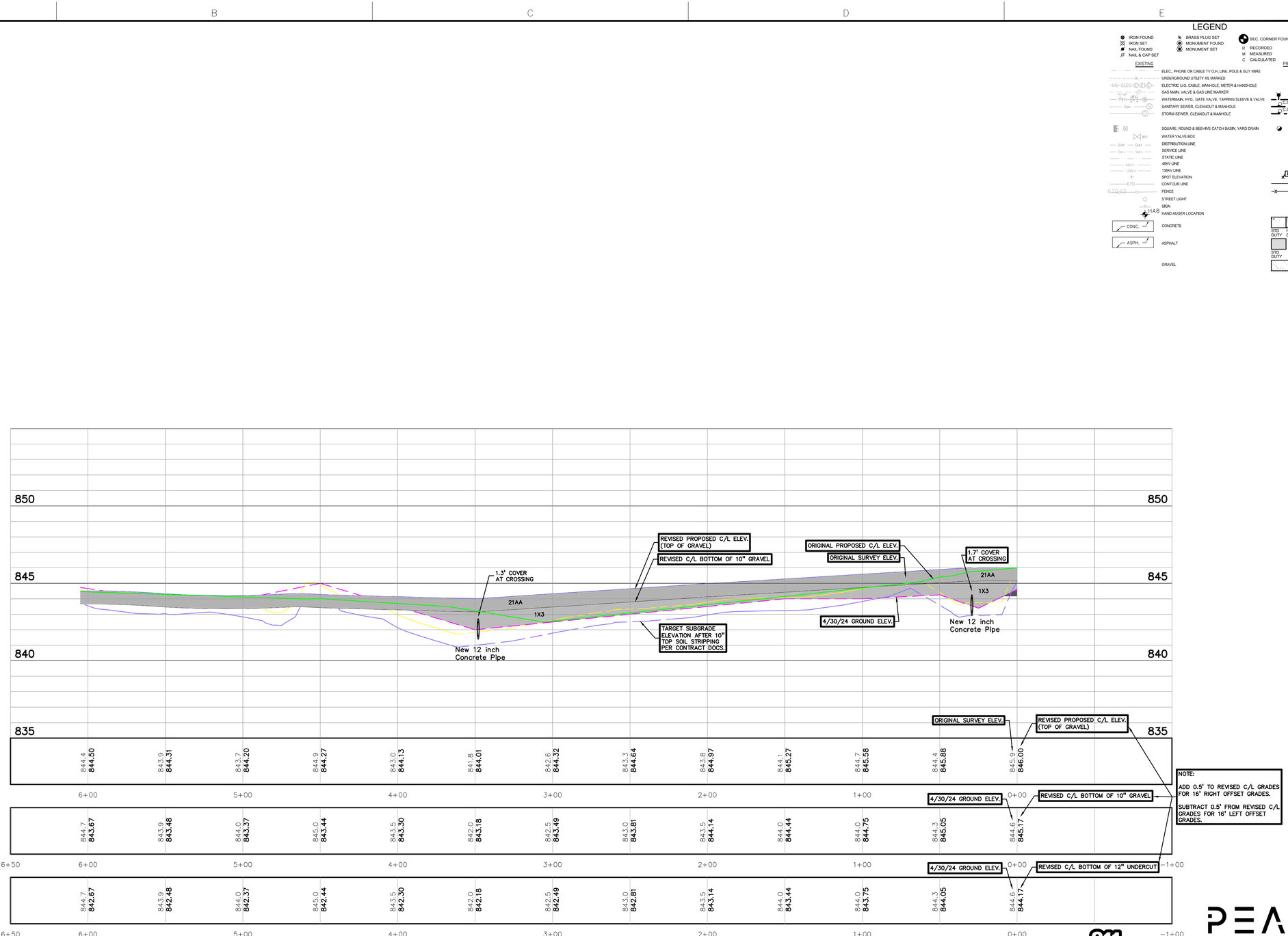
LEGEND

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET
- SEC. CORNER FOUND
- R RECORDED
- M MEASURED
- C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	C.O. C.O.
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	Y.D.
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46KV LINE	
138KV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAB HAND AUGER LOCATION	
CONCRETE	STD DUTY, HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	



NOTE:

ADD 0.5' TO REVISED C/L GRADES FOR 16' RIGHT OFFSET GRADES.

SUBTRACT 0.5' FROM REVISED C/L GRADES FOR 16' LEFT OFFSET GRADES.

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0 15 30 60
SCALE: 1" = 30'

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	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE

NAME: SCOTT PERUSKI

MICHIGAN P.E. No.: 6201060666

Consumers Energy

GCON SOUTHWEST – LANSING

ROADWAY PLAN & PROFILE

SCALE: AS NOTED

JOB:

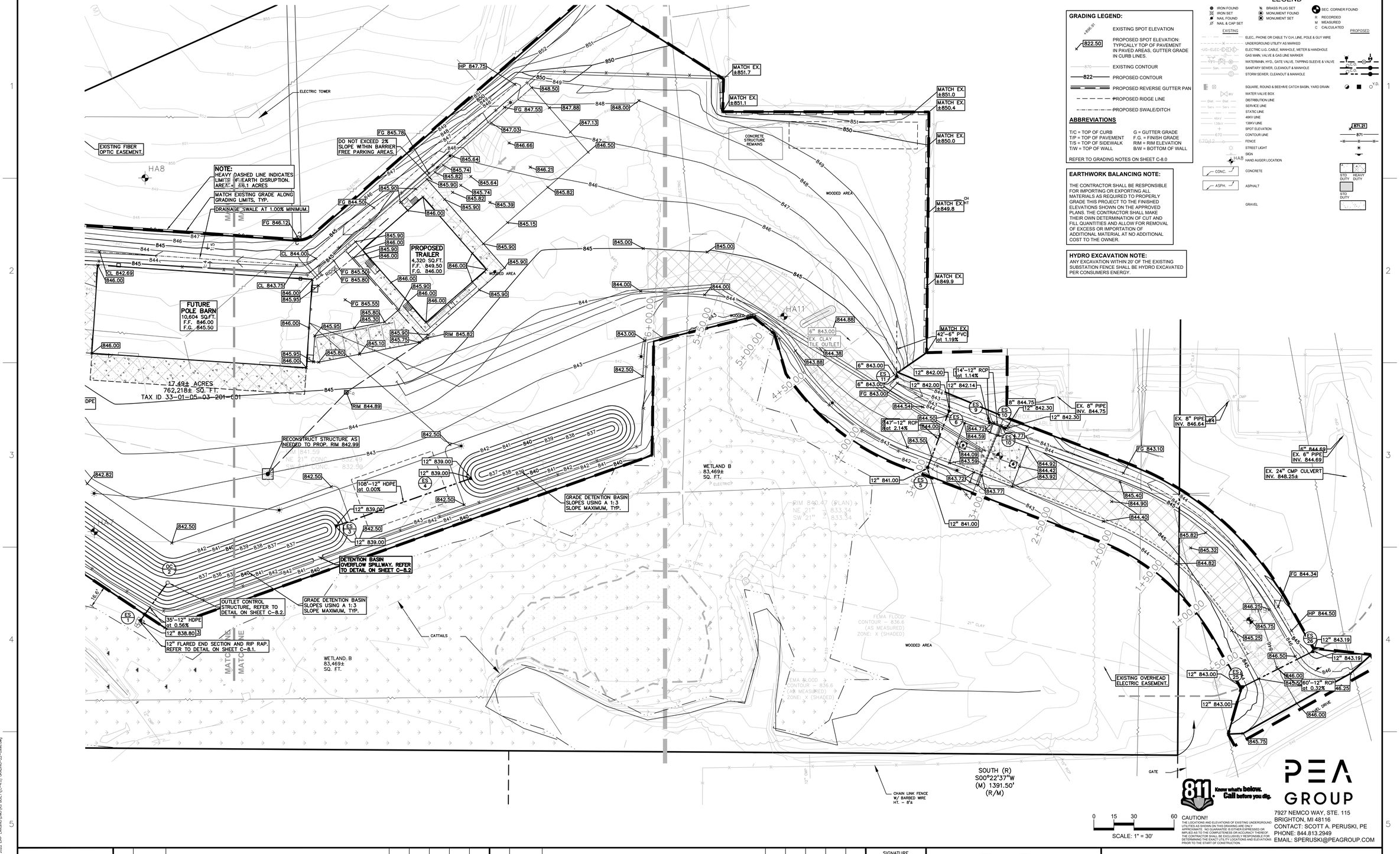
DRAWING NO.

SHEET: C-4.3

REV.: 0

S:\PROJECTS\2022\2022-0996 (ST. 2022 ESP LANSING)\DWG\AS BUILT\C-4.0 (PAVING-21-0996).dwg

SHEET SIZE: ARCH-D 24x36



LEGEND

IRON FOUND · IRON SET · NAIL FOUND · NAIL & CAP SET · BRASS PLUG SET · MONUMENT FOUND · MONUMENT SET · SEC. CORNER FOUND · R RECORDED · M MEASURED · C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	
CONTOUR LINE	
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	
ASPHALT	
GRAVEL	

GRADING LEGEND:

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

ABBREVIATIONS

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REFER TO GRADING NOTES ON SHEET C-8.0

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HYDRO EXCAVATION NOTE:

ANY EXCAVATION WITHIN 20' OF THE EXISTING SUBSTATION FENCE SHALL BE HYDRO EXCAVATED PER CONSUMERS ENERGY.

STD DUTY · HEAVY DUTY

SCALE: 1" = 30'

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	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

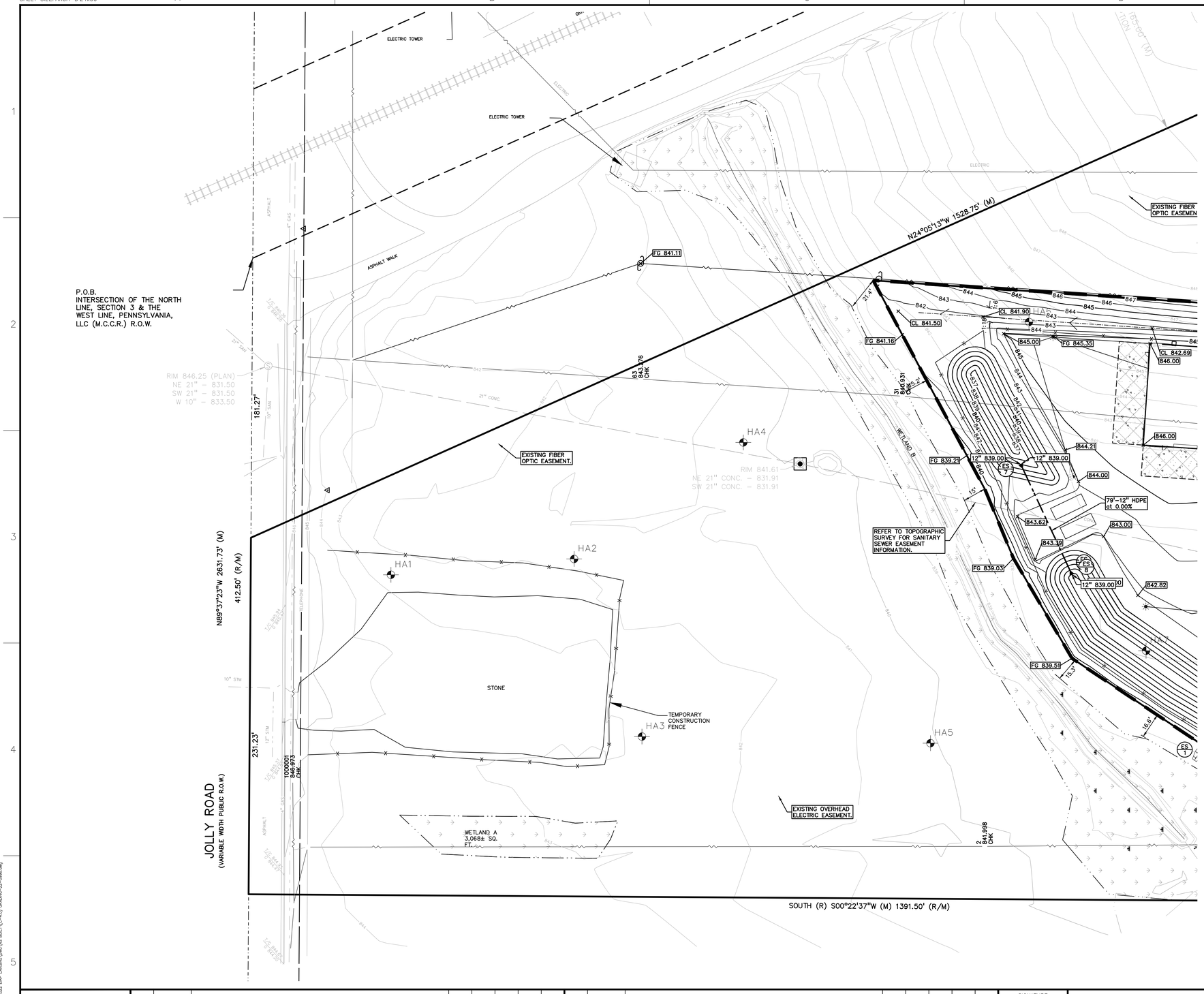
Consumers Energy
GCON SOUTHWEST – LANSING

GRADING PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET: C-4.2
REV.: 0

S:\PROJECTS\2022\2022-1096 CE 2022 ERP LANSING\[MICH]AS BUILT\C-4.0 GRADING-22-1096.dwg

SHEET SIZE: ARCH–D 24x36



LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	C.O.
STORM SEWER, CLEANOUT & MANHOLE	C.O.
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	Y.D.
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAB HAND AUGER LOCATION	
CONC. CONCRETE	STD DUTY / HEAVY DUTY
ASPH. ASPHALT	STD DUTY
GRAVEL	
HA3 HAND AUGER LOCATION	

GRADING LEGEND:

- +844.00 / 822.50 — EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
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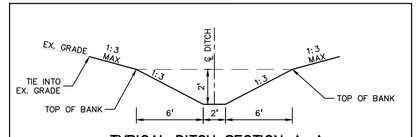

TYPICAL DITCH SECTION A–A
NOT TO SCALE

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SCALE: 1" = 30'

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REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REFERENCE DRAWINGS

SIGNATURE

NAME: SCOTT PERUSKI

MICHIGAN P.E. No.: 6201060666

Consumers Energy

GCON SOUTHWEST – LANSING

GRADING PLAN

SCALE: AS NOTED

JOB:

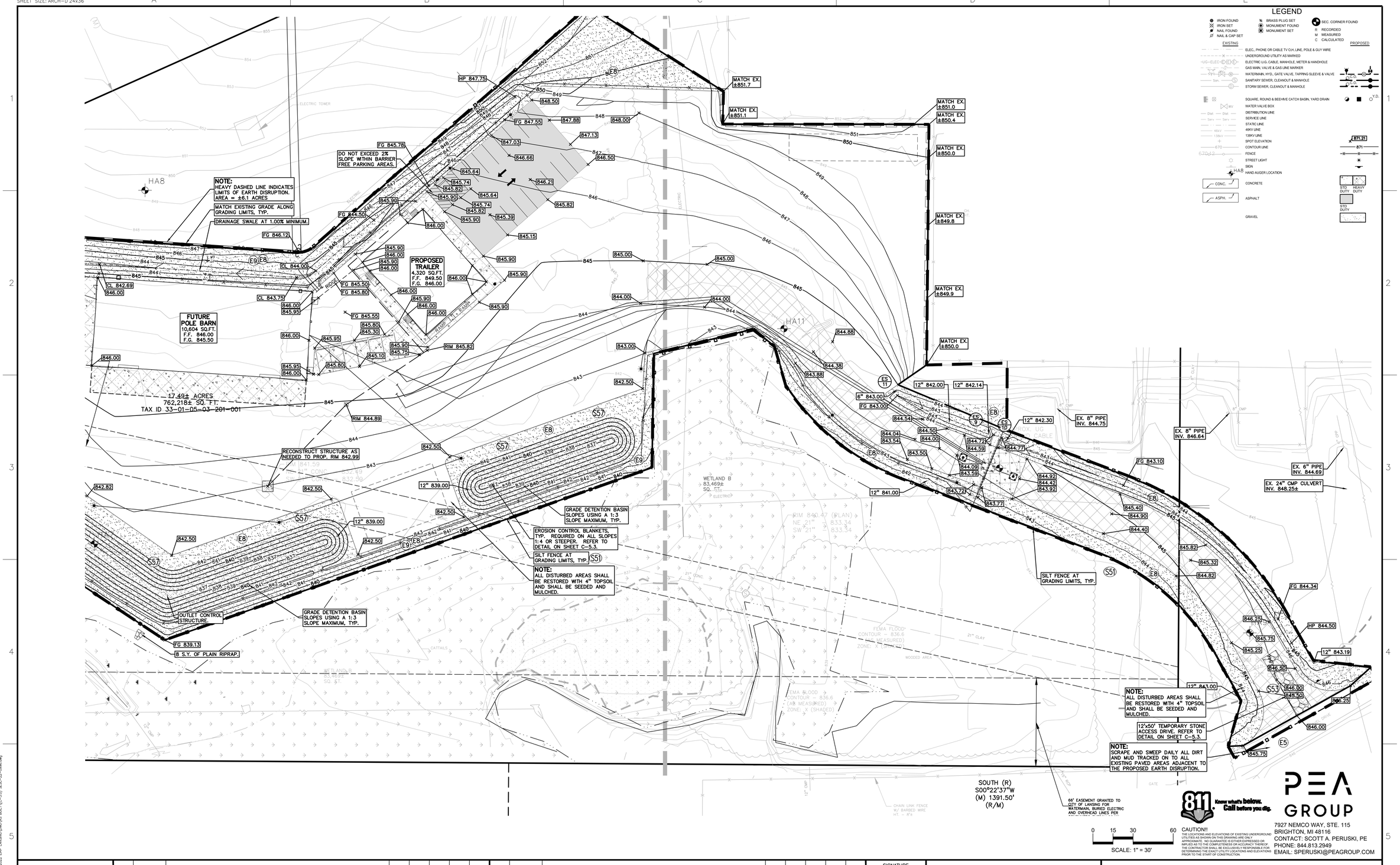
DRAWING NO.

SHEET: C–4.1

REV.: 0

S:\PROJECTS\2022\2022-0998.CE 2022 ERP LANSING\Civil\Art\ BALT\[C–4.0] GRADING–22–0998.dwg

SHEET SIZE: ARCH–D 24x36



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	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

SOIL EROSION AND SEDIMENTATION CONTROL PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-5.2
REV. 0

S:\PROJECTS\2022\2022-0906 CE 2022 ESP LANSING\DWG\AS BUILT\C-5.0 ESCC-22-0906.dwg

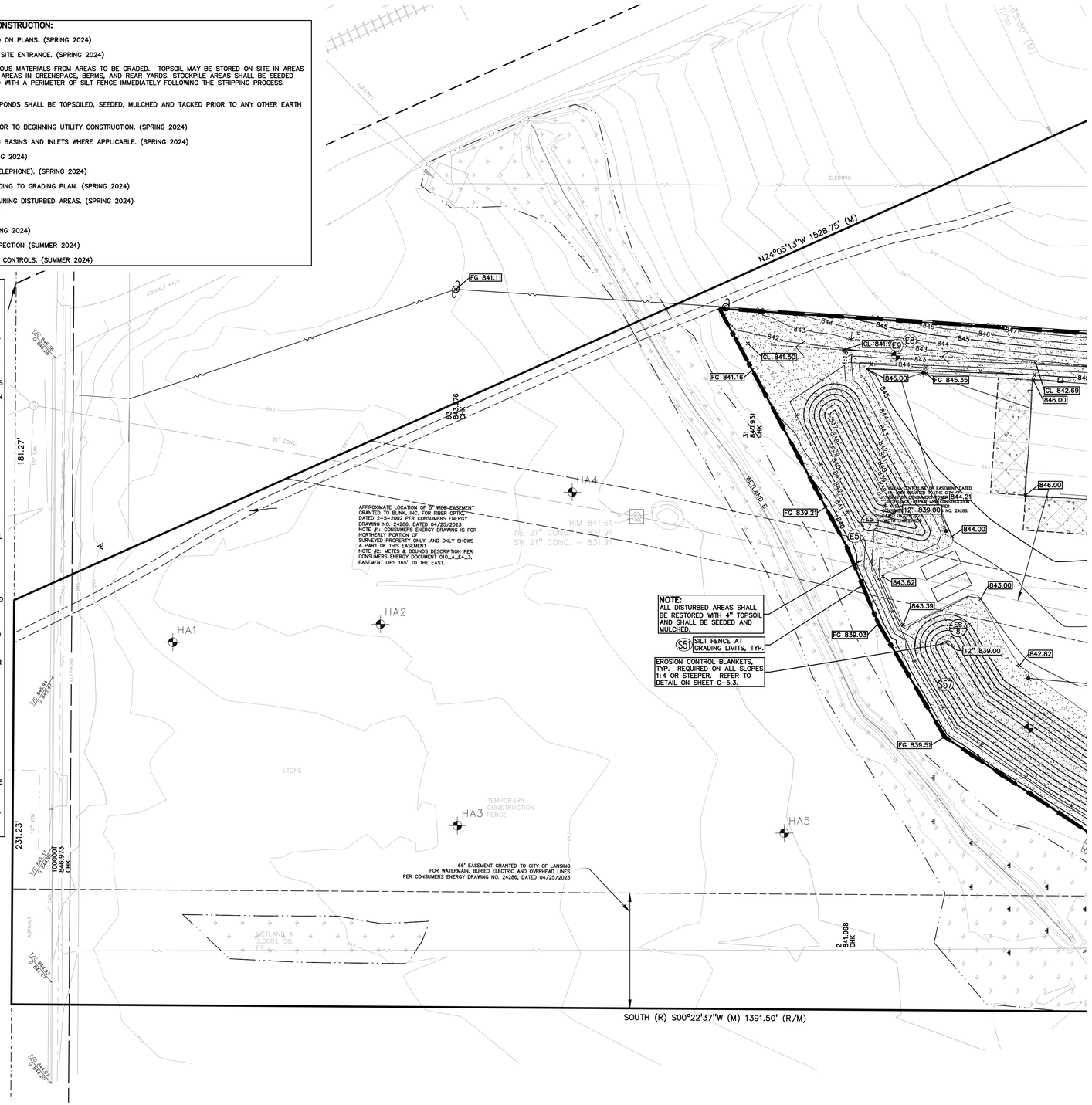
SHEET SIZE: ARCH-D 24x36

SOIL EROSION SCHEDULE AND SEQUENCE OF CONSTRUCTION:

1. PLACE SILT FENCE AND SEDIMENT TRAPS AS INDICATED ON PLANS. (SPRING 2024)
2. INSTALL TEMPORARY CONSTRUCTION ACCESS DRIVE AT SITE ENTRANCE. (SPRING 2024)
3. REMOVE ALL TOPSOIL, ORGANIC MATTER, AND DELETERIOUS MATERIALS FROM AREAS TO BE GRADED. TOPSOIL MAY BE STORED ON SITE IN AREAS INDICATED AND USED FOR FUTURE PLANTING AND FILL AREAS IN GREENSPACE, BERMS, AND REAR YARDS. STOCKPILE AREAS SHALL BE SEEDED AND MULCHED OR MATTED WITH STRAW, AND PROVIDED WITH A PERIMETER OF SILT FENCE IMMEDIATELY FOLLOWING THE STRIPPING PROCESS. (SPRING 2024)
4. CONSTRUCT DITCH RE-ROUTE AND DETENTION PONDS. PONDS SHALL BE TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO ANY OTHER EARTH DISRUPTION. (SPRING 2024)
5. MASS GRADE SITE TO WITHIN 0.5' OF FINAL GRADE PRIOR TO BEGINNING UTILITY CONSTRUCTION. (SPRING 2024)
6. INSTALL UTILITIES. PLACE INLET FILTERS ON ALL CATCH BASINS AND INLETS WHERE APPLICABLE. (SPRING 2024)
7. PLACE PAVEMENT/GRAVEL SURFACE MATERIALS. (SPRING 2024)
8. INSTALL FRANCHISE UTILITIES TO TRAILER (ELECTRIC, TELEPHONE). (SPRING 2024)
9. REDISTRIBUTE TOPSOIL. SITE SHALL BE GRADED ACCORDING TO GRADING PLAN. (SPRING 2024)
10. ESTABLISH VEGETATION AND/OR LANDSCAPE ANY REMAINING DISTURBED AREAS. (SPRING 2024)
11. CLEAN PAVEMENT AND STORM SEWERS. (SPRING 2024)
12. REMOVE ALL SEDIMENT FROM DETENTION BASINS. (SPRING 2024)
13. FINAL SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION (SUMMER 2024)
14. REMOVE ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS. (SUMMER 2024)

EROSION CONTROL STANDARDS:

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO STANDARDS AND SPECIFICATIONS OF THE JURISDICTIONAL AGENCY UNDER PART 91 OF ACT 451 OF 1994, AS AMENDED.
2. DAILY INSPECTIONS SHALL BE MADE BY CONTRACTOR WHILE WORKING TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY. ALL SOIL EROSION CONTROL PROVISIONS SHALL BE PROPERLY MAINTAINED DURING CONSTRUCTION.
3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF- SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGE AREAS HAVE BEEN COMPLETED.
5. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH.
6. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
7. DUST SHALL BE CONTROLLED BY WATERING OR BY OTHER APPROVED MEANS THROUGHOUT ALL CONSTRUCTION OPERATIONS.
8. PERMANENT SOIL EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 5 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
9. THE CONTRACTOR SHALL PRESERVE NATURAL VEGETATION AS MUCH AS POSSIBLE.
10. ANY WORK OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REQUIRE A SEPARATE GRADING PERMIT.
11. FOLLOWING THE PLACEMENT OF 4" OF TOPSOIL AND HYDROSEED, STRAW MULCH BLANKET IS TO BE INSTALLED PERPENDICULAR ALONG THE PROPOSED SLOPES 1:4 OR STEEPER FROM TOP OF SLOPE TO TOE OF SLOPE, INCLUDING DITCH BOTTOMS, AND IT MUST BE PEGGED IN PLACE.
12. ALL MUD/DIRT TRACKED ONTO EXISTING COUNTY/CITY ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR. REMOVAL SHALL BE ACCOMPLISHED BY SWEEPING OR SCRAPING, NOT FLUSHING WITH WATER.



NOTE:
ALL DISTURBED AREAS SHALL BE RESTORED WITH 4" TOPSOIL AND SHALL BE SEEDED AND MULCHED.

(S1) SILT FENCE AT GRADING LIMITS, TYP.

EROSION CONTROL BLANKETS, TYP. REQUIRED ON ALL SLOPES 1:4 OR STEEPER. REFER TO DETAIL ON SHEET C-5.3.

LEGEND

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET
- SEC. CORNER FOUND
- R RECORDED
- M MEASURED
- C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	
CONTOUR LINE	
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	
ASPHALT	
GRAVEL	

C.C.O.

T.D.

871.21

871

STD DUTY / HEAVY DUTY

STD DUTY

STORMWATER MANAGEMENT SYSTEM MAINTENANCE TASKS AND SCHEDULE
DURING CONSTRUCTION

TASKS / COMPONENTS	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlets	Channels & Ditches	Basin Outlet Filters	Basin Forebays	Storm Basins	Overflow Structures	Discharge Outlets	Wetlands and Buffers	SCHEDULE
Install & maintain soil erosion control measures			X	X					X	X	Per plans or as required
Inspect for accumulated sediment	X	X			X	X	X			X	Weekly or after rain event
Removal of accumulated sediment > 1' deep	X	X		X	X	X	X		X		As required
Inspect for erosion				X			X	X	X		Weekly or after rain event
Reestablish permanent & temporary controls			X	X			X	X	X		As required
Inspect for floatables and debris	X	X	X		X		X	X			Weekly or after rain event
Remove floatables and debris	X	X	X		X		X	X			As required
Replace Outlet Filter gravel jackets					X						As required
Replace rip-rap or stone check dams				X		X	X	X			As required
Mowing				X		X	X	X			Two times, annually
Certified Stormwater Manager inspections	X	X	X	X	X	X	X	X	X	X	Weekly or after rain event
Professional engineer, reporting to developer, construction observations	X	X	X	X	X	X	X	X	X	X	As required
Modifications per engineering recommendation	X	X	X	X	X	X	X	X	X	X	Monthly
Certified Stormwater Manager maintenance and inspection records											Weekly

STORMWATER MANAGEMENT SYSTEM MAINTENANCE TASKS AND SCHEDULE
POST CONSTRUCTION

TASKS / COMPONENTS	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlets	Channels & Ditches	Basin Outlet Filters	Basin Forebays	Storm Basins	Overflow Structures	Discharge Outlets	Wetlands and Buffers	SCHEDULE
Inspect for accumulated sediment	X	X			X	X	X				Annually
Removal of accumulated sediment > 1' deep	X	X			X	X	X				5 years or as required
Inspect for erosion				X			X	X	X		Annually
Reestablish permanent controls, eroded areas				X			X	X	X		As required
Inspect for floatables and debris	X	X	X		X		X	X			Annually
Remove floatables and debris	X	X	X		X		X	X			As required
Replace Outlet Filter gravel jackets					X						As required
Replace rip-rap or stone check dams				X							As required
Mowing				X		X	X	X			Two times, annually
Vegetation and animal control				X		X	X	X			Annually, or as required
Professional engineer observation during rain event	X	X	X	X	X	X	X	X	X	X	Annually
Modifications per engineering recommendation	X	X	X	X	X	X	X	X	X		As required
Professional engineer, emergency observations											As required
Maintenance & inspection records by Owner											Annually

811 Know what's below. Call before you dig.

0 15 30 60
SCALE: 1" = 30'

CAUTION!!
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BRIGHTON, MI 48116
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PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REFERENCE DRAWINGS

SIGNATURE

NAME
SCOTT PERUSKI

MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

SOIL EROSION AND SEDIMENTATION CONTROL PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-5.1
REV. 0

S:\PROJECTS\2027-2022-0996 CE 2022 ESP LANSING\DWG\AS BUILT\[C-5.0 ESC-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
	ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
	UNDERGROUND UTILITY AS MARKED
UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS	GAS MAIN, VALVE & GAS LINE MARKER
W	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
San.	SANITARY SEWER, CLEANOUT & MANHOLE
	STORM SEWER, CLEANOUT & MANHOLE
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
WV	WATER VALVE BOX
Dist	DISTRIBUTION LINE
Serv	SERVICE LINE

C.C.O.
Y.D.

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION

S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
	EROSION CONTROLS		
E1	SELECTIVE GRADING AND SHAPING		To reduce steep slopes and erosive velocities.
E2	GRUBBING LIMITED		For use on steep slopes to prevent rilling, gullying, and reduce sheet flow velocity or where clear vision corridors are necessary.
E3	SLOPE ROUGHENING AND SCARIFICATION		Where created grades cause increased erosive velocities. Promotes infiltration and reduces runoff velocity.
E4	TERRACES		On relatively long slopes up to 8% grades with fairly stable soils.
E5	DUST CONTROL		For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.
E6	MULCH		For use in areas subject to erosive surface flows or severe wind or on newly seeded areas.
E7	TEMPORARY SEEDING		Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E10	SODDING		On areas and slopes where immediate stabilization is required.
E11	VEGETATED CHANNELS		For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
E13	GABION WALLS		On newly created or denuded stream banks to reduce velocity until permanent stabilization is achieved or on existing banks to retard erosive velocities.
E14	ENERGY DISSIPATOR		Where the energy transmitted from a concentrated flow of surface runoff is sufficient to erode receiving area or watercourses.
E15	TEMPORARY SLOPE DRAIN		Where surface runoff temporarily accumulates or sheet flows over the top of a slope and must be conveyed down a slope in order to prevent erosion.
E16	SLOPE DRAIN		Where concentrated flow of surface runoff must be permanently conveyed down a slope in order to prevent erosion.

B = BIOENGINEERING

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E17	CELLULAR CONFINEMENT SYSTEMS		Used on steep slopes and high velocity channels.
E18	PLASTIC SHEETS		Used on exposed slopes, seeded areas, new ditch bottoms, and areas subject to surface runoff and erosion. Used as a liner in temporary channels and to stabilize stockpiles.
E19	TEMPORARY DRAINAGEWAY/ STREAM CROSSING		Use on construction sites where stream/drainageway crossings are required.
E20	TEMPORARY BYPASS CHANNEL		Use within existing stream corridors when existing flow cannot be interrupted, and at culvert and bridge repair sites
E21	LIVE STAKING	B	In areas requiring protection of slopes against surface erosion and shallow mass wasting.
	EROSION / SEDIMENT CONTROLS		
ES31	CHECK DAM		Used to reduce surface flow velocities within constructed and existing flow corridors.
ES32	STONE FILTER BERM		Use primarily in areas where sheet or rill flow occurs and to accommodate dewatering flow.
ES33	FILTER ROLLS	B	In areas requiring immediate protection of slopes against surface erosion and gully formation and for perimeter sediment control.
ES34	SAND FENCE		For use in areas susceptible to wind erosion, especially where the ground has not yet been stabilized by other means.
ES35	DEWATERING		Use where construction activities are limited by the presence of water and dry work is required.
ES36	DIVERSION DIKE/BERM		Within existing flow corridors to address or prevent erosion and sedimentation, or on disturbed or unstable slopes subject to erosive surface water velocities.
ES37	DIVERSION DITCH		In conjunction with a diversion dike, or where diversion of upslope runoff is necessary to prevent damage to unstabilized or disturbed construction areas.
ES38	COFFERDAM/SHEET PILINGS		Constructed along or within water corridor or waterbody to provide dry construction area.
ES39	STREAMBANK BIOSTABILIZATION	B	For use along banks where stream and riparian zones may have difficulty recovering from the long-term effects of erosion.
ES40	POLYMERS	B	To minimize soil erosion and reduce sedimentation in water bodies by increasing soil particle size.
ES41	WATTLES	B	In areas requiring protection of slopes against surface erosion and gully formation.

B = BIOENGINEERING

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
	SEDIMENT CONTROLS		
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S52	CATCH BASIN SEDIMENT GUARD		Use in or at stormwater inlets, especially at construction sites.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S54	TIRE WASH		For use on construction sites where vehicular traffic requires sediment removed from its tires in highly erosive areas.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.
S56	SEDIMENT TRAP		In small drainage areas, along construction site perimeters, and above check dams or drain inlets.
S57	VEGETATED BUFFER/FILTER STRIP		Use along shorelines, waterways, or other sensitive areas. Slows velocity, reduces sediment load, and reduces erosion in areas of sheet flow.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.
S60	INLET PROTECTION STONE		Use around urban stormwater inlets.
S61	TURBIDITY CURTAIN		Use during construction adjacent to a water resource, to contain sediment within the work area when other BMP's cannot be used.

B = BIOENGINEERING

E5 DUST CONTROL SPECIFICATIONS

When
- On construction sites during periods of low precipitation, low humidity, and high temperature or high winds.

Why
- To reduce dust and sedimentation from wind and construction activities.

Where
- Use on unpaved roadways, construction sites with vehicle traffic, soil stockpile areas, and general areas with unstabilized, or fine soils.

How
1. Dust control applications can include watering, chemical dust suppression, gravel or asphalt surfacing, temporary aggregate cover, and haul truck covers.
2. Minimize length of time vulnerable areas are exposed on construction site.
3. Identify and stabilize key access points prior to initiating construction.
4. Quickly stabilize exposed soil by vegetation, mulch, soil erosion control blankets, spray-on adhesives, sprinkling, or stone layering to minimize areas in need of dust control.
5. Follow manufacturers instructions regarding application of any dust palliative. Pay particular attention to mixing details.
6. Apply dust suppressant to surfaces using a pressure type water distributor truck equipped with a spray system.
7. The number of applications to be determined by site engineer.
8. Immediately clean-up sediment tracked onto paved roads.
9. Limit vehicle traffic to 15 miles per hour.
10. Utilize aggregate cover on access, parking, and paved roads.
11. Keep construction traffic directed to stabilized site roadways when possible.

STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

E8 PERMANENT SEEDING SPECIFICATIONS

When
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
- Within 5 days of final grade.

Why
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where
- Used on construction and earth change sites which require permanent vegetative stabilization.

How
1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3–5" deep seedbed, with the top 3–4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

STANDARD SYMBOL

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E8 PERMANENT SEEDING SPECIFICATIONS (cont.)

How (cont.)
11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance
- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations
- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

E8 PERMANENT SEEDING

Planting Zones:	Lower Peninsula (South of T20N) Zone 1	Lower Peninsula (North of T20N) Zone 2	Upper Peninsula Zone 3
Seeding Window Permanent Seeding	4/15 – 10/10	5/1 – 10/1	5/1 – 9/20
Seeding Window Dormant Seeding*	11/15 – Freeze	11/01 – Freeze	11/01 – Freeze

Source: Adopted from MDOT Interim 2003 Standard Specifications for Construction

	Zone 1 Lower Peninsula (South of U.S. 10)	Zone 2 Lower Peninsula (North of U.S. 10)	Zone 3 Upper Peninsula
Seeding Dates (with Irrigation or Mulch)	4/1 – 8/1	5/1 – 9/20	5/1 – 9/10
Seeding Dates (w/o Irrigation or Mulch)	4/1 – 5/20 or 8/10 – 10/1	5/1 – 8/10 or 8/1 – 9/20	5/1 – 6/15 or 8/1 – 9/20
Dormant Seeding Dates*	11/1 – Freeze	10/25 – Freeze	10/25 – Freeze

Source: Adopted from USDA NRCS Technical Guide §342 (1999)

* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50°F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.

- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.

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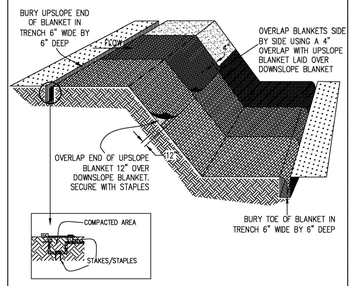
E9 MULCH BLANKETS

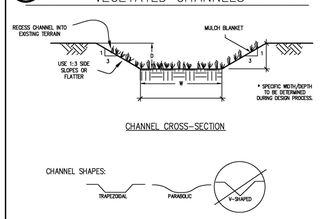


NOTES:
1. PLACE MULCH BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
2. WHEN BLANKETS ARE USED IN FLOWING DITCH, BLANKETS SHOULD NOT OVERLAP IN DITCH CENTER PARALLEL TO FLOW.
3. STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
4. WHERE POSSIBLE, CONSTRUCT WITH BIODEGRADABLE MATERIAL.

STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

E11 VEGETATED CHANNELS



CHANNEL CROSS-SECTION

CHANNEL SHAPES:

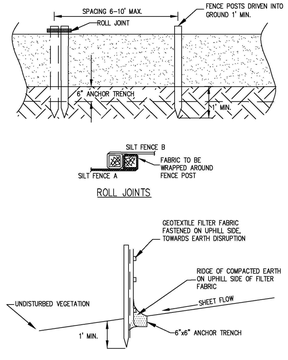
SOIL ERODIBILITY	
SOIL TEXTURE	ERODIBILITY
SILT, SAND, LOAM, SILTY LOAM, SANDY LOAM	EASILY ERODIBLE
CLAY LOAM, SILTY CLAY LOAM, SANDY CLAY LOAM, SILT LOAM, CLAY	EROSION RESISTANT SOILS

NOTES:
1. LOCATE VEGETATED CHANNELS TO FOLLOW NATURAL TOPOGRAPHY.
2. UTILIZE PARABOLIC OR TRAPEZOIDAL CHANNEL SHAPES.
3. AVOID V-SHAPED CHANNELS AS THEY PROMOTE EROSION.
4. DESIGN ADEQUATE VEGETATION BASED ON RETARDANCE TO FLOW VELOCITIES.
5. MAY NEED MULCH BLANKET IN HIGH VELOCITY FLOW AREAS OR DITCH BOTTOMS.

STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

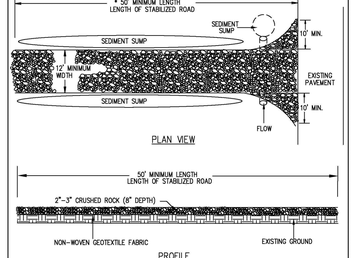
S51 SILT FENCE



STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

S53 STABILIZED CONSTRUCTION ACCESS

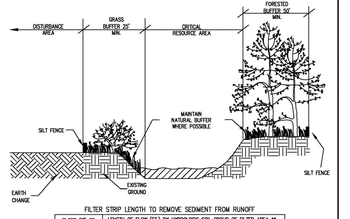


NOTES:
1. Establish stabilized construction entrance prior to the initiation of site construction activities.
2. Care should be taken to prevent material movement into adjacent wetlands/waterbodies.
3. Care should be taken to maintain existing roadside drainage via culvert installation, with sediment sump placed downflow of culvert.

STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

S57 VEGETATED BUFFER/FILTER STRIP



FILTER STRIP LENGTH TO REMOVE SEDIMENT FROM RUNOFF

SLOPE (%) OF CONTRIBUTING AREA ABOVE FILTER STRIP	LENGTH OF FLOW (FT.) BY HYDROLOGIC SOIL GROUP OF FILTER AREA **			
	A	B	C	D
0 – 1	20	20	22	24
1 – 3	20	25	28	30
3 – 5	24	30	33	36
5 – 8	28	35	40	42
8 – 12	32	40	44	48
12 – 15	40	50	55	60
15 – 20	48	60	66	72
> 20	*	*	*	*

* For slopes that exceed 20% consult NRCS technical specialist for design guidance.
** Hydrologic Soil Groups, as defined in U.S.D.A., Natural Resources Conservation Service Engineering Field Manual, Section 3, Page 2
TABLE FROM NRCS TECHNICAL GUIDE, FILTER STRIP 393-A

NOTES:
1. MINIMUM GRASS/SOD FILTER STRIP = 25 FEET, MINIMUM FORESTED WIDTH = 50'
2. BUFFER STRIP WIDTH IS DEPENDENT ON LENGTH AND STEEPNESS OF SLOPE, VEGETATION TYPE, AND SOIL TYPE.
3. THE LARGER THE BUFFER WIDTH, THE MORE EFFECTIVE AND BENEFICIAL IT IS.

STANDARD SYMBOL

STATE OF MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET STATE FACILITIES ADMINISTRATION

Know what's below. Call before you dig. 811

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CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

SESC DETAILS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-5.3
REV. 0

S:\PROJECTS\2022\2022-0966.1E 2022 DRP LANSING\DWG\AS BUILT\C-5.0 SESC-22-0966.dwg

SHEET SIZE: ARCH–D 24x36

REFER TO ELEC. PLANS FOR CONTINUATION, TYP. LOCATE IN FIELD WITH OWNER PRIOR TO INSTALLATION.

EXISTING OVERHEAD ELECTRIC TO REMAIN.

PROVIDE HANDHOLE AND CONDUIT. REFER TO ELECTRICAL PLANS.

EX SUBSTATION DRAIN, 6" PVC PIPE

ELEC., TYP.
EXISTING OVERHEAD ELECTRIC TO REMAIN.
NEW POLE BY SERVICE PROVIDER.
RELOCATED OVERHEAD ELECTRIC BY SERVICE PROVIDER.

1" COPPER WATER SERVICE TO JOLLY ROAD A/B

WATER SERVICE CONNECTION A/B

6" 841.59

6" 841.22

3'–6" PVC at 1.00%

40'–6" PVC at 1.00%
6" 841.19
6" 841.19
6" 841.19

PROPOSED TRAILER
4,320 SQ.FT.
F.F. 849.50
F.G. 846.00

WATER SERVICE CONNECTION A/B

4" GAS SERVICE (HDPE BORED) A/B

REFER TO ELEC. PLANS FOR CONTINUATION, TYP.

86'–6" PVC at 1.00%

FUTURE POLE BARN
10,604 SQ.FT.
F.F. 846.00
F.G. 845.50

RAMP 1:12 RAMP

6" 840.36

CLEANOUT AND BOX

3'–6" PVC at 1.00%

6" 840.33
6" 840.33
6" 840.33

70'–6" PVC SDR 23.5 at 1.00%

12'8" A/B

12'2" A/B

14'3" A/B

16'6" A/B

1" ELEC. TO LIGHT POLES A/B

17.49± ACRES
762,218± SQ. FT.
TAX ID 33–01–05–03–201–001

6'7" A/B

85'–6" PVC SDR 23.5 at 6.30%

6" 839.63
6" 839.63
CLEANOUT AND BOX

UTILITY CROSSINGS 2–6
FG = 845.5±
B/P ELEC=843.5±
T/P SANITARY=840.6±
CLEARANCE=2.9'±

PHYSICAL CENTERLINE OF EASEMENT DATED 7–15–1963 FOR 66' WIDE EASEMENT FOR THE PURPOSE OF ELECTRIC POWER FOR MAINTENANCE, REPAIR AND CONSTRUCTION OF A SANITARY SEWER LINE PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023 (WIDTH UNDEFINED)

(4) 3" ELEC. CONDUITS A/B

15'8" A/B

RECONSTRUCT STRUCTURE TO MEET CITY OF LANSING ACCESS REQUIREMENTS. REPLACE FRAME AND GRATE. REFER TO DETAILS ON SHEET C–8.2

CONNECT TO EXISTING CONCRETE SANITARY SEWER MANHOLE PER CITY STANDARDS.
EX. 21" NE INV. 832.49
EX. 21" SW INV. 832.49
PR. 6" SE INV. 834.30

12" 839.00

108'–12" HDPE at 0.00%

12" 839.00

DETENTION BASIN OVERFLOW SPILLWAY, REFER TO DETAIL ON SHEET C–8.2

UTILITY CROSSING 1
B/P STORM=838.75
T/P SANITARY=834.75
CLEARANCE=4.0'±

UTILITY CROSSING 6
FG = 842.5±
B/P ELEC=840.5±
T/P SANITARY=834.7±
CLEARANCE=5.8'±

16'4" A/B

OUTLET CONTROL STRUCTURE, REFER TO DETAIL ON SHEET C–8.2.

35'–12" HDPE at 0.56%
12" 838.80

12" FLARED END SECTION AND RIP RAP. REFER TO DETAIL ON SHEET C–8.1.

6'6" A/B

3'6" A/B

HIGH VOLTAGE DUCT BANK A/B

WETLAND B
83,469± SQ. FT.

UNCOVER AND RELOCATE EXISTING CLAY TILE PIPE AS FIELD CONDITIONS ALLOW.

6" 843.00
EX. CLAY TILE OUTLET

(1) 2" & (3) 1" ELEC. CONDUITS TO GATE A/B

UTILITY CROSSING 8
FG = 844.2±
B/P STORM=841.5±
T/P ELEC=840.5±
DIP ELECTRIC.

12'8" A/B

12" RCP A/B

47'–12" RCP at 2.14%

42'–6" PVC at 1.19%

PAIR OF COPPER GROUNDS, ELEV 838.54 A/B

12" 842.00

12" 842.14

14'–12" RCP at 1.14%

8" 844.75

FENCE A/B

12" 842.30

APPROX. PROPERTY LINE

6" INV. 842.18
6" INV. 841.00
12" 841.00

4" GAS SERVICE (HDPE BORED) A/B

ELEC. HAND HOLE A/B

300'–6" UNDERDRAIN at 0.62% (min.)

BWL FIBER LINE, NOT FIELD LOCATED, DEPTH UNKNOWN, A/B

30' WIDE EASEMENT FOR SANITARY SEWER.

FEMA FLOOD CONTOUR – 836.6 (AS MEASURED) ZONE: X (SHADED)

WOODED AREA

CATTAILS

66' EASEMENT GRANTED TO CITY OF LANSING FOR WATERMAIN, BURIED ELECTRIC AND OVERHEAD LINES PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023

CHAIN LINK FENCE W/ BARBED WIRE HT. – 8'±

SOUTH (R)
S00°22'37"W
(M) 1391.50'
(R/M)

8" 846.64

6" 844.69

6" INV. 844.05

12" 843.19

60'–12" RCP at 0.32%

12" 843.00

GRAVEL DRIVE

STORM STRUCTURES		
OC	2	(3' DIA./2.00' SUMP) RIM = 841.00 12" NW 839.00

END SECTIONS	
1	END SECTION 12" 838.80
3	END SECTION 12" 839.00
4	END SECTION 12" 839.00
5	END SECTION 12" 841.00
6	END SECTION 12" 842.00
7	END SECTION 12" 839.00
8	END SECTION 12" 839.00
9	END SECTION 12" 842.14
10	END SECTION 12" 842.30
11	END SECTION 6" 843.00
25	END SECTION 12" 843.00
26	END SECTION 12" 843.19

SANITARY CLEANOUTS	
A	C.O. IN BOX RIM = 844.89 INV. 839.63
B	C.O. IN BOX RIM = 845.56
E	C.O. IN BOX RIM = 845.71 INV. 841.22

SANITARY STRUCTURES	
C	MH (4' DIA.) RIM = 843.51 21" S 831.91 21" N 831.91
D	MH (4' DIA.) RIM = 842.99 6" SE 834.30 21" S 832.59 21" N 832.49

HYDRO EXCAVATION NOTE:
ANY EXCAVATION WITHIN 20' OF THE EXISTING SUBSTATION FENCE SHALL BE HYDRO EXCAVATED PER CONSUMERS ENERGY.

NOTE:
CONTRACTOR TO VERIFY ALL QUANTITIES. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF PEA GROUP FOR VERIFICATION, PRIOR TO BIDDING.

PREMIUM TRENCH BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 3' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE MDOT CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY DENSITY (ASTM D-1557).

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING / PROPOSED

ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
UNDERGROUND UTILITY AS MARKED
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN, VALVE & GAS LINE MARKER
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER, CLEANOUT & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
WATER VALVE BOX
DISTRIBUTION LINE
SERVICE LINE
STATIC LINE
46kV LINE
138kV LINE
SPOT ELEVATION
CONTOUR LINE
FENCE
STREET LIGHT
SIGN
HAND AUGER LOCATION
CONCRETE
ASPHALT
GRAVEL

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

0 15 30 60
SCALE: 1" = 30'

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

UTILITY PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C–6.2
REV. 0

S:\PROJECTS\2022\2022–0996 CE 2022 ERP LANSING\DWG\AS BUILT\C–6.0 UTIL–22–0996.dwg

SHEET SIZE: ARCH-D 24x36

P.O.B.
INTERSECTION OF THE NORTH LINE, SECTION 3 & THE WEST LINE, PENNSYLVANIA, LLC (M.C.C.R.) R.O.W.

N89°37'23"W 2631.73' (M)
412.50' (R/M)

JOLLY ROAD
(VARIABLE WIDTH PUBLIC R.O.M.)

N24°05'13"W 1528.75' (M)

SOUTH (R) S00°22'37"W (M) 1391.50' (R/M)

231.23'

181.27'

EXISTING OVERHEAD ELECTRIC TO REMAIN.

NEW POLE BY SERVICE PROVIDER.

NEW POLE BY SERVICE PROVIDER.

EX. OVERHEAD ELECTRIC TO BE RELOCATED BY SERVICE PROVIDER.

EX. UTILITY POLE TO REMAIN.

1" COPPER TO JOLLY R

ELEC., TYP.

1" ELEC. TO LIGHT POLES A/B

30' WIDE EASEMENT FOR SANITARY SEWER.

RECONSTRUCT STRUCTURE TO MEET CITY OF LANSING ACCESS REQUIREMENTS. REPLACE FRAME AND GRATE. REFER TO DETAILS ON SHEET C-8.2

79'-12" HDPE @ 0.00%

12" 839.00

UTILITY CROSSING 7
FG = 843.6±
B/P STORM=838.75±
T/P SANITARY=834.12±
CLEARANCE=4.3'±

66' EASEMENT GRANTED TO CITY OF LANSING FOR WATERMAIN, BURIED ELECTRIC AND OVERHEAD LINES PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023

EX. TRANSFORMER A/B

PHYSICAL CENTERLINE OF EASEMENT DATED 7-15-1963 GRANTED TO THE CITY OF LANSING BY CONSUMERS POWER FOR MAINTENANCE, REPAIR AND CONSTRUCTION OF A SANITARY SEWER LINE PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023 (WIDTH UNDEFINED)

APPROXIMATE LOCATION OF 5' WIDE EASEMENT GRANTED TO BLINK, INC. FOR FIBER OPTIC, DATED 2-5-2002 PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023
NOTE #1: CONSUMERS ENERGY DRAWING IS FOR NORTHERLY PORTION OF SURVEYED PROPERTY ONLY, AND ONLY SHOWS A PART OF THIS EASEMENT
NOTE #2: METES & BOUNDS DESCRIPTION PER CONSUMERS ENERGY DOCUMENT 010_A_E4_3, EASEMENT LIES 165' TO THE EAST.

APPROXIMATE LOCATION OF 5' WIDE EASEMENT GRANTED TO BLINK, INC. FOR FIBER OPTIC, DATED 2-5-2002 PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023
#1: CONSUMERS ENERGY DRAWING IS FOR NORTHERLY PORTION OF SURVEYED PROPERTY ONLY, AND ONLY SHOWS A PART OF THIS EASEMENT
#2: METES & BOUNDS DESCRIPTION PER CONSUMERS ENERGY DOCUMENT 010_A_E4_3, EASEMENT LIES 165' TO THE EAST.

PHYSICAL CENTERLINE OF EASEMENT DATED 7-15-1963 GRANTED TO THE CITY OF LANSING BY CONSUMERS POWER FOR MAINTENANCE, REPAIR AND CONSTRUCTION OF A SANITARY SEWER LINE PER CONSUMERS ENERGY DRAWING NO. 24286, DATED 04/25/2023 (WIDTH UNDEFINED)

RIM 846.25 (PLAN)
NE 21" - 831.50
SW 21" - 831.50
W 10" - 833.50

RIM 841.61
NE 21" CONC. - 831.91
SW 21" CONC. - 831.91

83.37 CHK

31 840931 CHK

2 844.998 CHK

100.001 846.973 CHK

STONE

TEMPORARY CONSTRUCTION FENCE

WETLAND A
3,068± SQ. FT.

ELECTRIC TOWER

ELECTRIC

ASPHALT

ASPHALT WALK

4" GAS

TELEPHONE

10" STM

12" STM

21" SAN

10" SAN

21" CONC.

ES 7

ES 8

ES 1

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	C.O.
STORM SEWER, CLEANOUT & MANHOLE	C.O.
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	Y.D.
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY, HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	

NOTE:
CONTRACTOR TO VERIFY ALL QUANTITIES. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF PEA GROUP FOR VERIFICATION, PRIOR TO BIDDING.

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811 Know what's below. Call before you dig.

0 15 30 60
SCALE: 1" = 30'

CAUTION!!
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PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

UTILITY PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-6.1
REV. 0

S:\PROJECTS\2022\2022-0996 CE 2022 ERP LANSING\DWG\AS BUILTS\C-6.0 UTIL-22-0996.dwg

SHEET SIZE: ARCH–D 24x36

PENNSYLVANIA, LLC (M.C.R.R.)
(100' RAILROAD R.O.W.)

JOLLY ROAD
(VARIABLE WIDTH PUBLIC R.O.W.)

WETLAND C
7,086± SQ. FT.

AREA 1
1.2 Ac
REFER TO SHEET
C–7.2 FOR RUNOFF
CALCULATIONS

AREA 2
1.1 Ac
REFER TO SHEET
C–7.2 FOR RUNOFF
CALCULATIONS

DETENTION BASIN

DETENTION BASIN EQUALIZATION PIPE

NOTE:
SOLID–HATCHED AREAS REPRESENT AREAS OF THE SITE THAT ARE TRIBUTARY TO THE PROPOSED DETENTION BASIN.
AREA = 2.3 ACRES

DETENTION BASIN DISCHARGE LOCATION.

DETENTION BASIN
FREEBOARD = 842.00
TOP OF DET. = 841.00
BOTTOM OF DET./TOP OF STORAGE BELOW OUTLET = 839.00
BOTTOM = 837.00

DETENTION BASIN OVERFLOW SPILLWAY. REFER TO DETAIL ON SHEET C–8.2

6" 843.00± EX. CLAY TILE OUTLET

GP100
E=431101.4310
N=1507954.1200
EL=846.340

GP1
E=431099.0150
N=1507971.5400
EL=843.924

1 846.276 CMK
31 846.531 CMK
2 841.998 CMK
1 1006.001 846.973 CMK

ELECTRIC, TELEPHONE, & CATV

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING	PROPOSED
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
UNDERGROUND UTILITY AS MARKED	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
WATER VALVE BOX	
DISTRIBUTION LINE	
SERVICE LINE	
STATIC LINE	
46kV LINE	
138kV LINE	
SPOT ELEVATION	871.21
CONTOUR LINE	871
FENCE	
STREET LIGHT	
SIGN	
HAND AUGER LOCATION	
CONCRETE	STD DUTY, HEAVY DUTY
ASPHALT	STD DUTY
GRAVEL	

SCALE: 1" = 50'

CAUTION!!
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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

DRAWING NO.: C–7.1
REV.: 0
SCALE: AS NOTED
JOB:

DRAINAGE AREA PLAN

S:\PROJECTS\2022\2022–0996 CE 2022 ESPP LANSING\DWG\AS BUILTS\C–7.0 ERAH–22–0996.dwg

SHEET SIZE: ARCH – D 24x36

SITE DEVELOPMENT STORMWATER TOOL (SDST)

SITE

Name	CE ERP: Lansing
Parcel Identification	33-01-05-03-201-001
Location Address	East Jolly Road Lansing, MI
Nearest Major Intersection	E Jolly Rd and S Pennsylvania Ave

OWNER

Contact	
Organization	Consumers Energy
Address	One energy Plaza Jackson, MI 49201
Phone	(517) 788-1001
Email	SupplyChain@cmsenergy.com

CALCULATIONS PERFORMED BY

Contact	Scott Peruski, P.E.
Organization	PEA Group
Address	7927 Nemco Way, Suite 115 Brighton, MI 48116
Phone	(248) 590-1234
Email	speruski@peagroup.com
Date	March 8, 2023

PROJECT DESCRIPTION

Consumers Energy ERP Site

COMMENTS, QUESTIONS, OR CONCERNS

FOR CITY USE ONLY

Site Plan Review	SPR 20___-___
Public Service Site Plan	SPR___/___/___
Reviewed by	
Approved by	
Date	
Comments:	

PURPOSE

The purpose of this spreadsheet model is to assist the design professional with sizing stormwater control measures for a given site development project. The spreadsheet model generates flow conditions based on the NRCS Curve Number approach using curvilinear unit hydrographs and a Type II rainfall distribution. Flow is passed through the stormwater control measures using a simple reservoir routing technique. The intent of the spreadsheet model is to help simplify the calculation steps but is by no means a substitute for professional engineering judgement.

STEPS

1	Job Control	Job control information is typically set once per community according to design requirements.
2	Site Area and Soil Type	Inputs the total area and the native soil type. A manual entry for the infiltration rate can be input. Backup information supporting the infiltration rate should be provided when manually adjusting the default values.
3	Condition Prior to Development	Use the drop down boxes to select the cover type for the site and enter the surface area for each cover type. Up to five (5) separate cover types may be selected. The composite CN for the site is automatically calculated. Manual entry of the CN is allowed. Time of concentration is also entered. Total site area must equal the area entered in Step 2.
4	Post Development Condition	Repeat Step 3 except for the post development conditions.
5	Stormwater Control Measures	Enter SCMs here. First enter the cross-sectional information, next enter the outlet control mechanism. Cross-section information is entered from the bottom up. Evaporation and infiltration may be toggled on and off for each control measure independently. It is suggested to work first on the smallest storm and meet the criterion. Then work sequentially on the larger events meeting the incremental criteria for each event.
6	Individual Results	This section shows the detailed results for each SCM.
7	Drainage Area Summary	Review drainage area summary. Check for uncontrolled portions of the site.
8	Sediment Control Strategy	Select the strategy that will be used to control sediment from portions of the site that do not pass through a SCM (see summary from Step 7).
9	Total System Results	This section shows the global results and whether design criteria have been met.
10	Graphical System Results	This section displays the results in the form of the hydrographs

CELL FORMATTING

STEP X	Step number headings
labels	Labels
input	Input Cells
calculation	Calculated Cells
linked	Linked Cells (similar to calculated cells)
standardized variables	Input Cells, but these are standardized variables and normally should not be changed

NOMENCLATURE

CN	Curve Number
Coefficient C	Orifice coefficient (typical value is 0.6) or the Weir coefficient (typical value 3.0) depending on selected outlet type
CPD	Condition Prior to Development
Dev	Development
ET	Evapotranspiration
Infil	Infiltration
Len	Length
NA	Not Applicable
Outflow	Sum of Outlet flow and Overflow (Step 7)
Outlet	Discharge through the orifice or weir (Step 7)
Overflow	Discharge overflowing the SCM (Step 7)
PRF	Peak Rate Factor (a shape factor associated with the curvilinear unit hydrograph)
Qpeak	Peak Flow
S. Area	Surface Area
SCM	Stormwater Control Measure
SW	Stormwater
Vol	Volume

MODELING CAVEATS

1. The design professional is responsible for proper placement of the stormwater control measure on the site to achieve the necessary overall site drainage control.
2.
3.

REFERENCES

1. USDA NRCS NEH Part 630 Hydrology: Chp 7 Hydrologic Soil Groups, Chp 8 Land Uses and Treatment Classes, Chp 9 Hydrologic Soil-Cover Complexes, Chp 10 Estimation of Direct Runoff from Storm Rainfall, Chp 15 Time of Concentration, and Chp 16 Hydrographs
2. Spreadsheet model developed by Dan Christian, Tetra Tech: (517) 316-3939 Dan.Christian@tetratech.com

JOB CONTROL

CLIMATOLOGY DATA

	Water Quality Treatment Volume	Channel Protection (pe)	Collection System	Roadway load System
Recurrence Interval	0.9	2-year	10-year	100-year
Duration (hr)	24-hr	24-hr	24-hr	24-hr
Precipitation (in)	0.90	2.42	3.43	5.20
Evapotranspiration (in/day)	0.1			
Hyetograph Distribution	Type II			

DESIGN CRITERIA

	90%	2-year	10-year	100-year
Recurrence Interval				
Treatment of Runoff for Sediment Load	Yes	NA	NA	NA
Peak flow (% of CPD)	NA	100%	100%	100%
Volume (% of CPD)	NA	100%	NA	NA
Dewater Time (hr), surface water [time from end of rainfall]	NA	48	48	48
Dewater Time (hr), complete drainage [time from end of rainfall]	NA	48	72	72

STEP 1

CONDITION PRIOR TO DEVELOPMENT

Peak Rate Factor (PRF)	484
Ratio of Initial Abstraction to Potential Maximum Retention [Ia/s]	0.05

	90%	2-year	10-year	100-year
Recurrence Interval				
Precipitation (in) [P]	0.90	2.42	3.43	5.20
Actual retention after runoff begins (in) [F]	0.82	1.72	2.13	2.64
Precipitation Excess (pe) runoff) (in) [Q]	0.08	0.70	1.30	2.56
Precipitation Excess (pe) runoff) (cf) [Q]	660	5,608	10,609	21,340
Precipitation Excess as a fraction of the total rainfall (%)	9%	29%	38%	49%

POST DEVELOPMENT CONDITIONS (No SCMs)

Peak Rate Factor (PRF)	484
Ratio of Initial Abstraction to Potential Maximum Retention [Ia/s]	0.05

	90%	2-year	10-year	100-year
Recurrence Interval				
Precipitation (in) [P]	0.90	2.42	3.43	5.2
Actual retention after runoff begins (in) [F]	0.46	0.72	0.77	0.85
Precipitation Excess (pe) runoff) (in) [Q]	0.44	1.72	2.66	4.35
Precipitation Excess (pe) runoff) (cf) [Q]	3,673	14,349	22,173	36,345
Precipitation Excess as a fraction of the total rainfall (%)	49%	71%	77%	84%

STEP 2

SITE AREA

2.3 acres

SOIL TYPE

	HSG	Auto	Manual	Infil (in/hr)
Silty clay loam	D	0.06		0.06

NRCS Velocity Method for Time of Concentration

2-year 24-hour Rainfall (in): 2.42

STEP 3

CONDITION PRIOR TO DEVELOPMENT

Surface Cover

No.	Cover	Area (ac)	CN
1	Natural | Brush, Forb, Grass Mix | Fair	2.3	68
2	Streets & Roads | Gravel (incl. ROW)		89
3	Not Used		NA
4	Not Used		NA
5	Not Used		NA
6	Manual Entry		
	Total	2.3	

Time of Concentration

No.	Surface Feature	Slope (ft/ft)	Manning n	Length (ft)	Tt (hr)
1	Sheet Flow - Short-grass prairie	0.023	0.15	300	0.43
2	Shallow Conc. - Short-grass pasture	0.023	0.073	300	0.18
3	Not Used		NA		0.00
4	Not Used		NA		0.00
5	Not Used		NA		0.00
6	Manual Entry				
				CPD Tc (hr)	0.61

POST DEVELOPMENT CONDITIONS

Surface Cover

No.	Cover	Area (ac)	CN
1	Urban | Open Space (lawns, parks, golf, cemeteries) | Good (grass cover >75%)		72
2	Urban | Paved Parking, Roofs, Driveways (excl. ROW) | 100% impervious	0.68	98
3	Water		100
4	Streets & Roads | Gravel (incl. ROW)	1.62	89
5	Not Used		NA
6	Manual Entry	0	
	Total	2.3	

Time of Concentration

No.	Surface Feature	Slope (ft/ft)	Manning n	Length (ft)	Tt (hr)
1	Sheet Flow - Smooth Surface	0.01	0.011	300	0.27
2	Sheet Flow - Smooth Surface	0.01	0.011	300	0.27
3	Not Used	0.001	NA	0	0.00
4	Not Used	0.001	NA	0	0.00
5	Not Used	0.001	NA	0	0.00
6	Manual Entry				
				Post Tc (hr)	0.15

STEP 4

STORMWATER CONTROL MEASURES

SCM 1

Practice Type: Detention
Drainage Area (ac): 2.3
Discharge To: Offsite

Traditional Detention Basin with 2.0' of storage below the outlet for the difference in the bankfull events

Sediment Strategy: 2: Retention and Infiltration
X-sec Entry: User Input Surface Area and Volume (e.g. data from CAD)

Cross Section	Media	Layer (in)	Side Slope (ft/ft 1V)	Width (ft)	Len (ft)	Surface Area (sf)	Total Vol (cf)	User Input SA (sf)	User Input Vol (cf)	Porosity Capacity	Field Void	SW Void	User Def. SW Overrid	Water Vol (cf)
Top			0	0	0	0		0						
TIP Enter data from bottom up ↑	Surface Storage	12					14,139	12,480	NA	NA	100%			12,480
	Surface Storage	12					10,821	9,256	NA	NA	100%			9,256
	Surface Storage	12					7,687	6,215	NA	NA	100%			6,215
	Surface Storage	12					4,743	3,366	NA	NA	100%			3,366
Bottom	Surface Storage	0					1,588	0	NA	NA	100%			0
	Total	48						31,314.5						31,315

Surface Storage Depth (in): 48
Media Storage Depth (in): 0
Media (lin ting) Infiltration Rate (in/hr): 0
Allowed Area (sf): 0
Evaporation: No
Infiltration (through bottom): Yes 6480

Outlet Type	Office	Weir	None	None	None
Offset from bottom (in)	24				
coefficient c	0.61				
Area (sf) or Length (ft)	0.78				
Volume below the offset (cf)	9580.5	0	NA	NA	NA

12" DIA. OUTLET

SCM 2

Practice Type: None
Drainage Area (ac): 0
Discharge To: Offsite

User Input Notes and Comments

Sediment Strategy: Bank Stabilization, Basin or Swale by
X-sec Entry: User Input Surface, Perimeter, Volume, and Slope (CAD)

Cross Section	Media	Layer (in)	Side Slope (ft/ft 1V)	Width (ft)	Len (ft)	Surface Area (sf)	Total Vol (cf)	User Input SA (sf)	User Input Vol (cf)	Porosity Capacity	Field Void	SW Void	User Def. SW Overrid	Water Vol (cf)
Top			0	0	0	0		0						
TIP Enter data from bottom up ↑	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
Bottom	Surface Storage	0	0	0	0	0	0	0	NA	NA	100%			0
	Total	48						0						0

Surface Storage Depth (in): 48
Media Storage Depth (in): 0
Media (lin ting) Infiltration Rate (in/hr): 0
Allowed Area (sf): 0
Evaporation: No
Infiltration (through bottom): Yes 0

Outlet Type	None	None	None	None	None
Offset from bottom (in)	0				
coefficient c	0				
Area (sf) or Length (ft)	0				
Volume below the offset (cf)	0	0	NA	NA	NA

SCM 3

Practice Type: None
Drainage Area (ac): 0
Discharge To: Offsite

User Input Notes and Comments

Sediment Strategy: Bank Stabilization, Basin or Swale by
X-sec Entry: User Input Surface, Perimeter, Volume, and Slope (CAD)

Cross Section	Media	Layer (in)	Side Slope (ft/ft 1V)	Width (ft)	Len (ft)	Surface Area (sf)	Total Vol (cf)	User Input SA (sf)	User Input Vol (cf)	Porosity Capacity	Field Void	SW Void	User Def. SW Overrid	Water Vol (cf)
Top			0	0	0	0		0						
TIP Enter data from bottom up ↑	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
Bottom	Surface Storage	0	0	0	0	0	0	0	NA	NA	100%			0
	Total	48						0						0

Surface Storage Depth (in): 48
Media Storage Depth (in): 0
Media (lin ting) Infiltration Rate (in/hr): 0
Allowed Area (sf): 0
Evaporation: No
Infiltration (through bottom): Yes 0

Outlet Type	None	None	None	None	None
Offset from bottom (in)	0				
coefficient c	0				
Area (sf) or Length (ft)	0				
Volume below the offset (cf)	0	0	NA	NA	NA

SCM 4

Practice Type: None
Drainage Area (ac): 0
Discharge To: Offsite

User Input Notes and Comments

Sediment Strategy: Bank Stabilization, Basin or Swale by
X-sec Entry: User Input Surface, Perimeter, Volume, and Slope (CAD)

Cross Section	Media	Layer (in)	Side Slope (ft/ft 1V)	Width (ft)	Len (ft)	Surface Area (sf)	Total Vol (cf)	User Input SA (sf)	User Input Vol (cf)	Porosity Capacity	Field Void	SW Void	User Def. SW Overrid	Water Vol (cf)
Top			0	0	0	0		0						
TIP Enter data from bottom up ↑	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
	Surface Storage	12	0	0	0	0	0	0	NA	NA	100%			0
Bottom	Surface Storage	0	0	0	0	0	0	0	NA	NA	100%			0
	Total	48						0						0

Surface Storage Depth (in): 48
Media Storage Depth (in): 0
Media (lin ting) Infiltration Rate (in/hr): 0
Allowed Area (sf): 0
Evaporation: No
Infiltration (through bottom): Yes 0

Outlet Type	None	None	None	None	None
Offset from bottom (in)	0				
coefficient c	0				
Area (sf) or Length (ft)	0				
Volume below the offset (cf)	0	0	NA	NA	NA

STEP 5

INDIVIDUAL SCM RESULTS

SCM 1

	90%	2-year	10-year	100-year
Qpeak Inflow (cfs)	1.3	5.2	8.0	12.9
Outlet (cfs)	0.0	0.3	1.9	3.7
Overflow (cfs)	0.0	0.0	0.0	0.0
Outflow (cfs)	0.0	0.3	1.9	3.7
Depth Max (in)	11.0	24.0	27.0	35.3
Remaining (in)	5.0	20.8	20.8	20.8
Volume Inflow (cf)	3,675	14,349	22,172	36,345
ET (cf)	0	0	0	0
Infil (cf)	2,272	2,404	2,422	2,432
Outlet (cf)	0	4,031	11,836	25,997
Overflow (cf)	0	0	0	0
Outflow (cf)	0	4,031	11,836	25,997
Remaining (cf)	1,403	7,914	7,915	7,915
Continuity	0.00%	0.00%	0.00%	0.00%
Dewater Surface (hr)	52.0	52.0	52.0	52.0
Complete (hr)	-24.0	0.2	0.2	0.2
Sediment Criteria Met?	=====			

SCM 2

	90%	2-year	10-year	100-year
Qpeak Inflow (cfs)	0.0	0.0	0.0	0.0
Outlet (cfs)	0.0	0.0	0.0	0.0
Overflow (cfs)	0.0	0.0	0.0	0.0
Outflow (cfs)	0.0	0.0	0.0	0.0
Depth Max (in)	0.0	0.0	0.0	0.0
Remaining (in)	NA	NA	NA	NA
Volume Inflow (cf)	0	0	0	0
ET (cf)	0	0	0	0
Infil (cf)	0	0	0	0
Outlet (cf)	0	0	0	0
Overflow (cf)	0	0	0	0
Outflow (cf)	0	0	0	0
Remaining (cf)	0	0	0	0
Continuity	NA	NA	NA	NA
Dewater Surface (hr)	NA	NA	NA	NA
Complete (hr)	NA	NA	NA	NA
Sediment Criteria Met?	NA			

STEP 5 con't

SCM 3

	90%	2-year	10-year	100-year
Qpeak Inflow (cfs)	0.0	0.0	0.0	0.0
Outlet (cfs)	0.0	0.0	0.0	0.0
Overflow (cfs)	0.0	0.0	0.0	0.0
Outflow (cfs)	0.0	0.0	0.0	0.0
Depth Max (in)	0.0	0.0	0.0	0.0
Remaining (in)	NA	NA	NA	NA
Volume Inflow (cf)	0	0	0	0
ET (cf)	0	0	0	0
Infil (cf)	0	0	0	0
Outlet (cf)	0	0	0	0
Overflow (cf)	0	0	0	0
Outflow (cf)	0	0	0	0
Remaining (cf)	0	0	0	0
Continuity	NA	NA	NA	NA
Dewater Surface (hr)	NA	NA	NA	NA
Complete (hr)	NA	NA	NA	NA
Sediment Criteria Met?	NA			

SCM 4

	90%	2-year	10-year	100-year
Qpeak Inflow (cfs)	0.0	0.0	0.0	0.0
Outlet (cfs)	0.0	0.0	0.0	0.0
Overflow (cfs)	0.0	0.0	0.0	0.0
Outflow (cfs)	0.0	0.0	0.0	0.0
Depth Max (in)	0.0	0.0	0.0	0.0
Remaining (in)	NA	NA	NA	NA
Volume Inflow (cf)	0	0	0	0
ET (cf)	0	0	0	0
Infil (cf)	0	0	0	0
Outlet (cf)	0	0	0	0
Overflow (cf)	0	0	0	0
Outflow (cf)	0	0	0	0
Remaining (cf)	0	0	0	0
Continuity	NA	NA	NA	NA
Dewater Surface (hr)	NA	NA	NA	NA
Complete (hr)	NA	NA	NA	NA
Sediment Criteria Met?	NA			

STEP 6

DRAINAGE AREA SUMMARY

Practice	Type	Drainage Area (ac)	% of Drainage	Discharge To
SCM 1	Detention	2.3	100.0%	Offsite
SCM 2	None	0	0.0%	NA
SCM 3	None	0	0.0%	NA
SCM 4	None	0	0.0%	NA
Uncontrolled		0	0.0%	Offsite
Total		2.3	100.0%	

STEP 7

SEDIMENT CONTROL STRATEGY FOR UNCONTROLLED PORTIONS OF THE SITE

Required: No

STEP 8

TOTAL SYSTEM RESULTS

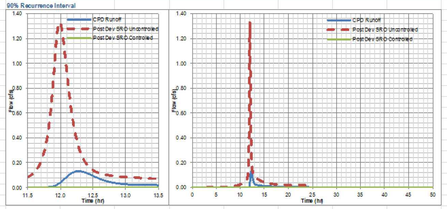
		90%	2-year	10-year	100-year
	Recurrence Interval				
PEAK FLOW	CPD Runoff (cfs)		0.13	1.29	2.45
	Post Dev SRO Uncontrolled (cfs)		1.33	5.18	7.97
	Post Dev SRO Controlled (cfs)		0.00	0.00	1.94
	Difference CPD - Post Dev (cfs)		0.1	1.3	0.5
	Criteria	NA	Qpost<= 1.3 cfs	Qpost<= 1.3 cfs	Qpost<= 1.94 cfs
	Criteria Met (Y/N)	NA	Yes	Yes	Yes
VOLUME	CPD Runoff (cf)	892	5,608	10,609	21,340
	Post Dev Runoff (cf)	3,673	14,349	22,173	36,345
	ET (cf)	0	0	0	0
	Infiltration (cf)	2,272	2,404	2,422	2,432
	Outflow (cf)	0	4,031	11,836	25,997
	Remaining Storage (cf)	1,403	7,914	7,915	7,915
	Continuity Error (%)	0.00%	0.00%	0.00%	0.00%
	Continuity Check	Okay	Okay	Okay	Okay
	Criteria	NA	Qpost<= 5808 cf	NA	NA
	Criteria Met (Y/N)	NA	Yes	NA	NA
SEDIMENT	Criteria Met (Y/N)	#VALUE!	NA	NA	NA
DEWATER TIME	Surface Water Dewater Time (hr)	52.0	52.0	52.0	52.0
	Criteria	NA	<= 48 hrs	<= 48 hrs	<= 48 hrs
	Criteria Met (Y/N)	Yes	No	No	No
	Complete Drainage Dewater Time (hr)	-24.0	0.2	0.2	0.2
	Criteria	NA	<= 48 hrs	<= 72 hrs	<= 72 hrs
	Criteria Met (Y/N)	Yes	Yes	Yes	Yes

* results are based on a 100-hour simulation

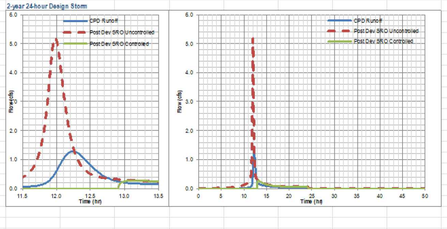
STEP 9

STEP 10

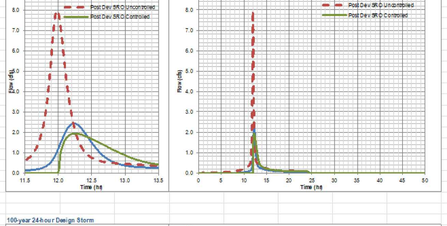
90% Recurrence Interval



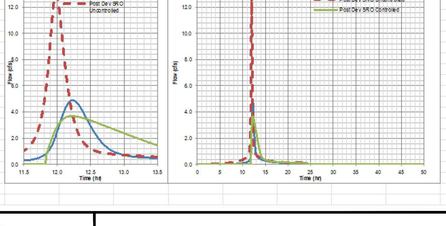
2-year 24-hour Design Storm



10-year 24-hour Design Storm



100-year 24-hour Design Storm



LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING / PROPOSED

SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
WATER VALVE BOX
DISTRIBUTION LINE
SERVICE LINE
STATIC LINE
46kV LINE
138kV LINE
SPOT ELEVATION
CONTOUR LINE
FENCE
STREET LIGHT
SIGN
HAND AUGER LOCATION
CONC.
ASPH.
STD DUTY
HEAVY DUTY

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

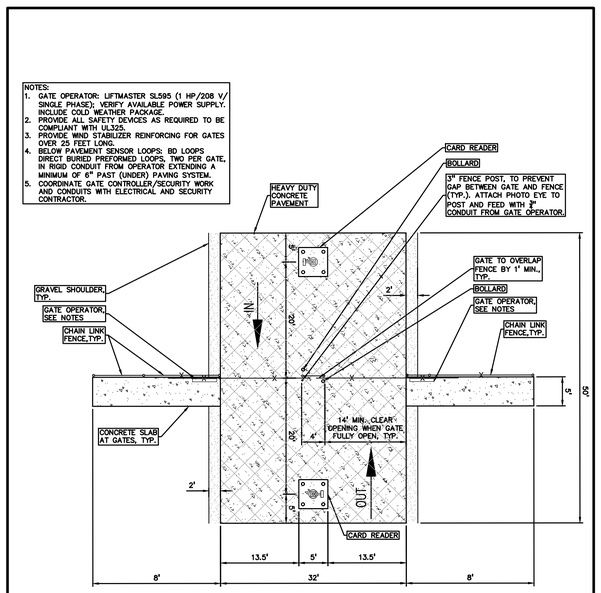
DETENTION BASIN CALCULATIONS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET: C-7.2
REV.: 0

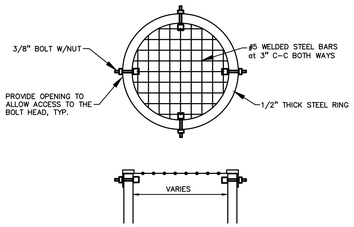
S:\PROJECTS\2023\2022-0996 CE 2022 ERP LANSING\DWGS BUILT\C-7.0_DRAN-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

NOTES:
1. GATE OPERATOR: LIFTMASTER SL595 (1 HP/208 V/ SINGLE PHASE); VERIFY AVAILABLE POWER SUPPLY. INCLUDE COLD WEATHER PACKAGE.
2. PROVIDE ALL SAFETY DEVICES AS REQUIRED TO BE COMPLIANT WITH UL325.
3. PROVIDE WIND STABILIZER REINFORCING FOR GATES OVER 25 FEET LONG.
4. BELOW PAVEMENT SENSOR LOOPS: BD LOOPS DIRECT BURIED PREFORMED LOOPS, TWO PER GATE, IN RIGID CONDUIT FROM OPERATOR EXTENDING A MINIMUM OF 6" PAST (UNDER) PAVING SYSTEM.
5. COORDINATE GATE CONTROLLER/SECURITY WORK AND CONDUITS WITH ELECTRICAL AND SECURITY CONTRACTOR.

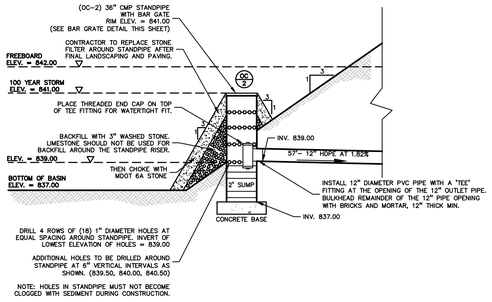


TWO-WAY SPLIT GATE DETAIL
NOT TO SCALE

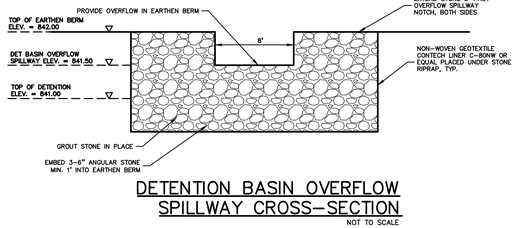


BAR GRATE FOR RISER
NOT TO SCALE

NOTE: BAR GRATE TO BE BOLTED TO STANDPIPE AS SHOWN

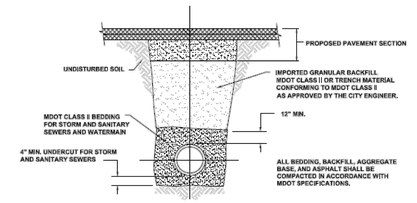


DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE

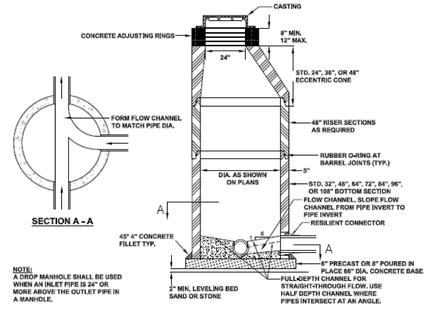


DETENTION BASIN OVERFLOW SPILLWAY CROSS-SECTION
NOT TO SCALE

SEWER REPAIR DETAILS

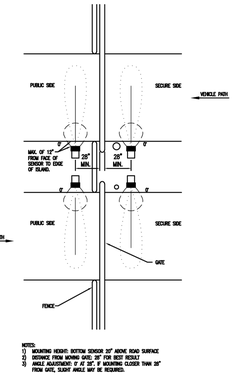


TRENCH BACKFILL UNDER PAVEMENT
NO SCALE



NOTE:
A DROP MANHOLE SHALL BE USED WHEN AN INLET PIPE IS 24" OR MORE ABOVE THE OUTLET PIPE IN A MANHOLE.

SANITARY MANHOLE DETAIL
NO SCALE



NOTES:
1) MOUNTING HEIGHT: BOTTOM SENSOR 20" ABOVE ROAD SURFACE.
2) DISTANCE FROM MOUNTING GATE: 20" FOR BEST RESULT.
3) ANGLE ADJUSTMENT: IF AT 20", IF MOUNTING CLOSER THAN 20" FROM GATE, SLIGHT ANGLE MAY BE REQUIRED.

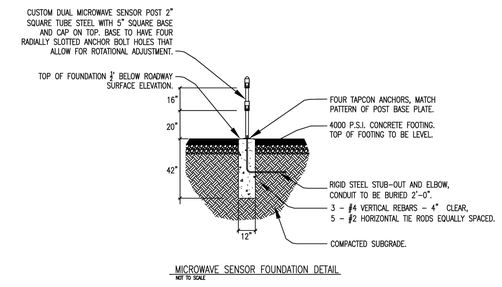
MICROWAVE SENSOR ON POST DETAIL
NO SCALE

SENSOR WITHIN ISLAND

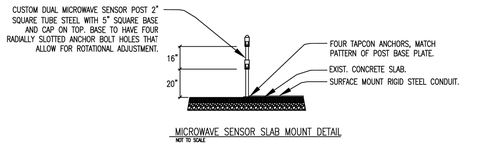
Designer DMK	Approved DMK
Issued For	Date 7/30/21
Scale: AS NOTED	
W.R. No.	
Acad Title	Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Sheet Title			
GATE STANDARD MICROWAVE SENSOR PLAN			
Drawing Number	Sheet	Rev.
SK-01	01	03



MICROWAVE SENSOR FOUNDATION DETAIL
NOT TO SCALE



MICROWAVE SENSOR SLAB MOUNT DETAIL
NOT TO SCALE

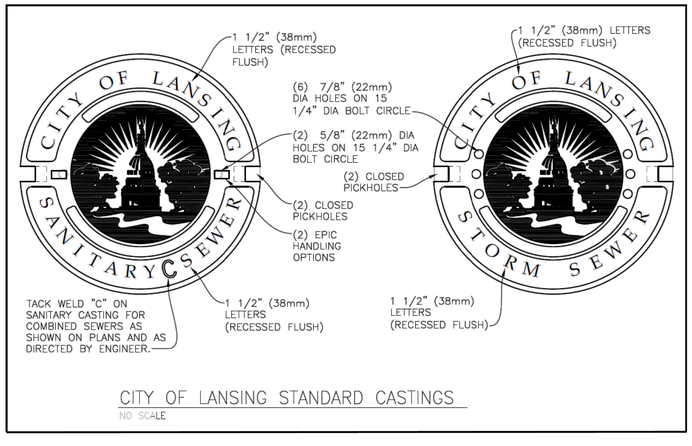
SLAB MOUNT DETAIL ONLY FOR RETROFIT APPLICATIONS

Designer DMK	Approved DMK
Issued For	Date 5/19/21
Scale: AS NOTED	
W.R. No. N/A	
Acad Title	Plot Scale 1:1

Consumers Energy
JACKSON, MICHIGAN

Sheet Title		
GATE STANDARD MICROWAVE SENSOR MOUNTING PLANS		
Drawing Number	Sheet	Rev
SK-01	01	01

City of Lansing Standard Castings



CITY OF LANSING STANDARD CASTINGS
NO SCALE

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REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO

SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

Consumers Energy
GCON SOUTHWEST - LANSING

DETAILS

SCALE: AS NOTED	DRAWING NO.	SHEET	REV.
JOB:		C-8.2	0

SHEET SIZE: ARCH-D 24x36

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 5 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
4. ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL TOWNSHIP INSPECTION FEES.
5. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
6. CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
7. ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
8. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, TOWNSHIP AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
10. THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

PAVING NOTES:

1. IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
2. REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
3. CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
4. ALL EXPANSION JOINTS AND CONCRETE PAVEMENT JOINTS TO BE SEALED.
5. CONCRETE PAVEMENT JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION;
   - 5.1. WHERE PROPOSED CONCRETE ABUTS A STRUCTURE, PROVIDE A MINIMUM 1/2" EXPANSION JOINT. THE JOINT FILLER BOARD MUST BE AT LEAST THE FULL DEPTH OF THE CONCRETE AND HELD DOWN A 1/2" TO ALLOW FOR SEALING.
   - 5.2. WHERE PROPOSED CONCRETE ABUTS EXISTING CONCRETE OR IN BETWEEN POURS OF PROPOSED CONCRETE (CONSTRUCTION JOINT), PROVIDE 5/8" DOWELS EVERY 30" CENTER TO CENTER HALF WAY ALONG THE THICKNESS OF THE PROPOSED PAVEMENT. ALTERNATE DOWELS SIZES AND SPACING MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
   - 5.3. WHERE PROPOSED CONCRETE ABUTS EXISTING OR PROPOSED SIDEWALK OR CURBING, PROVIDE A MINIMUM 1/2" EXPANSION JOINT.
   - 5.4. CONTROL, LONGITUDINAL AND/OR TRANSVERSE JOINTS SHALL BE PLACED TO PROVIDE PANELS WITHIN THE PAVEMENT AS SQUARE AS POSSIBLE WITH THE FOLLOWING MAXIMUM SPACING PARAMETERS:
     - 5.4.1. 6-INCH THICK CONCRETE PAVEMENT: 12' X 12'
     - 5.4.2. 8-INCH THICK CONCRETE PAVEMENT: 15' X 15'
   - 5.5. IRREGULAR-SHAPED PANELS MAY REQUIRE THE USE OF REINFORCING MESH OR FIBER MESH AS DETERMINED BY THE ENGINEER. THE USE OF MESH MUST BE APPROVED BY THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
   - 5.6. IF A JOINT PLAN IS NOT PROVIDED IN THE PLANS, THE CONTRACTOR SHALL SUBMIT ONE TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
6. CONCRETE CURBING JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
   - 6.1. JOINTS WHEN ADJACENT TO ASPHALT PAVEMENT
     - 6.1.1. PLACE CONTRACTION JOINTS AT 10' INTERVALS
     - 6.1.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
     - 6.1.3. PLACE 1" EXPANSION JOINT:
       - 6.1.3.1. AT SPRING POINTS OF INTERSECTIONS OR ONE OF THE END OF RADIUS LOCATIONS IN A CURVE
       - 6.1.3.2. AT 400' MAXIMUM INTERVALS ON STRAIGHT RUNS
       - 6.1.3.3. AT THE END OF RADIUS AT OPPOSITE ENDS IN A CURBED LANDSCAPE ISLAND
   - 6.2. JOINTS WHEN TIED TO CONCRETE PAVEMENT
     - 6.2.1. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT
     - 6.2.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
     - 6.2.3. PLACE 1"EXPANSION JOINT OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT
     - 6.2.4. CURB AND GUTTER AND CONCRETE SHALL BE TIED TOGETHER SIMILAR TO A LONGITUDINAL LANE TIE JOINT (MDOT B1 JOINT)
   - 6.3. IN BETWEEN POURS OF PROPOSED CONCRETE CURBING (CONSTRUCTION JOINT):
     - 6.3.1. CARRY THE REBAR CONTINUOUSLY BETWEEN POURS
     - 6.3.2. IF THE REBAR IS NOT LONG ENOUGH TO CARRY CONTINUOUSLY, THEN TIE TWO PIECES OF REBAR PER THE LATEST MDOT SPECIFICATIONS
7. CONCRETE SIDEWALK JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
   - 7.1. PLACE TRANSVERSE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
   - 7.2. PLACE TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS EQUAL TO 1/2 THE WIDTH OF THE WALK WHEN WIDTH IS EQUAL TO OR GREATER THAN 8'
   - 7.3. PLACE 1" EXPANSION JOINT WHERE ABUTTING SIDEWALK RAMP AND/OR RADIUS IN INTERSECTION
   - 7.4. PLACE TRANSVERSE 1/2" EXPANSION JOINT AT MAXIMUM OF 100' SPACING
   - 7.5. PLACE 1/2" EXPANSION JOINT WHEN ABUTTING A FIXED STRUCTURE, OTHER PAVEMENT (CONCRETE PAVEMENT AND DRIVE APPROACHES), UTILITY STRUCTURES, LIGHT POLE BASES AND COLUMNS

GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE CITY OF LANSING PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:3 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 4" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

GENERAL UTILITY NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION
2. ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
3. WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
5. THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.
6. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.

STORM SEWER NOTES:

1. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS (ASTM C-443)UNLESS SPECIFIED OTHERWISE ON PLANS.
2. ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26.
4. JOINTS FOR PVC PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

SANITARY SEWER NOTES:

1. DOWNSPOUTS, WEEP TILE, FOOTING DRAINS OR ANY CONDUIT THAT CARRIES STORM OR GROUND WATER SHALL NOT BE ALLOWED TO DISCHARGE INTO A SANITARY SEWER.
2. ALL SANITARY LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL SANITARY SEWER 8" OR LARGER SHALL BE P.V.C. TRUSS PIPE (ASTM D2680) AND FITTINGS, WITH ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
4. ALL SANITARY SEWER LEADS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 23.5 PIPE AND FITTINGS. ALL JOINTS TO BE ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
5. SANITARY LEADS SHALL BE PROVIDED WITH CLEANOUTS EVERY 100 FEET AND AT EVERY BEND AS SHOWN. ALL CLEANOUTS TO BE PROVIDED WITH E.J.I.W. #1565 BOX OR EQUAL.

CONSTRUCTION MATERIAL SUBMITTALS

UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
2. UTILITY TRENCH BACKFILL MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
3. RIP RAP MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
4. STORM AND SANITARY SEWER PIPING INCLUDING JOINTS
5. STORM AND SANITARY SEWER STRUCTURES
6. STORM AND SANITARY SEWER STRUCTURE FRAME AND COVERS INCLUDING CLEAN OUTS
7. STORM WATER MANAGEMENT OUTLET CONTROL STRUCTURES INCLUDING COVERS OR GRATES
8. PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
9. PAVEMENT UNDERDRAIN MATERIAL AND BACKFILL WITH ALL BACKFILL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
10. PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:
    - CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
    - SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)
    - MARSHALL MIX DESIGN CHECKLIST (FORM 1849)
11. SITE FENCING AND GATES INCLUDING FOOTINGS
12. ANY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO:

** ANY SPECIALITY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.

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0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE

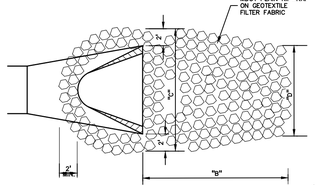
NAME
SCOTT PERUSKI

MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

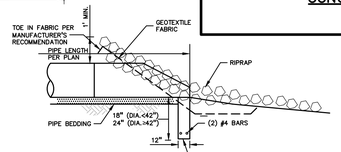
NOTES AND DETAILS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET C-8.0
REV. 0



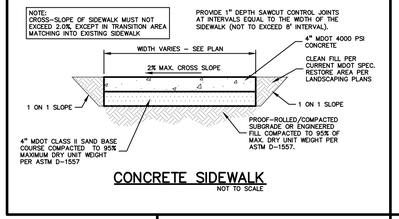
PLAN VIEW

PIPE DIAMETER	"B"	"C"	"D"	SQUARE YARDS
12"	5'-0"	6'-6"	3'-0"	8.0
15"	5'-0"	7'-0"	3'-0"	8.5
18"	5'-0"	7'-6"	3'-6"	9.2
21"	5'-6"	8'-0"	4'-0"	10.7
24"	6'-0"	8'-6"	4'-6"	12.4



PROFILE VIEW

END SECTION & RIPRAP DETAIL
NOT TO SCALE



CONCRETE SIDEWALK
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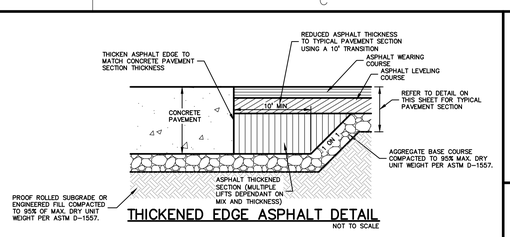
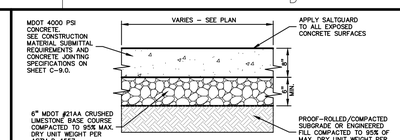
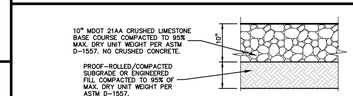


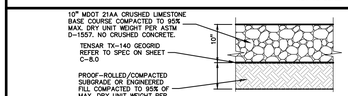
THICKENED EDGE ASPHALT DETAIL
NOT TO SCALE



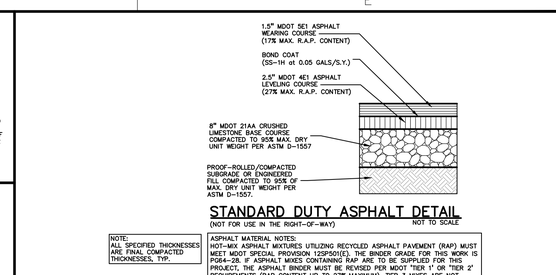
HEAVY DUTY CONCRETE DETAIL
NOT TO SCALE



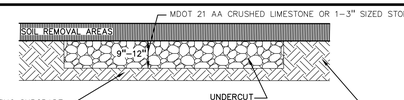
GRAVEL SURFACE FOR STORAGE YARD
NOT TO SCALE



GRAVEL SURFACE FOR ROADWAY
NOT TO SCALE



STANDARD DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT-OF-WAY)
NOT TO SCALE

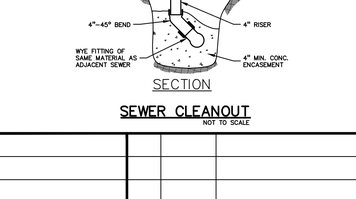


FULL DEPTH UNDERCUT
NOT TO SCALE

PROOFROLL SUBGRADE FOR EVIDENCE OF INSTABILITY

NOTE:
EXISTING SUBGRADE SHALL BE PROOFROLLED IN PROPOSED GRAVEL/PAVEMENT AREAS. IF SUBGRADE IS UNSTABLE, REMOVE EXISTING MATERIAL TO MIN. DEPTH OF 9"–12" PER THE GEOTECH REPORT, AND BACKFILL WITH MDOT 21AA CRUSHED LIMESTONE COMPACTED TO MIN. 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557 OR CRUSHED 1–3" SIZED STONE. THE WORK OF FULL DEPTH UNDERCUT CONSISTS OF REMOVAL OF THE EXISTING DETERIORATED SUBGRADE TO A DEPTH OF 9"–12" PER THE GEOTECH REPORT, AND PLACING AND COMPACTING THE REPLACEMENT MATERIALS AS SHOWN. SUBGRADE UNDERCUTTING SHALL BE PERFORMED IN ACCORDANCE WITH THE 2020 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. CONTRACTOR TO PROVIDE UNIT PRICE FOR FULL DEPTH UNDERCUT AS PART OF BASE BID.

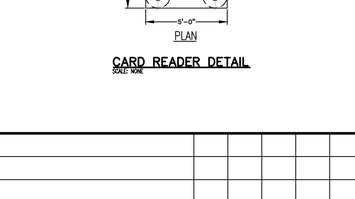
SAND BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 5' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE M.D.O.T. CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY UNIT WEIGHT (ASTM D-1557)



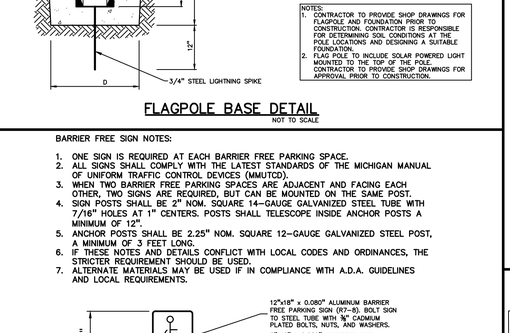
TRENCH WIDTH CALCULATIONS:
PVC A-2000 = (1.5 x O.D.) + 12"
CORRUGATED HDPE = 2 x O.D.
PVC HP STORM = 30" MAX. WIDTH
ABS SOLID WALL = 30" MAX. WIDTH

STANDARD PIPE BEDDING FOR FLEXIBLE PIPE
NOT TO SCALE

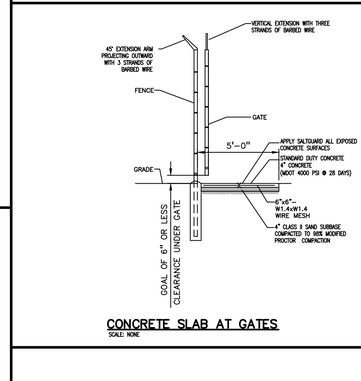
SAND BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 5' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT). IN OTHER AREAS BACKFILL WILL CONSIST OF MATERIAL AS EXCAVATED FROM TRENCH COMPACTED TO 90% MAX. DRY UNIT WEIGHT (ASTM D-1557). PROVIDE M.D.O.T. CLASS II GRANULAR MATERIAL (OR EQUAL) IN MAX. 6" LAYERS COMPACTED TO 95% MAX. DRY UNIT WEIGHT (ASTM D-1557).



STANDARD PIPE BEDDING FOR RIGID PIPE
NOT TO SCALE



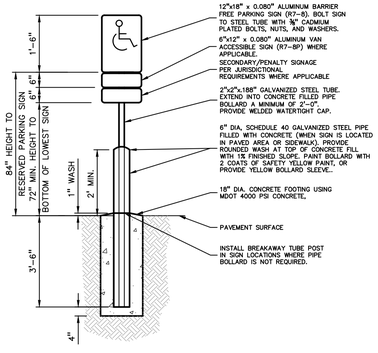
FLAGPOLE BASE DETAIL
NOT TO SCALE



CONCRETE SLAB AT GATES
SCALE: NONE

BARRIER FREE SIGN NOTES:

1. ONE SIGN IS REQUIRED AT EACH BARRIER FREE PARKING SPACE.
2. ALL SIGNS SHALL COMPLY WITH THE LATEST STANDARDS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
3. WHEN TWO BARRIER FREE PARKING SPACES ARE ADJACENT AND FACING EACH OTHER, TWO SIGNS ARE REQUIRED, BUT CAN BE MOUNTED ON THE SAME POST.
4. SIGN POSTS SHALL BE 2" NOM. SQUARE 14–GAUGE GALVANIZED STEEL TUBE WITH 7/16" HOLES AT 1" CENTERS. POSTS SHALL TELESCOPE INSIDE ANCHOR POSTS A MINIMUM OF 12".
5. ANCHOR POSTS SHALL BE 2.25" NOM. SQUARE 12–GAUGE GALVANIZED STEEL POST, A MINIMUM OF 3 FEET LONG.
6. IF THESE NOTES AND DETAILS CONFLICT WITH LOCAL CODES AND ORDINANCES, THE STRICTER REQUIREMENT SHOULD BE USED.
7. ALTERNATE MATERIALS MAY BE USED IF IN COMPLIANCE WITH A.D.A. GUIDELINES AND LOCAL REQUIREMENTS.



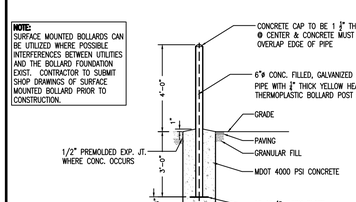
BARRIER FREE SIGN AND POST DETAIL
NOT TO SCALE

12" x 18" (R7–8) GREEN BORDER AND LEGEND WHITE SYMBOL, BLUE BACKGROUND, REFLECTORIZED

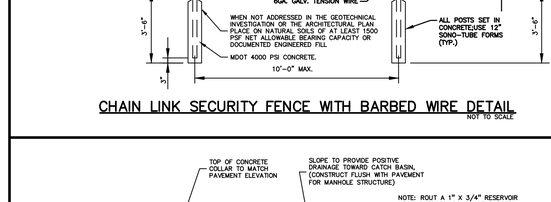
NOTE: MAY ONLY BE USED AT 11' WIDE SPACES LOCATED ON THE LEFT SIDE OF A 5' WIDE AISLE, OR 8' WIDE (MIN.) SPACES LOCATED TO THE LEFT OF 8' WIDE AISLES

6" x 12" (R7–8P) GREEN BORDER AND LEGEND REFLECTORIZED

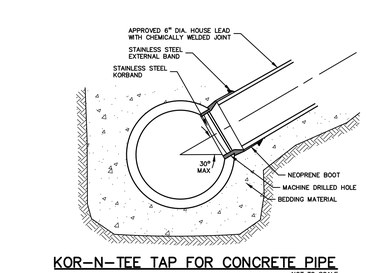
VAN ACCESSIBLE PARKING SIGN DETAIL
NOT TO SCALE



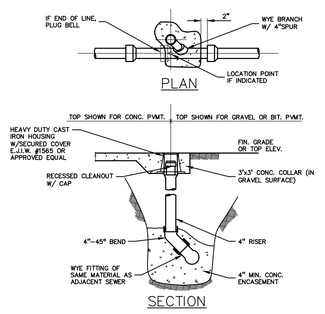
BOLLARD
NOT TO SCALE



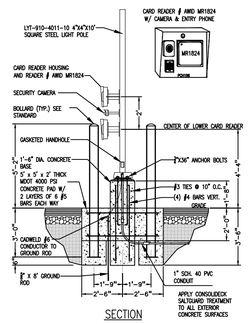
CHAIN LINK SECURITY FENCE WITH BARBED WIRE DETAIL
NOT TO SCALE

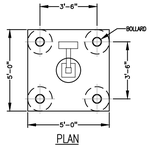


KOR-N-TEE TAP FOR CONCRETE PIPE
NOT TO SCALE

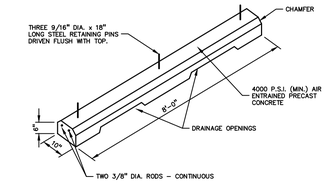


SEWER CLEANOUT
NOT TO SCALE

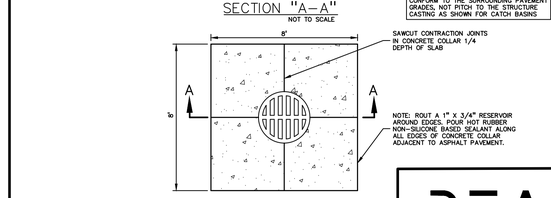




CARD READER DETAIL
SCALE: NONE



CONCRETE PARKING BUMPER
NOT TO SCALE



CONCRETE COLLAR DETAIL
NOT TO SCALE

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

REFERENCE DRAWINGS

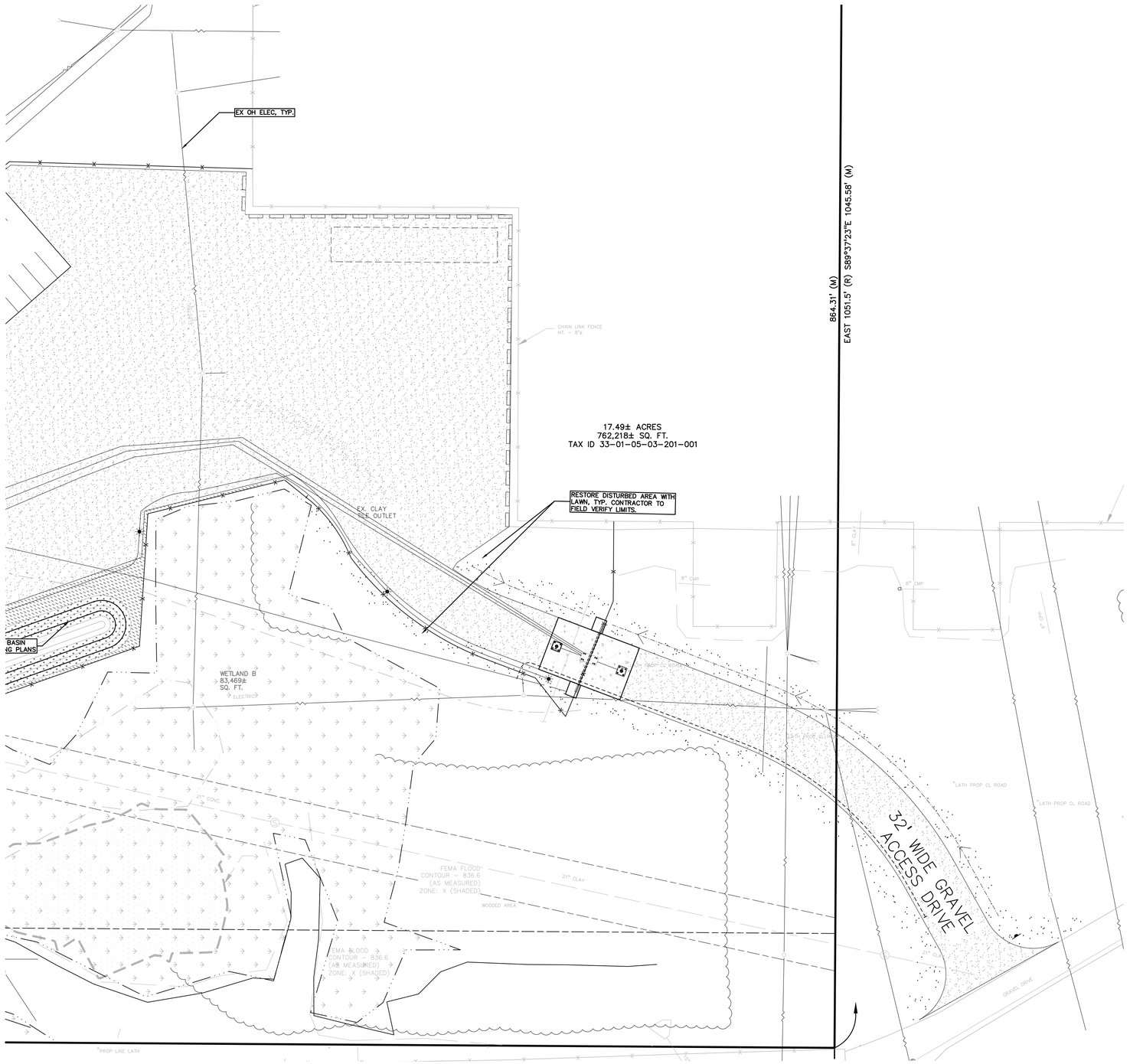
SIGNATURE
NAME: SCOTT PERUSKI
MICHIGAN P.E. No.: 6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

DETAILS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET: C-8.1
REV.: 0

SHEET SIZE: ARCH-D 24x36



KEY:

- = RIGHT OF WAY TREE
- = PARKING LOT TREE
- = SHRUBS
- = EXISTING TREES TO REMAIN WITH TREE PROTECTION FENCE
- = RESTORE/ SEED LAWN
- = STORMWATER SEED MIX
- = SWALE SEED MIX
- = ECONOMY PRAIRIE SEED MIX

SEE SHEET L-1.2 FOR GENERAL LANDSCAPE NOTES AND DETAILS

SCALE: 1" = 30'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
					BCG			JLE
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

LANDSCAPE PLAN

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET L-1.1
REV. 0

S:\PROJECTS\2021\2022-0956 CE 2022 ESP LANSING\DWG\AS BUILTS\L-1.0 LANDSCAPE PLAN-22-0956.dwg

SHEET SIZE: ARCH-D 24x36

DECIDUOUS TREE PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
2	AL8	Allegheny Serviceberry	*Amelanchier laevis*	8-10' Ht.	B&B
3	MP2.5	Prairiefire Crab	*Malus 'Prairiefire'*	2.5" Cal.	B&B
3	SR2.5	Japanese Tree Lilac	*Syringa reticulata 'Ivory Silk'*	2.5" Cal.	B&B
8	TOTAL DEC.				

SHRUB PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
12	DK30	Kodiak Orange Diervilla	*Diervilla x 'Kodiak Orange'*	30" Ht.	Cont.
12	VD30	Blue Muffin Viburnum	*Viburnum dentatum 'Christom'*	30" Ht.	Cont.
24	TOTAL SHRUBS				

PERENNIAL PLANT LIST:

1252.09 MAINTENANCE::

(a) PLANT MATERIALS, INCLUDING LAWN, SHALL BE KEPT TRIMMED AND MAINTAINED SO AS TO PROMOTE PROPER GROWTH AND A NEAT AND ORDERLY APPEARANCE.
(b) TREES AND SHRUBS SHALL BE TRIMMED TO AVOID CONFLICTS WITH PEDESTRIAN USE OF THE SIDEWALK. LANDSCAPING AT CORNER PROPERTIES SHALL BE PLANTED TO PROVIDE THE CLEAR VISION REQUIRED IN SECTION LANDSCAPING IN THE CLEAR VISION TRIANGLE SHALL NOT CONTAIN OBSTRUCTIONS GREATER THAN 36" IN HEIGHT.
(c) WEEDS SHALL BE KEPT UNDER CONTROL.
(d) BUFFER STRIPS SHALL BE PROPERLY MAINTAINED ACCORDING TO THE TYPES OF MATERIALS UTILIZED. COVER MATERIALS SHALL BE MAINTAINED IN A MANNER AS SPECIFIED AT THE TIME OF THE PLAN'S APPROVAL. LANDSCAPE/BUFFER AREAS SHALL BE KEPT FREE FROM REFUSE AND DEBRIS.
(e) NO BUILDINGS OR PARKING OR STORAGE OF MATERIALS OR VEHICLES SHALL BE ALLOWED IN ANY DESIGNATED BUFFER STRIPS, UNLESS APPROVED BY THE ZONING ADMINISTRATOR.

LANDSCAPE CALCULATIONS:

PER CITY OF LANSING ZONING ORDINANCE, ZONED IND-1 SUBURBAN INDUSTRIAL

1252.06 NON-RESIDENTIAL RIGHT OF WAY AND FRONT SETBACK PLANTING

REQUIRED: 1 TREE PER 30 LF. 1 SHRUB PER 10 LF.
JOLLY RD: 232 LF / 30 LF = 8 TREES
232 LF / 10 LF = 24 SHRUBS

PROVIDED:
JOLLY RD: 8 TREES AND 24 SHRUBS PROPOSED

1252.07 PARKING LOT LANDSCAPING

REQUIRED: 1 TREE PER 6,000 SF OF PAVED DRIVEWAY AND PARKING LOT SURFACE.

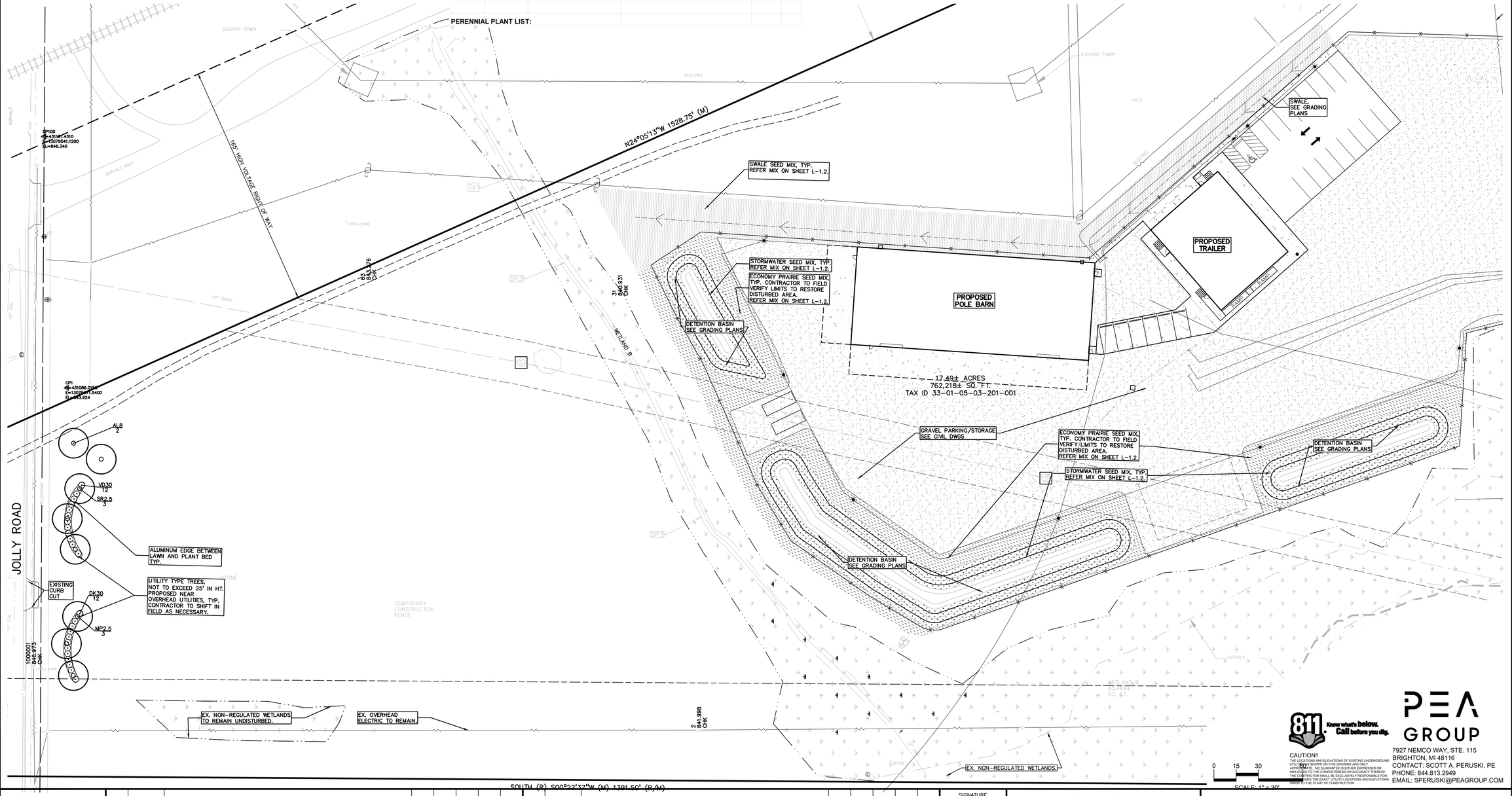
PROPOSED PAVED SURFACE: 8,581 SF PARKING LOT PVMT / 6,000 SF = 1.4 TREES

PROVIDED: 2 TREES

KEY:

= RIGHT OF WAY TREE
= PARKING LOT TREE
= SHRUBS
= EXISTING TREES TO REMAIN WITH TREE PROTECTION FENCE
= RESTORE/ SEED LAWN
= STORMWATER SEED MIX
= SWALE SEED MIX
= ECONOMY PRAIRIE SEED MIX

SEE SHEET L-1.2 FOR GENERAL LANDSCAPE NOTES AND DETAILS


JOLLY ROAD
N24°05'13"W 1528.75' (M)
165' HIGH VOLTAGE RIGHT OF WAY
SWALE SEED MIX, TYP. REFER MIX ON SHEET L-1.2
STORMWATER SEED MIX, TYP. REFER MIX ON SHEET L-1.2
ECONOMY PRAIRIE SEED MIX, TYP. CONTRACTOR TO FIELD VERIFY LIMITS TO RESTORE DISTURBED AREA. REFER MIX ON SHEET L-1.2
DETENTION BASIN SEE GRADING PLANS
PROPOSED POLE BARN
PROPOSED TRAILER
SWALE, SEE GRADING PLANS
17.49± ACRES
762,218± SQ. FT.
TAX ID 33-01-05-03-201-001
GRAVEL PARKING/STORAGE SEE CIVIL DWGS
ECONOMY PRAIRIE SEED MIX, TYP. CONTRACTOR TO FIELD VERIFY LIMITS TO RESTORE DISTURBED AREA. REFER MIX ON SHEET L-1.2
STORMWATER SEED MIX, TYP. REFER MIX ON SHEET L-1.2
DETENTION BASIN SEE GRADING PLANS
DETENTION BASIN SEE GRADING PLANS
AL8
2
VD30
12
SR2.5
3
ALUMINUM EDGE BETWEEN LAWN AND PLANT BED TYP.
EXISTING CURB CUT
DK30
12
UTILITY TYPE TREES, NOT TO EXCEED 25' IN HT. PROPOSED NEAR OVERHEAD UTILITIES, TYP. CONTRACTOR TO SHIFT IN FIELD AS NECESSARY.
MP2.5
3
TEMPORARY CONSTRUCTION FENCE
EX. NON-REGULATED WETLANDS TO REMAIN UNDISTURBED.
EX. OVERHEAD ELECTRIC TO REMAIN.
EX. NON-REGULATED WETLANDS.
SOUTH (R) S00°22'37"W (M) 1391.50' (R/M)
WETLAND B
WETLAND B
SP1
SP2
SP3
SP4
SP5
SP6
SP7
SP8
SP9
SP10
SP11
SP12
SP13
SP14
SP15
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SP31
SP32
SP33
SP34
SP35
SP36
SP37
SP38
SP39
SP40

SHEET SIZE: ARCH-D 24x36

NATIVE SEED MIX. BY STANTEC NATIVE PLANT NURSERY, 574-586-2412, OR EQUAL
SPECIES TO BE NATIVE TO COUNTY, NO INVASIVE SPECIES ALLOWED

FOR ALL SEED MIXES, PROVIDE EROSION MAT ON SLOPES AND AREAS OF WASH OUT TYP.
INSTALL AND PREP PER MANUFACTURES SPECIFICATIONS.

Economy Prairie Seed Mix
Stantec Native Plant Nursery 574-586-2412
stantec.com/native-plant-nursery

Botanical Name	Common Name
Permanent Grasses/Sedges/Rushes:	
Andropogon gerardii	Big Bluestem
Bouteloua curtipendula	Side Oats Grama
Carex spp.	Prairie Sedge Mix
Elymus canadensis	Canada Wld Rye
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass
Temporary Cover:	
Avena sativa	Common Oat
Lolium multiflorum	Annual Rye
Forbs & Shrubs:	
Asclepias syriaca	Common Milkweed
Asclepias tuberosa	Butterfly Weed
Chamaecrista fasciculata	Partridge Pea
Coreopsis lanceolata	Sand Coreopsis
Echinacea purpurea	Broad-leaved Purple Coneflower
Heliopsis helianthoides	False Sunflower
Lupinus perennis	Wild Lupine
Monarda fistulosa	Wild Bergamot
Penstemon digitalis	Foxglove Beard Tongue
Pycnanthemum virginianum	Common Mountain Mint
Ratibida pinnata	Yellow Coneflower
Rudbeckia hirta	Black-Eyed Susan
Solidago speciosa	Showy Goldenrod
Symphyotrichum laeve	Smooth Blue Aster
Symphyotrichum novae-angliae	New England Aster

Stormwater Seed Mix
Stantec Native Plant Nursery 574-586-2412
stantec.com/native-plant-nursery

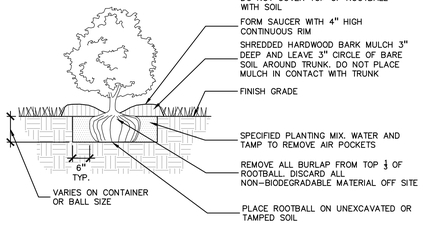
Botanical Name	Common Name
Permanent Grasses/Sedges/Rushes:	
Bolboschoenus fluviatilis	River Bulrush
Carex cristatella	Crested Oval Sedge
Carex lurida	Bottlebrush Sedge
Carex vulpinoidea	Brown Fox Sedge
Elymus virginicus	Virginia Wild Rye
Glyceria striata	Fowl Manna Grass
Juncus effusus	Common Rush
Leersia oryzoides	Rice Cut Grass
Panicum virgatum	Switch Grass
Schoenoplectus tabernaemontani	Softstem Bulrush
Scirpus atrovirens	Dark Green Rush
Scirpus cyperinus	Wool Grass
Temporary Cover:	
Avena sativa	Common Oat
Lolium multiflorum	Annual Rye
Forbs & Shrubs:	
Alisma spp.	Water Plantain (Various Mix)
Asclepias incarnata	Swamp Milkweed
Bidens spp.	Bidens (Various Mix)
Helenium autumnale	Sneezeweed
Iris virginica	Blue Flag
Lycopus americanus	Common Water Horehound
Mimulus ringens	Monkey Flower
Oligoneuron riddellii	Riddell's Goldenrod
Penthorum sedoides	Ditch Stonecrop
Polygonum spp.	Pinkweed (Various Mix)
Rudbeckia subtomentosa	Sweet Black-Eyed Susan
Rudbeckia triloba	Brown-Eyed Susan
Sagittaria latifolia	Common Arrowhead
Senna hebecarpa	Wild Senna
Symphyotrichum novae-angliae	New England Aster
Thalictrum dasycarpum	Purple Meadow Rue

Swale Seed Mix
Stantec Native Plant Nursery 574-586-2412
stantec.com/native-plant-nursery

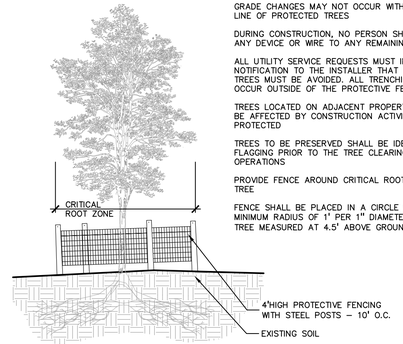
Botanical Name	Common Name
Permanent Grasses/Sedges:	
Andropogon gerardii	Big Bluestem
Carex comosa	Bristly Sedge
Carex cristatella	Crested Oval Sedge
Carex lurida	Bottlebrush Sedge
Carex spp	Prairie Sedge Mix
Carex vulpinoidea	Brown Fox Sedge
Elymus virginicus	Virginia Wild Rye
Glyceria striata	Fowl Manna Grass
Panicum virgatum	Switch Grass
Scirpus atrovirens	Dark Green Rush
Scirpus cyperinus	Wool Grass
Spartina pectinata	Prairie Cord Grass
Temporary Cover:	
Avena sativa	Common Oat
Lolium multiflorum	Annual Rye
Forbs:	
Alisma spp.	Water Plantain (Various Mix)
Asclepias incarnata	Swamp Milkweed
Coreopsis tripteris	Tall Coreopsis
Eutrochium maculatum	Spotted Joe-Pye Weed
Iris virginica	Blue Flag
Liatris spicata	Marsh Blazing Star
Lobelia cardinalis	Cardinal Flower
Lobelia siphilitica	Great Blue Lobelia
Lycopus americanus	Common Water Horehound
Pycnanthemum virginianum	Common Mountain Mint
Rudbeckia triloba	Brown-Eyed Susan
Sagittaria latifolia	Common Arrowhead
Senna hebecarpa	Wild Senna
Silphium terebinthinaceum	Prairie Dock
Symphyotrichum novae-angliae	New England Aster
Verbena hastata	Blue Vervain
Zizia aurea	Golden Alexanders

GENERAL PLANTING NOTES:

1. LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING SITE CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION MAY BE LOCATED BY CALLING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES ON THE JOB AND SHALL REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER'S REPRESENTATIVE PRIOR TO COMMENCING.
3. ALL PLANT MATERIAL TO BE PREMIUM GRADE NURSERY STOCK AND SHALL SATISFY AMERICAN ASSOCIATION OF NURSERYMEN STANDARD FOR NURSERY STOCK. ALL LANDSCAPE MATERIAL SHALL BE NORTHERN GROWN, NO. 1. GRADE.
4. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON LANDSCAPE PLAN PRIOR TO PRICING THE WORK.
5. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL NOT MEETING SPECIFICATIONS.
6. ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
7. ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER; TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
8. ALL MULTI STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
9. ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.
10. ALL TREES TO HAVE CLAY OR CLAY LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.
11. NO MACHINERY IS TO BE USED WITHIN THE DRIP LINE OF EXISTING TREES; HAND GRADE ALL LAWN AREAS WITHIN THE DRIP LINE OF EXISTING TREES.
12. ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.
13. IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS.
14. ALL PLANTING BEDS SHALL RECEIVE 3" SHREDDED HARDWOOD BARK MULCH WITH PRE EMERGENT, SEE SPECIFICATIONS. SHREDDED PALETTE AND DYED MULCH WILL NOT BE ACCEPTED.
15. ALL LANDSCAPED AREAS SHALL RECEIVE 4" COMPACTED TOPSOIL.
16. SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.
17. FOR NON-LAWN SEED MIX AREAS, AS NOTED ON PLAN, BRUSH MOW ONCE SEASONALLY FOR INVASIVE SPECIES CONTROL.
18. CONTRACTOR SHALL NOT INSTALL PLANTS UNDER BUILDING OVERHANG AND SHALL NOTIFY LANDSCAPE ARCHITECT IF DRAWINGS CONFLICT WITH BUILDING OVERHANGS.
19. TREES SHALL NOT CONFLICT/ BLOCK PROPOSED REGULATORY/ DIRECTION SIGNAGE, MONUMENT SIGNS, ADDRESS OR LIGHT POLES. SHIFT TREES AS NECESSARY TYP.



4 SHRUB PLANTING DETAIL
SCALE: 1" = 2'-0"



TREE PROTECTION WILL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE

NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN; INCLUDING, BUT NOT LIMITED TO PLACING SOLVENTS, BUILDING MATERIAL, CONSTRUCTION EQUIPMENT OR SOIL DEPOSITS WITHIN DRIP LINES

GRADE CHANGES MAY NOT OCCUR WITHIN THE DRIP LINE OF PROTECTED TREES

DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY REMAINING TREE

ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING

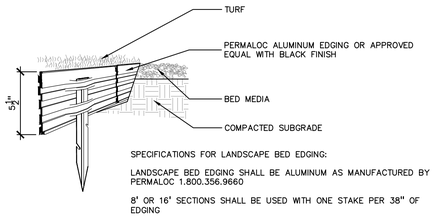
TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED

TREES TO BE PRESERVED SHALL BE IDENTIFIED WITH FLAGGING PRIOR TO THE TREE CLEARING OPERATIONS

PROVIDE FENCE AROUND CRITICAL ROOT ZONE OF TREE

FENCE SHALL BE PLACED IN A CIRCLE WITH A MINIMUM RADIUS OF 1' PER 1" DIAMETER OF THE TREE MEASURED AT 4.5' ABOVE GROUND

2 TREE PROTECTION DETAIL
SCALE: 1" = 3'-0"



SPECIFICATIONS FOR LANDSCAPE BED EDGING:

LANDSCAPE BED EDGING SHALL BE ALUMINUM AS MANUFACTURED BY PERMALOC 1.800.356.9660

8' OR 16' SECTIONS SHALL BE USED WITH ONE STAKE PER 38" OF EDGING

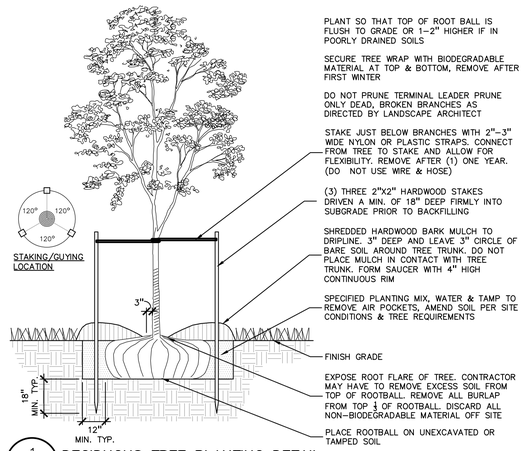
EDGING SHALL BE 3/16" THICK X 4" DEPTH WHEN ADJ. TO MULCH AND 3/16" THICK X 5 1/2" DEPTH WHEN ADJ. TO ROCK, FINISH: BLACK DURAFLEX MEETING AAMA 2603

STAKE SHALL SECURELY ENGAGE EDGING AND SHALL BE ENTIRELY BELOW TOP SURFACE OF EDGING

EDGING SHALL HAVE A MINIMUM OF 2" OF INTERLOCKING OVERLAP BETWEEN SECTIONS

INSTALL AS PER MANUFACTURER'S SPECIFICATIONS WITH TOP OF EDGING 2"-3" ABOVE COMPACTED FINISH GRADE. FINISH GRADE TO BE COMPACTED ON BOTH SIDES OF EDGING TO MAINTAIN STABILITY

3 ALUMINUM EDGE DETAIL
SCALE: 1/2" = 1'-0"



1 DECIDUOUS TREE PLANTING DETAIL
SCALE: 1" = 3'-0"

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE
BCG JLE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST - LANSING

LANDSCAPE DETAILS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET L-1.2
REV. 0

S:\PROJECTS\2022\2022-0996 CE 2022 ESRP LANSING\CAD\XS BUILT\(L-11) LANDSCAPE DETAILS-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

EXTERIOR PLANTS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Furnish and install landscaping plants as described in Contract Documents.

1.2 QUALITY ASSURANCE

1.2.1 Plant names indicated, comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

1.2.2 Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.

1.2.3 All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of two years.

1.2.4 Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional charge. Larger plants shall not be cut back to size indicated.

1.2.5 Provide "specimen" plants with a special height, shape, or character of growth. Landscape Subcontractor is to tag specimen trees or shrubs at the source of supply. The Landscape Subcontractor shall inspect all plant material at source prior to Landscape Architect's approval. Landscape Subcontractor shall accompany Landscape Architect on final selection trip. The Landscape Architect will inspect specimen selections for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.

1.2.6 Plants may be inspected and approved at the place of growth for compliance with specification requirements for quality, size, and variety.

1.2.7 Approval of plant selection at the place of growth shall not impair the right of inspection and rejection upon delivery at the site or during progress of the work.

1.2.8 Provide percolation testing by filling plant pits with water and monitoring length of time for water to completely percolate into soil. Submit test results to Landscape Architect prior to starting work.

1.2.9 Before proceeding with work, check and verify dimensions and quantities. Report variations between Drawings and site to Landscape Architect before proceeding with work of this section.

1.2.10 Plant totals are for convenience only and are not guaranteed. Verify amounts shown on Drawings. All plantings indicated on Drawings are required unless indicated otherwise.

1.3 SUBMITTALS

1.3.1 Provide and pay for material testing. Testing agency shall be acceptable to the Landscape Architect. Provide the following data:

1. The loss of weight by ignition and moisture absorption capacity shall be tested for peat moss.

1.3.2 Submit the following material samples to Landscape Architect:

1. Peat moss, shredded hardwood bark mulch, planting accessories, pre-emergent herbicides, and plant fertilizers.

1.3.3 Submit the following materials certification to Landscape Architect:

1. Topsoil source and ph value, peat moss, and plant fertilizer.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Deliver fertilizer materials in original, unopened and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

1.4.2 Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected.

1.4.3 Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration.

1.4.4 Dig, pack, transport, and handle plants with care to ensure protection against injury.

1.4.5 Inspection certificates required by law shall accompany each shipment invoice or order to stock on arrival. The certificate shall be filed with the General Contractor's representative.

1.4.6 Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, shredded hardwood bark mulch, or in a manner acceptable to the General Contractor's representative.

1.4.7 Water heeled in plantings daily.

1.4.8 No plant shall be bound with rope or wire in a manner that could damage or break the branches.

1.4.9 Cover plants transported on open vehicles with a protective covering to prevent wind burn.

1.4.10 Frozen or muddy topsoil is not acceptable.

1.5 PROJECT CONDITIONS

1.5.1 See Landscape Preparation Section.

1.5.2 Work notification: notify Landscape Architect at least seven working days prior to installation of plant material.

1.5.3 Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

1.5.4 A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the proposal form. In the event that quantity discrepancies or material omissions occur in the proposal form, Subcontractor shall notify the Landscape Architect during the proposal bidding process.

1.5.5 An irrigation system will be installed prior to planting. Locate, protect, and maintain the irrigation system during planting operations. Repair irrigation system components, damaged during planting operations, at the Landscape Subcontractor's expense.

1.5.6 The Landscape Subcontractor shall inspect existing soil conditions in all areas of the site where his operations will take place, prior to the beginning of work. It is the responsibility of the Landscape Subcontractor to notify the General Contractor's representative and the Landscape Architect in writing of any conditions which could affect the survivability of plant material to be installed.

1.6 WARRANTY

1.6.1 See Landscape Maintenance and Warranty Standards.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Plants: Provide plants typical of their species or variety; with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.

2. All trees shall have clay or clay loam balls. Trees with sand balls will be rejected.

3. Provide tree species that mature at heights over 25'-0" with a single, main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.

4. Plants planted in rows shall be matched in form, (see specimen stock).

5. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.

6. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

7. Evergreen trees shall be unsheared and branched to the ground.

8. Shrubs and small plants shall meet the requirements for spread and height indicated on the drawings.

9. Plant materials shall be subject to approval by the Landscape Architect as to size, health, quality, and character.

10. Bare root trees are not acceptable.

11. Provide plant materials from licensed nursery or grower.

2.1.2 Bare root plants: dug with adequate fibrous roots, to be covered with a uniformly thick coating of mud by being puddled immediately after they are dug or packed in moist straw or peat moss.

2.1.3 Container grown stock: grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.

1. No plants shall be loose in the container.

2. Container stock shall not be root bound.

3. Single stemmed or thin plants will not be accepted.

4. Side branches shall be generous, well twigged, and the plant as a whole well bushed to the ground.

5. Plants shall be in a moist, vigorous condition, free from dead wood, bruises or other root or branch injuries.

2.1.4 Collected stock consists of plants growing under natural conditions in soils and climate as exist at location to be planted, in locations lending themselves to proper collecting practices. Root system (balls) to be at least twenty-five (25%) percent larger than specified for nursery grown material.

2.1.5 Specimen stock: all specimen designated plantings are to be nursery grown, fully developed, excellent quality, and typical example of the species. Plants designated to be planted in rows must be matched, symmetrical, and uniform in height, spread, caliper, and branching denalty.

1. Matched plantings should be obtained from the same nursery and, preferably, from the same row or line. All specimen material will be approved by the Landscape Architect at nursery.

2.1.6 Topsoil for planting mix: fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials with acidity range of between ph 6.0-6.8 for ericaceous plants.

2.1.7 Peat moss: brown to black in color, weed and seed free granulated raw peat.

1. Provide ASTM D2607 sphagnum peat moss with a ph below 6.0 for ericaceous plants.

2.1.8 Planting mixture Type A - trees: standard planting backfill shall be a mixture of ⅓ native soil (excavated from plant pits), ⅓ topsoil, and ⅓ sand. Add fertilizer Type "A" and "B" to planting mixture per manufacturer's requirements. Follow planting details.

2.1.9 Planting mixture Type B for perennial flowers, groundcover beds, and ericaceous plants: planting backfill shall be a mixture of 1/3 screened topsoil, 1/3 sand and 1/3 peat. All existing soil shall be excavated and removed. Adding fertilizer types "A" and "B" to mixture per manufacturer's requirements. Follow planting details. Planting mixture Type C for annual flower beds: same as Type "B". Submit a sample to the Landscape Architect for approval prior to installation.

2.1.10 Plant fertilizer Type A to be "Drimanure" applied per manufacturer recommendations.

2.1.11 Plant fertilizer Type B to be "14-14-14". Apply per manufacturer recommendations.

2.1.12 Bone Meal - 5 lbs. per cubic yard of soil mixes.

2.1.13 Lime to be ground dolomitic limestone, ninety-five percent (95%) passing through #100 mesh screen. Use to adjust soil pH only, under direction of Landscape Architect.

2.1.14 Sand to be clean, coarse, ungraded conforming to ASTM-C-3 for fine aggregates.

2.1.15 Anti-Desiccant: protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration. Mixed and applied in accordance with Manufacturer's instructions.

2.1.16 Shredded bark mulch shall be double processed, dark shredded hardwood bark that is clean, free of debris and sticks. Materials shall be uniform in size, shape, and texture. Submit samples to Landscape Architect for approval prior to installation. Install mulch to finish grade, level smooth, without ridges, humps, or depressions.

2.1.17 Water: free of substances harmful to plant growth. Hoses or other methods of transportation shall be furnished by Sub Contractor.

2.1.18 Stakes for staking : (3) Three Hardwood, 2" x 2" x 8'-0" long. Driven a min. of 18" deep firmly into subgrade prior to backfilling. Stakes for guying: Hardwood, 2" x 2" x 36" long.

2.1.19 Guying/staking material: With 2"-3" wide fabric straps, connect from tree to stake. Remove after (1) year, allow for flexibility (do not use wire & hose).

2.1.20 Tree wrap: standard waterproofed tree wrapping paper, 2-1/2" wide, made of 2 layers of crepe kraft paper weighing not less than 30 lbs. per ream, cemented together with asphalt. Secure tree wrap with biodegradable material at top and bottom. Remove after first winter.

2.1.21 Twine: two-ply jute material.

2.2 MEASUREMENTS

2.2.1 Measure height and spread of specimen plant materials with branches in their normal positions as indicated on Drawings or Plant List.

2.2.2 The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.

2.2.3 Measurement should be average of plant, not greatest diameter. For example, plant measuring 15 inches in widest direction and 9 inches in narrowest direction would be classified as 12 inch stock.

2.2.4 Plants properly trimmed and transplanted should measure same in every direction.

2.2.5 Measure caliper of trees 6 inches above surface of ground.

2.2.6 Where caliper or other dimensions of plant materials are omitted from Plant List, plant materials shall be normal stock for type listed.

2.2.7 Plant materials larger than those specified may be supplied, with prior written approval of Landscape Architect, and:

1. If complying with Contract Document requirements in all other respects.

2. If at no additional cost to Owner.

3. If sizes of roots or balls are increased proportionately.

2.2.8 The height of the trees, specified by height, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated on the drawings.

3.0 EXECUTION

3.1 INSPECTION

3.1.1 Landscape Architect or General Contractor's representative must approve proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.1.2 Individual plant locations shall be staked on the project site by the Landscape Contractor and approved by the Landscape Architect before any planting pits are dug. The Landscape Architect reserves the right to adjust plant material locations to meet field conditions, without additional cost to the General Contractor / Owner.

3.1.3 Accurately stake plant material according to the Drawings. Stakes shall be above grade, painted a bright color, and labeled with the name of the plant material to be installed at that location.

3.2 TIME OF PLANTING

3.2.1 Evergreen material: Plant Evergreen materials between September 1 and October 15 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.

3.2.2 Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in leaf, they shall be sprayed with anti-desiccant prior to planting operation.

3.2.3 Planting times other than those indicated must be acceptable to the Landscape Architect.

3.3 PREPARATION

3.3.1 General: See Landscape Preparation Section

3.3.2 Vegetation Removal

1. Strip existing grass and weeds, including roots from all bed areas leaving the soil surface one (1") inch below finish grade.

2. Herbicide: as required to prepare area for new planting applied to all ground cover, evergreen and shrubbery beds and all mulch areas before application of preemergence herbicide, per manufacture's recommendations. Clean area of all dead material after five (5) days.

3. Pre-Emergence Herbicide: applied per manufacturer recommendations to same area where "Herbicide" has been applied and to planting bed areas, after area is cleared of dead vegetation.

4. Herbicides to be applied by licensed applicator as required by the State.

5. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds. Provide plant pits per planting details. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 6".

6. Roughen sides of excavations.

7. Provide premixed planting mixture Type "A" for use around the balls and roots of all deciduous and evergreen tree plantings.

3.3.3 Ground Cover Beds

1. Excavate existing soil to 12" depth over entire bed area and remove soil from site. Scarify bottom of bed to a 4" depth. Set plants according to drawings and backfill entire bed with premixed planting mixture "Type B". Ground Cover shall be planted after bed has been backfilled with plant mix and mulched. Plant ground cover through mulch and into plant mix.

3.4 INSTALLATION

3.4.1 Planting shall be performed only by experienced workman familiar with planting procedures under the supervision of a qualified supervisor.

3.4.2 Planting pits shall be round, with vertical sides and flat bottoms, and sized in accordance with outlines and dimensions shown on the planting details.

3.4.3 See drawings for planting details.

3.4.4 If obstructions are encountered that are not indicated, do not proceed with planting operations until alternative plant locations have been selected and approved in writing by the Landscape Architect. Where location or spacing dimensions are not clearly shown, request clarification by the Landscape Architect.

3.4.5 Set plant material in the planting pit to proper grade and alignment.

1. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure.

2. Set plant material so it is flush to finish grade after settling, or 1-2" higher in poorly drained soil, or as directed by Landscape Architect.

3. No filling will be permitted around the trunks or stems.

4. Do not cover top of root ball with soil.

5. Backfill pit with planting mixture. Do not use frozen or muddy mixtures for backfilling.

6. Form a ring of soil around the edge of the planting pit to retain water.

3.4.6 After balled and burlapped plants are set, tamp planting mixture around of balls and fill all voids and remove air pockets.

3.4.7 Remove all burlap, ropes, and wires from top 1/3 of balls.

3.4.8 Space ground cover plants in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Plant to within 12" of trunks and shrubs and to within 6" of planting bed.

3.4.9 Spread and arrange roots of bare rooted plants in their natural position. Work in planting mixture. Do not mat roots together. Cut all broken and frayed roots before installing planting mixture.

3.4.10 Water immediately after planting.

3.4.11 Apply pre-emergent herbicide to bed areas per manufacturer's recommendations before mulching.

3.5 MULCHING

3.5.1 Mulch trees and shrub planting pits and shrub beds with shredded hardwood bark mulch 3" deep to dripline immediately after planting. Leave 3" circle of bare soil around tree trunk. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

3.5.2 Mulch shall not be placed in contact with trunks or stems.

3.5.3 Mulch ground cover beds with shredded bark mulch 2" to 3" deep prior to planting.

3.5.4 Plant ground cover through mulch.

3.6 WRAPPING, GUYING, AND STAKING

3.6.1 Inspect trees for injury to trunks, evidence of insect infestation and improper pruning before wrapping.

3.6.2 Wrap trunks of all trees spirally from bottom to top with specified tree wrap and secure in place.

3.6.3 Stake deciduous trees under 4" caliper. Stake evergreen trees under 6'-0" tall and over with metal fence post, three (3)per tree.

3.6.4 Stake/guy all trees immediately after installation. When high winds or other conditions which may effect tree survival or appearance occur during the warranty period, the Sub-Contractor shall immediately repair the staking/guying.

3.6.5 Guy deciduous trees 4" caliper and over. Stake evergreen trees 6'-0" tall and over with metal fence post, three (3) per tree.

3.6.6 All work shall be acceptable to the Landscape Architect/Owner's representative.

3.7 PRUNING

3.7.1 Remove or cut back broken, damaged, and unsymmetrical growth of new wood.

3.7.2 Multiple leader plants: preserve the leader which will best promote the symmetry of the plant. Do not prune terminal leader. Cut branches flush with the trunk of the main branch, at a point beyond a lateral shoot or bud a distance of not less than ⅛ the diameter of the supporting branch. Make cut on an angle.

3.7.3 Prune evergreens only to remove broken or damaged branches.

3.8 MAINTENANCE

3.8.1 See Landscape Maintenance and Warranty Standards.

3.9 CLEANING

3.9.1 Perform cleaning during installation of the work and upon completion of the work. Remove from all site excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

END OF SECTION

LANDSCAPE MAINTENANCE AND WARRANTY STANDARDS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Provide maintenance for new landscaping as described in Contract Documents.

2. The requirements of the Section include a one (1) year warranty period from date of acceptance of installation performed by the General Contractor's Representative and Landscape Architect.

2.0 PRODUCTS - Not Used

3.0 EXECUTION

3.1 PERFORMANCE

3.1.1 Acceptance of Installation

1. At the completion of all landscape installation, or pre-approved portions thereof, the Landscape Subcontractor shall request in writing an inspection for Acceptance of Installation in which the Landscape Subcontractor, Landscape Architect, and General Contractor's Representative shall be present.

   a. Following the acceptance inspection a punch list will be issued by the Landscape Architect.

   b. Upon completion of all punch list items, the Landscape Architect and/or General Contractor's Representative shall reinspect the project and issue a written statement of Acceptance of installation and establish the beginning of the Project Warranty Period.

   c. At the time of acceptance all plant material shall be of vigorous health.

   d. It is the responsibility of the Landscape Subcontractor to make the written request for inspection of installation in a timely fashion.

   e. If there is plant material loss prior to the Landscape Subcontractor's written request for inspection of installation, the Landscape Contractor shall make all replacements of this dead material at no additional cost These replacements are not considered to be the required one (1) replacement of dead plant material by the Landscape Subcontractor during the one (1) year project warranty period, as outlined below.

2. Landscape work may be inspected for acceptance in parts agreeable to the General Contractor's Representative and Landscape Architect provided work offered for inspection is complete, including maintenance as required.

3. For work to be inspected for partial acceptance, the Landscape Subcontractor shall provide a drawing outlining work completed and supply a written statement requesting acceptance of this work completed to date.

3.1.2 Project Warranty

1. The Project Warranty Period begins upon written preliminary acceptance of the project installation by the Landscape Architect and General Contractor's representative.

2. The Landscape Subcontractor shall guarantee trees, shrubs, ground cover beds and seeded or sodded areas through construction and for a period of one (1) year after date of Acceptance of Installation against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others or unusual phenomena or incidents which are beyond Landscape Subcontractor's control.

3.1.3 Maintenance During One (1) Year Project Warranty

1. To insure guarantee standards, the following maintenance procedures for trees, shrubs, and ground covers shall be executed during construction and for the full Project Warranty Periods.

   a. Landscape Subcontractor shall be responsible for only one (1) replacement of any plant materials during the one (1) year Project Warranty Period. These include those which are dead or in the opinion of the Landscape Architect are in an unhealthy or unsightly condition, or having lost natural shape, resulting from dieback, excessive pruning, or inadequate or improper maintenance as part of the guarantee.

   b. Prior to any replacements, Landscape Subcontractor shall review individual plants in question with Landscape Architect to determine reason for plant demise.

2. Replacements must meet the standards specified on the Landscape plans and in the specifications, i.e. quality, species of plant material and planting procedures to receive approval of replacement materials by Landscape Architect.

3. Costs for replacements are assumed part of bid quotations and therefore will not result in an additional cost to General Contractor or Landscape Architect.

4. Areas damaged as a result of replacement operation are to be restored by Landscape Subcontractor at no cost to the General Contractor or Landscape Architect.

5. The Landscape Subcontractor shall be responsible for watering all plantings through the warranty period and shall keep guy wires taut, raise tree balls which settle, furnish and apply sprays as necessary to keep the plantings free of disease and insects until the end of the warranty period.

6. The Landscape Subcontractor shall remove and replace trees, shrubs or other plants found to be dead or in unhealthy condition.

   a. Rejected plants and materials shall be removed promptly.

   b. Replacements shall be made during the following normal planting schedule.

   c. Trees and shrubs which are in doubt shall be replaced, unless, in the opinion of the Landscape Architect, it is advisable to extend Project Warranty Period for full growing Season.

7. The Landscape Contractor shall apply anti-desiccants on evergreen trees and evergreen shrub beds within 150' of major streets and drives, no later than December 1, during the one (1) year project warranty.

8. The first spring after plant installation the contractor shall check all trees to insure twine has rotted from around the trunk. If twine is still present, it shall be removed and disposed of off-site.

9. All stakes, guy wires, tree wrap paper, dead twigs and branches shall be removed from tree and plant materials at the end of this warranty period.

3.1.4 Maintenance of Seeded Lawn Areas

1. The Landscape Subcontractor shall maintain seeded lawn areas.

   a. Water, fertilize, weed, and apply chemicals until a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one (1) foot of area up to a maximum of 3% of the total seeded lawn area is established.

   b. Seeded lawn that fails to show a uniform growth and/or germination shall be reseeded until a dense cover is established, regardless of what season the seed was installed.

2. The Landscape Subcontractor shall maintain and mow all lawn areas for until acceptance of installation (typically 3 mows) . When lawn reaches 3" in height it shall be cut to 2" in height.

3. The Owner assumes cutting responsibilities following the Acceptance of Installation of the seeded lawn.

4. At conclusion of Project Warranty Period and after receiving Written Final Acceptance by General Contractor's representative and Landscape Architect, the Owner shall assume all seeded lawn maintenance responsibilities.

END OF SECTION

NOTE: The Owners may at their option elect to utilize a Construction Manager in lieu of a General Contractor for all matters pertaining to these specifications and the site work.

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
	0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

							JLE	
				BGG				

SIGNATURE
NAME
SCOTT PERUSKI
MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST - LANSING

LANDSCAPE SPECIFICATIONS

SCALE: AS NOTED
JOB:
DRAWING NO.
SHEET L-2.2
REV. 0

S:\PROJECTS\2021\2021-0996 CE 2022 ESPP LANSING\CMD\AS BUILTs\L-2.0 LANDSCAPE SPECIFICATIONS-22-0996.dwg

SHEET SIZE: ARCH-D 24x36

GENERAL LANDSCAPING REQUIREMENTS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. General procedures and requirements for Site Work.

2.0 PRODUCTS – Not Used

3.0 EXECUTION

3.1 PREPARATION

3.1.1 Protection

1. Spillage:
   A. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
   B. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
2. Erosion Control:
   A. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on–site or off–site drainage systems.
   B. Develop, install, and maintain an erosion control plan if required by law.
   C. Repair and correct damage caused by erosion.
3. Existing Plants And Features:
   A. Do not damage tops, trunks, and roots of existing trees and shrubs on site which are intended to remain.
   B. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of Landscape Architect.
   C. Do not damage other plants and features which are to remain.

3.1.2 If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.

END OF SECTION

LANDSCAPING PREPARATION

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. General landscape work requirements.

1.2 QUALITY ASSURANCE

1.2.1 Comply with all applicable local, state and federal requirements, regarding materials, methods of work, and disposal of excess and waste materials.

1.2.2 Obtain and pay for all required inspections, permits, and fees.

1.2.3 Provide notices required by governmental authorities.

1.3 PROJECT CONDITIONS

1.3.1 Locate and identify existing underground and overhead services and utilities within contract limit work areas. (Call Miss Dig: 1–800–482–7171 in Michigan).

1.3.2 Provide adequate means to protect utilities and services designated to remain.

1.3.3 Repair utilities damaged during site work operations at Subcontractor's expense.

1.3.4 When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.

1.3.5 Locate, protect, and maintain benchmarks, monuments, control points and project engineering reference points. Re–establish disturbed or destroyed items at Subcontractor's expense.

1.3.6 Perform landscape work operations and the removal of debris and materials to assure minimum interference with streets, walks, and other adjacent facilities.

1.3.7 Obtain governing authorities' written permission when required to close or obstruct streets, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways when required by governing authorities.

1.3.8 Protect and maintain street lights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal.

1.3.9 The General Contractor will occupy the premises and adjacent facilities during the entire period of construction. Perform landscape work operations to minimize conflicts and to facilitate General Contractor's use of the premises and conduct of his normal operations.

1.3.10 Perform landscape preparation work before commencing landscape construction.

1.3.11 Provide necessary barricades, coverings and protection to prevent damage to existing improvements indicated to remain.

1.3.12 Protect existing trees scheduled to remain against injury or damage including cutting, breaking or skinning of roots, trunks or branches, smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.

2.0 PRODUCTS

2.1 MATERIALS/EQUIPMENT

2.1.1 As selected by the General Contractor, except as indicated.

1. Tree protection:
   A. Wood fencing – Snow fencing 4' height.
   B. Posts – Steel fence post.
   C. Herbicide for lawn restoration – "Round–up" by Monsanto.

3.0 EXECUTION

3.1 EXISTING UTILITIES

3.1.1 Call "MISS DIG" 811 before construction begins. Information on the drawings related to existing utility lines and services is from the best sources presently available. All such information is furnished only for information and is not guaranteed. Excavate test pits as required to determine exact locations of existing utilities.

3.2 CLEARING

3.2.1 Locate and suitably identify trees and improvements indicated to remain.

3.2.2 Fencing/soil erosion fence is to be installed.

3.2.3 Any equipment that compacts the soil in the areas of existing trees is not allowed.

3.2.4 Protect trees scheduled to remain with 4' high snow fence per plans.

3.2.5 No vehicular traffic is permitted beneath drip line at any time. All lawn areas are to be worked by hand.

3.2.6 Clear and grub areas within contract limits as required for site access and execution of the work.

3.2.7 Remove trees, plants, undergrowth, other vegetation and debris, except items indicated to remain.

3.2.8 Treat planting and lawn areas as required with herbicide per manufacturer recommendations to kill existing vegetation prior to planting, seeding and sodding.

3.2.9 Remove stumps and roots to a clear depth of 36" below subgrades. Remove stumps and roots to their full depth within 5'0" of underground structures, utility lines, footings, and paved areas.

3.3 DISPOSAL OF WASTE MATERIALS

3.3.1 Stockpile, haul from site and legally dispose of waste materials and debris. Accumulation is not permitted.

3.3.2 Maintain disposal routes, clear, clean and free of debris.

3.3.3 On site burning of combustible cleared materials is not permitted.

3.3.4 Upon completion of landscape preparation work, clean areas within contract limits, remove tools and equipment. Site to be clear, clean and free of materials and debris and suitable for site work operations.

3.3.5 Materials, items and equipment not scheduled for reinstallation or salvaged for the General Contractor are the property of the Landscape Contractor. Remove cleared materials from the site as the work progresses. Storage and sale of Landscape Contractors salvage items on site is not permitted.

END OF SECTION

FINISH GRADING AND TOPSOIL PLACEMENT

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Perform finish grading and topsoil placement required to prepare site for installation of landscaping as described in Contract Documents.

1.2 SUBMITTALS

1.2.1 Quality Assurance

1. Submit test on imported topsoil and on site stockpiled topsoil by independent licensed testing laboratory prior to use. Imported topsoil shall meet minimum specified requirements and be approved by Landscape Architect prior to use.
2. Provide and pay for testing and inspection during topsoil operations. Laboratory, inspection services, and Soils Engineer shall be acceptable to the Landscape Architect.
3. Submit report stating location of source of imported topsoil and account of recent use.
4. Test for pH factor, mechanical analysis, and percentage of organic content.
5. Submit test reports to General Contractor.
6. Sub–Contractor, or testing agency to make recommendations on type of quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

1.3 QUALITY ASSURANCE

1.3.1 Participate in pre–installation meeting with Landscape Architect.

1.4 PROJECT CONDITIONS

1.4.1 Also see Landscape Preparation Section.

1.4.2 Protect existing trees, plants, lawns, and other features designated to remain as part of the landscaping work.

1.4.3 Promptly repair damage to adjacent facilities caused by topsoil operations. Cost of repair at Subcontractor's expense.

1.4.4 Promptly notify the General Contractor and Landscape Architect of unexpected subsurface conditions.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Topsoil: supplied and stockpiled topsoil proposed for use must meet the testing criteria results specified. Topsoil must conform to adjustments and recommendations from the soil test and by the Landscape Architect.

2.1.2 Existing topsoil: existing topsoil from on–site stockpile shall be utilized. All processing, cleaning, and preparation of this stored topsoil to render it acceptable for use is the responsibility of the Subcontractor.

2.1.3 Provide additional topsoil as required to complete the job. Topsoil must meet testing criteria results specified.

2.1.4 All processing, cleaning, and preparation of this supplied topsoil to render it acceptable for use is the responsibility of the Subcontractor.

2.1.5 Supplied and stockpiled topsoil, shall be fertile, friable, dark in color and representative of local productive soil, capable of sustaining vigorous plant growth and free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones of 1" in any dimension, roots, sticks, or other extraneous material: not frozen or muddy. PH of soil range between 5.0 and 7.5

2.1.6 Soil shall not contain more than 2 percent of particles measuring over 2.0 mm in largest size

2.1.7 Prepared topsoil shall be used in planting mixtures as specified in Trees, Plants, and Ground Cover; all beds prepared as specified.

3.0 EXECUTION

3.1 EXAMINATION

3.1.1 Do not commence work of this Section until grading tolerances specified are met.

3.2 PREPARATION

3.2.2 Prior to grading, dig out weeds from planting areas by their roots and remove from site. Before placing top soil in landscape areas, remove rocks larger than 1 inch in any dimension and foreign matter such as building rubble, wire, cans, sticks, concrete, etc.

3.2.3 Prior to placing topsoil, remove any imported base material present in planting areas down to natural subgrade or other material acceptable to Landscape Architect.

3.3 PERFORMANCE

3.3.1 Site Tolerances

1. Total Topsoil Depth –
   A. Lawn And Groundcover Planting Areas – 4 inches minimum compacted.
   B. Shrub Planting Areas – 12 inches minimum throughout entire shrub bed area.
2. Elevation of topsoil relative to walks or curbs –
   A. Seeded Lawn Areas – 1/4 inch below
   B. Shrub And Ground Cover Areas – 3 inches below

3.3.2 Do not expose or damage existing shrub or tree roots.

3.3.3 Redistribute approved existing top soil stored on site as a result of rough grading. Remove organic material, rocks and clods greater than 1 inch in any dimension, and other objectionable materials. Provide additional approved imported topsoil required for specified topsoil depth and bring surface to specified elevation relative to walk or curb.

3.3.4 For trees, shrubs, ground cover beds and plant mix for beds see Exterior Plants section.

3.3.5 Provide earth berming where indicated on Plans.

3.3.6 Berming to be free flowing in shape and design, as indicated, and to blend into existing grades gradually so that the toe of slope is not readily visible. Landscape Architect or General Contractor's representative to verify final contouring before planting.

3.3.7 Regardless of finish grading elevations indicated, it is intended that grading be such that proper drainage of surface water away from buildings will occur and that no low areas are created to allow ponding. Subcontractor to consult the General Contractor and Landscape Architect regarding variations in grade elevations before rough grading is completed.

3.3.8 Slope grade away from building for 12 feet minimum from walls at slope of 1/2 inch per ft minimum unless otherwise noted. High point of finish grade at building foundation shall be 6 inches minimum below finish floor level. Direct surface drainage in manner indicated on Drawings by molding surface to facilitate natural run–off of water. Fill low spots and pockets with top soil and grade to drain properly.

3.3.9 Rake all topsoil to remove clods, rocks, weeds, and debris.

3.3.10 Grade and shape area to bring surface to true uniform planes free from irregularities and to provide proper drainage and slopes per plans.

3.4 CLEANING

3.4.1 Upon completion of topsoil operations, clean areas within contract limits, remove tools, equipment, and haul all excess topsoil off–site. Site shall be clear, clean, free of debris, and suitable for site work operations.

END OF SECTION

LAWN SEEDING

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Furnish and install seeded lawn as described in Contract Documents.

1.2 SUBMITTALS

1.2.1 Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentage of purity, germination, and weed seed for each grass species.

1.3 DELIVERY AND STORAGE

1.3.1 Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

1.4 PROJECT CONDITIONS

1.4.1 See landscape preparation section.

1.4.2 Work notification: Notify Landscape Architect of General Contractor's representative at least seven (7) working days prior to start of seeding operation.

1.4.3 Protect existing utilities, paving, and other facilities from damage caused by seeding operations.

1.4.4 Perform seeding work only after planting and other work affecting ground surface has been completed.

1.4.5 Provide hose and lawn watering equipment as required.

1.4.6 The irrigation system will be installed prior to seeding. Locate, protect, and maintain the irrigation system during seeding operations. Repair irrigation system components damaged during seeding operations at the Sub–Contractor's expense.

1.5 WARRANTY

1.5.1 See Landscape Maintenance and Warranty Section

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Topsoil for Seeded Areas: See Topsoil Placement and Drawings.

2.1.2 Lawn seeded areas: Fresh, clean and new crop seed mixture. Mixed by approved methods.

2.1.3 Seed mixture composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination.

2.1.4 N/A

2.1.5 Non–Irrigated Economy/Prairie Seed Mixture proportioned by volume as indicated below:

SEED TYPE	PROPORTION	PURITY	GERMINATION
Penn Lawn Fescue	60%	90%	85%
Kentucky 28# Common Bluegrass	20%	90%	90%
Pennfine Perennial Rye	20%	90%	90%

2.1.6 Fertilizer: granular, non burning product composed of not less that 50% organic slow acting, guaranteed analysis professional fertilizer.

2.1.7 Ground Limestone: Used if required by soil test report: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.

2.1.8 Straw Mulch: Used in crimping process only. Clean oat or wheat straw well seasoned before baling, free from mature seed–bearing status, or roots of prohibited or noxious weeds.

2.1.9 Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.

3.0 EXECUTION

3.1 INSPECTION

3.1.1 Landscape Architect or General Contractor's representative must approve finish surfaces, grades, topsoil quality and depth. Do not start seeding work until unsatisfactory conditions are corrected.

3.2 PREPARATION

3.2.1 SURFACE PREPARATION

1. Seven days maximum prior to seeding, –
   A. Treat Lawn areas if required with "Round–Up" by Monsanto, per label direction to kill existing vegetation prior to seeding.
   B. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.
   C. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.
   D. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.
   E. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more that 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
   F. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).
   G. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.
   H. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.
   I. After preparation of lawn areas and with topsoil in semi–dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.
   J. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.
   K. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to seeding.

3.3 INSTALLATION

3.3.1 SEEDING

1. Seed lawns only between April 1, and June 1, and fall seeding between August 15, and October 15, or at such other times acceptable to Landscape Architect.
2. Seed immediately after preparation of bed. Seed indicated areas within contract Limits and areas adjoining contract limits disturbed as a result of construction operations.
3. Perform seeding operations when the soil is dry and when the winds do not exceed five(5) miles per hour velocity.
4. Apply seed with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in two (2) directions, at right angles to each other.
5. Sow seed at a rate of 300 lbs./acre.
6. After seeding, rake or drag surface of soil lightly to incorporate seed into top 1/8" of soil. Roll with light lawn roller.
7. Provide soil erosion planting mat where grade conditions required to stabilize the planting area.

3.3.2 HYDRO–SEEDING

1. Hydro–seeding: The application of grass seed and a wood cellulose fiber mulch tinted green shall be accomplished in one operation by use of an approved spraying machine.
   A. Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce a homogeneous slurry. Add wood cellulous fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight.
   B. For hydro–seeding, wood cellulose fiber shall be used. Silva–Fiber Mulch by Weyerhaeuer Company, Tacoma, WA (800–443–9179).
   C. Hydraulically spray material on ground to form a uniform cover impregnated with grass seed.
   D. Immediately following application of slurry mix, make separate application of wood cellulose mulch at the rate of 1,000 pounds, dry weight, per acre.
   E. Apply cover so that rainfall or applied water will percolate to underlying soil.

3.3.3 MULCHING

1. Place straw mulch on seeded areas within 24–hours after seeding.
2. Place straw mulch uniformly in a continuous blanket at a rate of 2–1/2 tons per acre, or two (2) 50 lb. bales per 1,000 sq. ft. of area. A mechanical blower may be used for straw mulch application when acceptable to the Landscape Architect.
3. Crimp straw into soil by use of a "crimper". Two passes in alternate direction required. Alternative methods on areas too small for crimper must be approved by the Landscape Architect or Owner's Representative.

3.3.3 ESTABLISH LAWN

1. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established.
2. Damage to seeded area resulting from erosion to be repaired by Sub Contractor.
3. In event Sub Contractor does not establish dense lawn during first germination period, return to project to refertilize and reseed to establish dense lawn.
4. Should the seeded lawn become largely weeds after germination, Sub Contractor is responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

3.4 CLEANING

3.4.1 Perform Cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.

3.5 MAINTENANCE

3.5.1 See Landscape Maintenance and Warranty Section.

3.6 ACCEPTANCE

3.6.1 See Landscape Maintenance and Warranty Section.

END OF SECTION

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
			BGG			JLE	
0	3/21/25	ISSUED FOR RECORD	JH	JH	SP	SP	PEA

SIGNATURE

NAME
SCOTT PERUSKI

MICHIGAN P.E. No.
6201060666

Consumers Energy
GCON SOUTHWEST – LANSING

LANDSCAPE SPECIFICATIONS

SCALE: AS NOTED
JOB:
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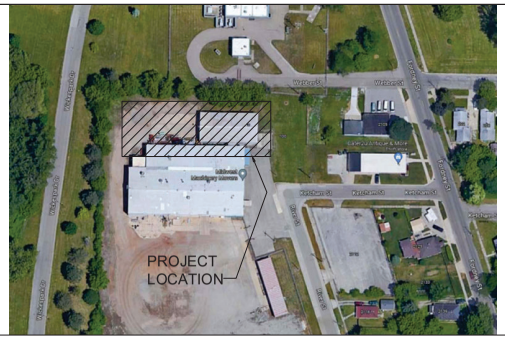
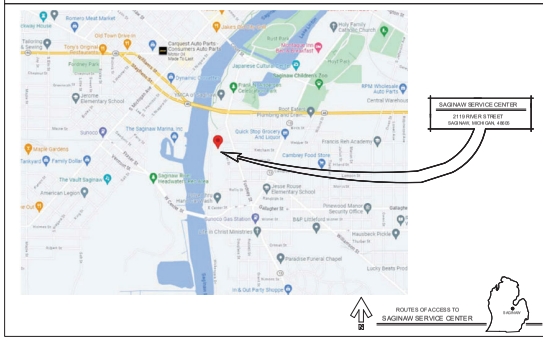
S:\PROJECTS\2022\2022–0996 CE 2022 ESPP LANSING\DWG\AS BUILTs–2.0 LANDSCAPE SPECIFICATIONS–22–0996.dwg

SAGINAW SERVICE CENTER
GCON SAGINAW SITE IMPROVEMENTS
2119 RIVER STREET, SAGINAW, MICHIGAN, 48601

LOCATION MAP



KEY MAP



DRAWING INDEX

DWG. NO.	DRAWING NAME	ISSUE TYPE	REV	ISSUED DATE
CS-001	COVER SHEET	AS-BUILT	1	04/25/25
C-101	CIVIL SITE PLAN	AS-BUILT	1	04/25/25
C-102	ENLARGED CIVIL SITE PLAN	AS-BUILT	1	04/25/25
F-101	FOUNDATION PLAN	AS-BUILT	1	04/25/25
F-102	ENLARGED FOUNDATION PLAN, SECTIONS & DETAILS	AS-BUILT	1	04/25/25
AD-301	ARCH. DEMOLITION SECTIONS	AS-BUILT	1	04/25/25
A-001	GENERAL NOTES, SYMBOLS, ABBREVIATIONS	AS-BUILT	1	04/25/25
A-101	ARCH. FLOOR PLAN	AS-BUILT	1	04/25/25
A-201	ARCH. ELEVATIONS	AS-BUILT	1	04/25/25
A-301	ARCH. SECTIONS	AS-BUILT	1	04/25/25
A-302	ARCH. DETAILS	AS-BUILT	1	04/25/25
S-101	ROOF FRAMING PLAN	AS-BUILT	1	04/25/25
E-000	ELECTRICAL SPECIFICATIONS	AS-BUILT	1	04/25/25
ES-102	ENLARGED ELEC. SITE PLAN	AS-BUILT	1	04/25/25
ED-101	ELEC. DEMOLITION FLOOR PLAN	AS-BUILT	1	04/25/25
EL-101	ELEC. LIGHTING FLOOR PLAN	AS-BUILT	1	04/25/25
EP-101	ELEC. POWER FLOOR PLAN	AS-BUILT	1	04/25/25
EP-102	ELEC. POWER FLOOR PLAN – MODULAR BUILDING	AS-BUILT	1	04/25/25
EP-600	ELEC. ONE LINE DIAGRAM	AS-BUILT	1	04/25/25
EP-601	ELEC. PANEL SCHEDULE	AS-BUILT	1	04/25/25
M-000	MECH. & PLUMBING SPECIFICATIONS	AS-BUILT	1	04/25/25
M-101	MECH. PLAN	AS-BUILT	1	04/25/25
M-102	MECH. MODULAR BUILDING PLAN	AS-BUILT	1	04/25/25
M-301	MECH. SECTION	AS-BUILT	1	04/25/25

CODE REVIEW

APPLICABLE CODES
a. BUILDING CODE: MICHIGAN BUILDING CODE (MBC) EDITION: 2015
b. MECHANICAL CODE: MICHIGAN MECHANICAL CODE EDITION: 2021
c. PLUMBING CODE: MICHIGAN PLUMBING CODE EDITION: 2021
d. ELECTRICAL CODE: NATIONAL ELECTRICAL CODE EDITION: 2023

PROJECT DESCRIPTION
A PORTION OF THE EXISTING BUILDING AND SITE WILL BE LEASED TO CONSUMERS ENERGY (CE). THE 5,100 SF WAREHOUSE PORTION OF THE EXISTING FACILITY WILL UNDERGO VARIOUS RESTORATION REPAIRS AS DESCRIBED WITHIN THESE DRAWINGS. THESE VARIOUS REPAIRS WILL BE COMPRISED OF ROOFING, SIDING, INSULATION, HVAC, AND ELECTRICAL IMPROVEMENTS. IN ADDITION, A TEMPORARY MODULAR TRAILER WILL BE PLACED ON SITE AS SHOWN. THE WAREHOUSE AND TRAILER WILL BE USED BY CONSUMERS ENERGY (CE).

BUILDING SIZE
OVERALL EXISTING BUILDING: 29,500 SF SINGLE STORY BUILDING
PORTION OF FACILITY TO BE USED BY CE: 5,300 SF WAREHOUSE PORTION

USE GROUP
EXISTING: S-2 LOW HAZARD STORAGE GROUP
PROPOSED: UNCHANGED

CONSTRUCTION TYPE
EXISTING: TYPE 2B
PROPOSED: UNCHANGED

ALLOWABLE BUILDING HEIGHT
S-2 75FT / 3 STORIES
EXISTING WAREHOUSE: 21 FT / 1 STORY

ALLOWABLE BUILDING AREA
S-2 42,120SF (INCLUDES FRONTAGE INCREASE)

OCCUPANCY LOAD (CALCULATED)
S-2 (ENTIRE FACILITY) 29,500/500 SF = 59 OCCUPANTS
S-2 (WAREHOUSE PORTION ONLY) 5,100 / 500 SF = 10 OCCUPANTS

OCCUPANCY LOAD (ACTUAL)
S-2 (WAREHOUSE PORTION ONLY): CONSUMER ENERGY STAFF = 5 OCCUPANTS

OCCUPANCY SEPARATION
S-2: 29,500SF FACILITY = NO SEPARATION REQUIRED.

FIRE SUPPRESSION SYSTEM
NOT REQUIRED

PLUMBING FIXTURES
S-2 OCCUPANCY (5,100 SF WAREHOUSE PORTION)

REQUIRED:
TOILETS 1 PER 100
LAVATORIES 1 PER 100
DRINKING FOUNTAIN 1 PER 1000
SERVICE SINK 1

PROPOSED:
PLUMBING FIXTURES WILL BE LOCATED WITHIN THE TEMPORARY TRAILER AS SHOWN ON A-101.
(2 LAVS, 2 TOILETS, 1 SERVICE SINK, 1 KITCHENETTE SINK)

EGRESS TRAVEL
EXIST ACCESS TRAVEL DISTANCE
S-2: 300 FT
DISTANCE WITHIN WAREHOUSE: 101 FT

ZONING INFORMATION
REFER TO DRAWING C-101 FOR ZONING INFORMATION.

INSULATION:
ROOF INSULATION: TO BE MIN R30
REFER TO DRAWING FOR 4" THICK INSULATED ROOF PANEL SPECIFICATION.
WALL INSULATION: TO BE MIN R24
INSULATION TO BE 'BAGGED BATT' OR 'SPRAY FOAM' TYPE.
GC TO SUBMIT PRODUCT FOR ARCHITECT/OWNER REVIEW AND APPROVAL.

ENVIRONMENTAL STATEMENT

CONSUMERS ENERGY IS COMMITTED TO PRESERVING THE ENVIRONMENT.

THE CONTRACTOR SHALL BE RESPONSIBLE TO RETRIEVE ANY CONSTRUCTION DEBRIS THAT MAY FLY INTO SURROUNDING LAKES OR STREAMS.

THE CONTRACTOR SHALL PRACTICE EXTREME CARE FOR ALL OF OUR NATURAL RESOURCES AND MAINTAIN THE INTEGRITY OF THE ENVIRONMENT.

OWNER CONTACT:
CONSUMERS ENERGY
BRYAN A. SCHULZ
4141 WILDER RD.
BAY CITY, MICHIGAN 48706
TELE: (989) 326-3561

ARCHITECT CONTACT:
SIDOCK GROUP INC.
WAYNE DUTTON
45650 GRAND RIVER AVE,
NOVI, MICHIGAN 48374
TELE: (248) 349-4500
WWW.SIDOCKGROUP.COM

MECHANICAL/ PLUMBING CONTACT:
SIDOCK GROUP INC.
CYRIL MIRANDA
45650 GRAND RIVER AVE,
NOVI, MICHIGAN 48374
TELE: (248) 349-4500
WWW.SIDOCKGROUP.COM

ELECTRICAL CONTACT:
SIDOCK GROUP INC.
LAUREN RYZYI
45650 GRAND RIVER AVE,
NOVI, MICHIGAN 48374
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WWW.SIDOCKGROUP.COM

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

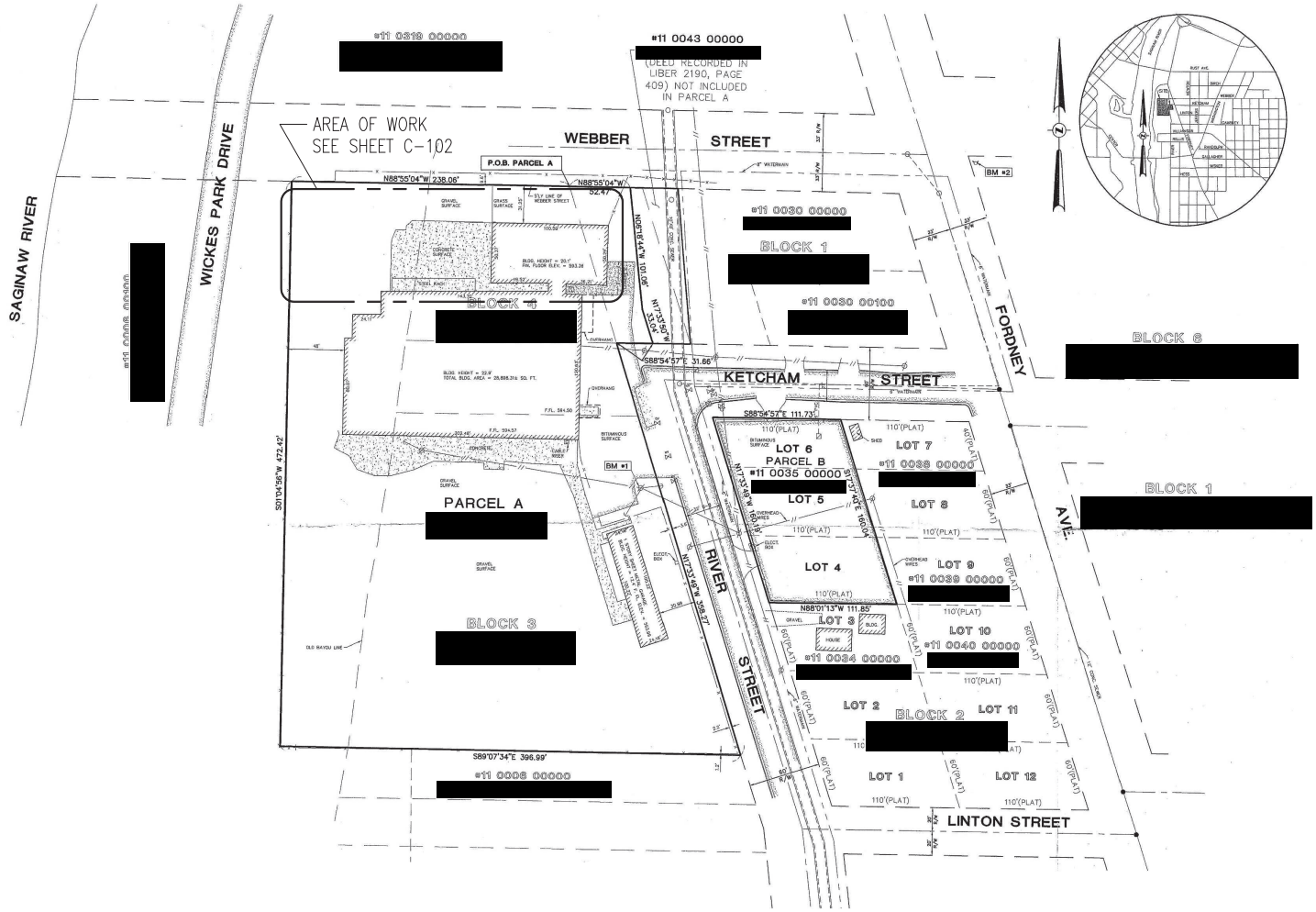
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
COVER SHEET

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet CS-001
Rev 1

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 CS-001 COVER SHEET.DWG PLOT DATE: 4/25/2025 9:30:53 AM JETRUSY



CIVIL SITE PLAN
SCALE: NO SCALE

GENERAL ZONING ORDINANCE SUMMARY

ZONING CATEGORY (zoning map 2021): M-2 General Industrial

ADJACENT PROPERTY ZONING CATEGORIES (zoning map 2021):
- North: R-2
- South: M-2
- East: M-1 and R-1
- West: M-2

SETBACKS (schedule 153.440):
- M-2: No setbacks required unless adjacent to R use (sub-section 0).
- Required Setbacks: Front 40' / Side 10' least one, 28' total of two / Rear 0

PARKING REQUIREMENTS (table 153.126):
- Light Industrial:
  - Requirement: 1 for every 500SF or 1 per every 1.5 employees.
  - Existing parking is to remain as-is.

SITE PLAN REVIEW:
- Section 153.083
  - Site plan review through either 'Review by Chief Inspector' – or – 'Review by Planning Commission.
    Note: Site plan has been reviewed by the City of Saginaw Urban Planner on 06/11/2024.

FLOODPLAIN INFORMATION

SEE FLOOD PLAIN LINE AS INDICATED ON SHEET C-102

DESCRIPTIONS

PARCEL A (PARCEL NO. 11 0043 00100 I.E. PARCELS 1, 2, 3 & 5 IN DEED RECORDED IN LIBER 2003, PAGE 608 COMBINED): A PARCEL OF LAND IN THE CITY OF SAGINAW, SAGINAW COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS: PART OF THE NORTHEAST 1/4 OF SECTION 35, T12N–R4E AND PART OF BLOCKS 3 AND 4 CURTIS & KING'S ADDITION TO THE VILLAGE OF SALINA ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 38 OF DEEDS ON PAGE 31, SAGINAW COUNTY RECORDS AND PART OF VACATED RIVER STREET DESCRIBED AS: BEGINNING AT THE SOUTHERLY END OF THE INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE OF WEBBER STREET WITH WESTERLY RIGHT-OF-WAY LINE OF RIVER STREET; THENCE N88°55'04"W 238.06 FEET ALONG THE SOUTHERLY RIGHT-OF-WAY LINE OF WEBBER STREET; THENCE S01°04'58"W 472.42 FEET; THENCE S89°07'34"E 396.99 FEET TO THE WESTERLY RIGHT-OF-WAY LINE OF RIVER STREET; THENCE N17°33'49"W 359.57 FEET ALONG SAID WESTERLY LINE TO THE NORTHERLY RIGHT-OF-WAY LINE OF KETCHAM STREET; THENCE S88°04'57"E 31.66 FEET ALONG SAID NORTHERLY LINE TO THE CENTERLINE OF RIVER STREET; THENCE N17°33'49"W 33.04 FEET ALONG SAID CENTERLINE; THENCE N88°55'04"W 101.06 FEET TO THE SOUTHERLY RIGHT-OF-WAY LINE OF WEBBER STREET; THENCE N88°55'04"W 52.47 FEET ALONG SAID SOUTHERLY LINE TO THE POINT OF BEGINNING.

PARCEL B (PARCEL NO. 11 0035 00000 I.E. PARCEL 4 IN DEED RECORDED IN LIBER 2003, PAGE 608): LOT 6 OF CURTIS & KING'S ADDITION TO THE VILLAGE OF SALINA, NOW A PART OF THE CITY OF SAGINAW, ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 38, PAGE 31, SAGINAW COUNTY RECORDS.

LEGEND

	MONUMENT / SECTION CORNER
	FOUND PROPERTY IRON
	SET PROPERTY IRON
	EXISTING CATCHBASIN
	EXISTING MANHOLE/CATCHBASIN
	EXISTING MANHOLE
	EXISTING HYDRANT
	EXISTING VALVE
SAN	EXISTING SANITARY SEWER
STM	EXISTING STORM SEWER
W	EXISTING WATERMAIN
F	EXISTING FENCE LINE
UGE	EXISTING UNDERGROUND ELECTRIC LINE
UGG	EXISTING UNDERGROUND GAS LINE
UGT	EXISTING UNDERGROUND TELEPHONE LINE
	EXISTING CENTERLINE
OHW	EXISTING OVERHEAD ELECTRICAL WIRES
	EXISTING MAILBOX / NEWSPAPER BOX
	EXISTING SIGN
	EXISTING DECIDUOUS TREES
	EXISTING CONIFEROUS TREES
	EXISTING UTILITY POWER POLE
	EXISTING TELEPHONE RISER

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Drawing No | Reference Drawings

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg | Plot Scale as noted

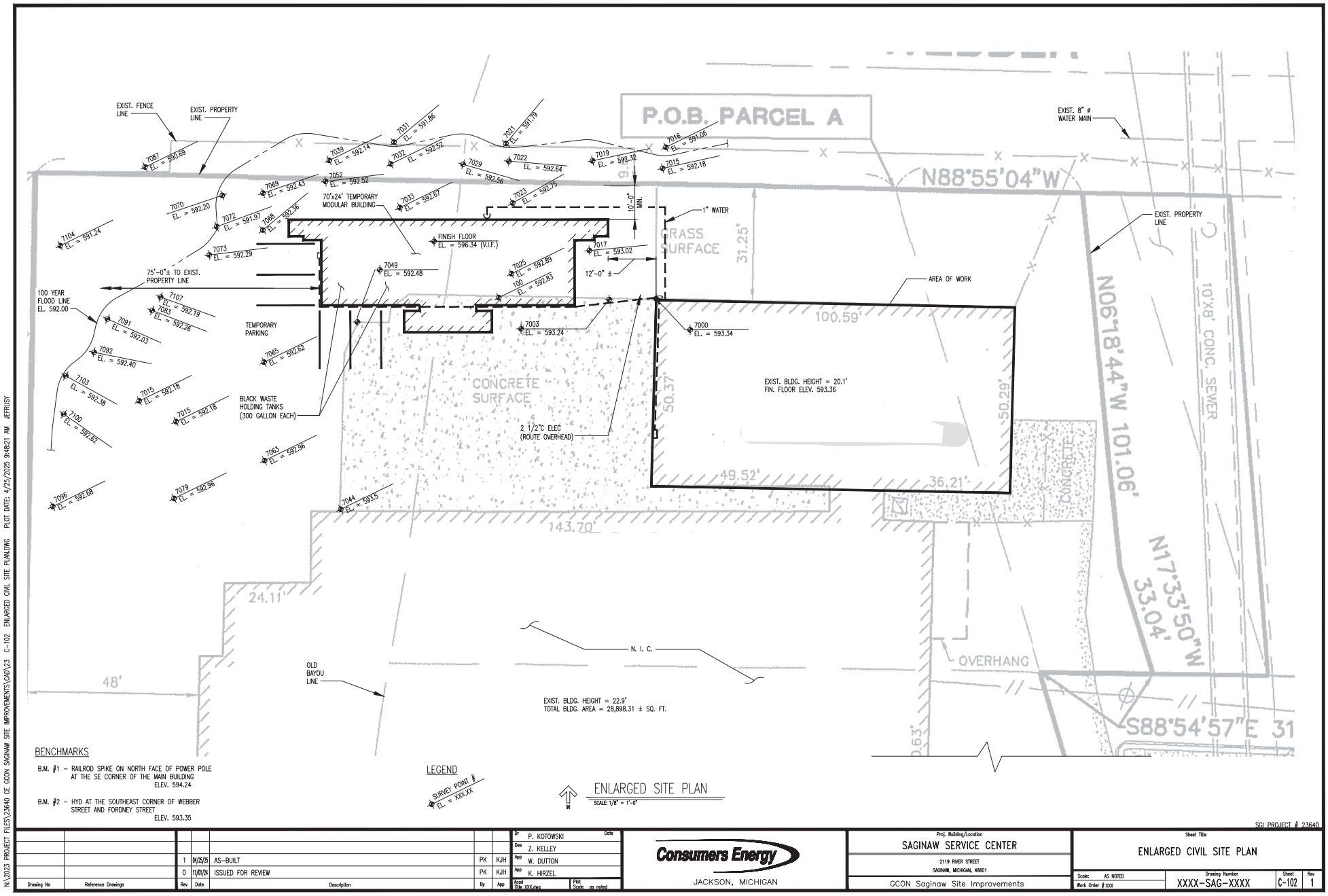
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
CIVIL SITE PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet C-101
Rev 1

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 C-101 CIVIL SITE PLAN.DWG PLOT DATE: 4/25/2025 9:47:30 AM JEFRUSY



Drawing No	Reference Drawings	Rev	Date	Description	By	App
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		0	11/01/24	ISSUED FOR REVIEW	PK	KJH

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

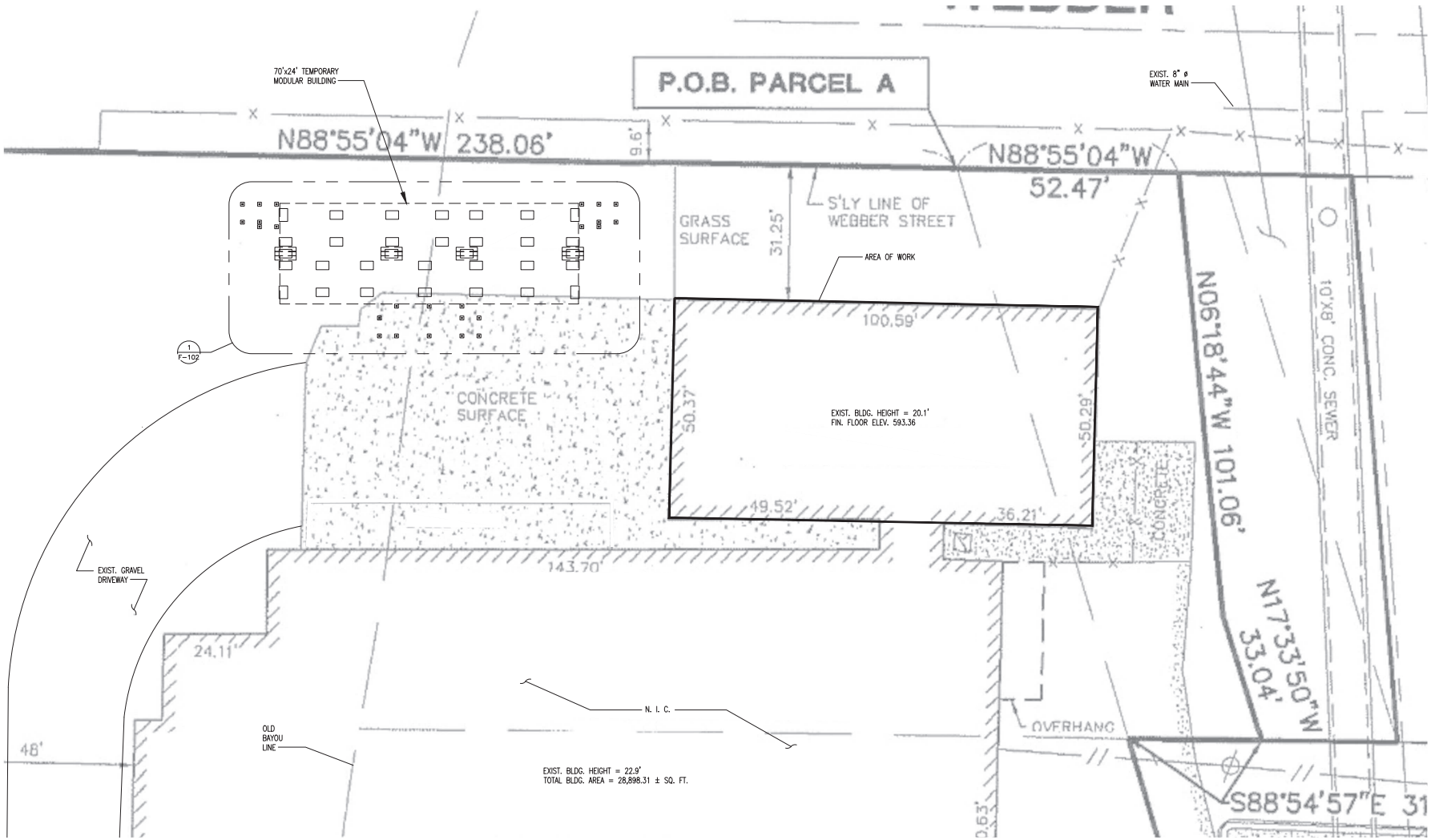
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ENLARGED CIVIL SITE PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet C-102
Rev 1

SGI PROJECT # 23640



PARTIAL FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

SGI PROJECT # 23640

Drawing No	Reference Drawings
A-1	MODULAR SOLUTIONS
F-1	WHITLEY MFG.
F-2	WHITLEY MFG.

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

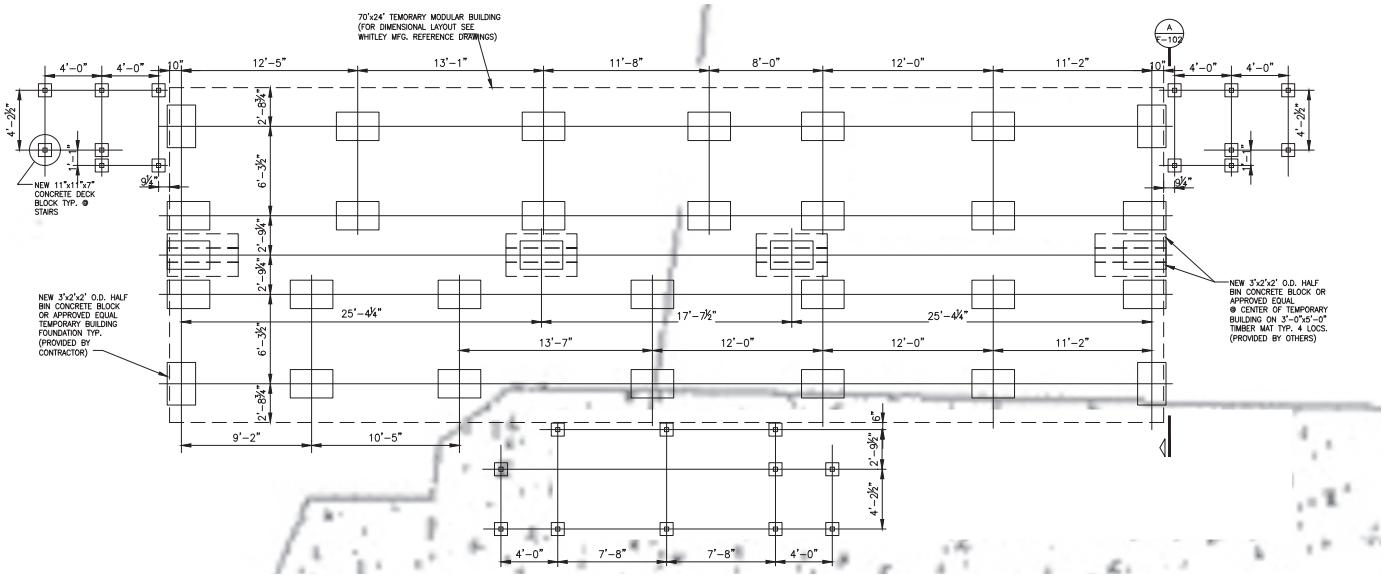
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

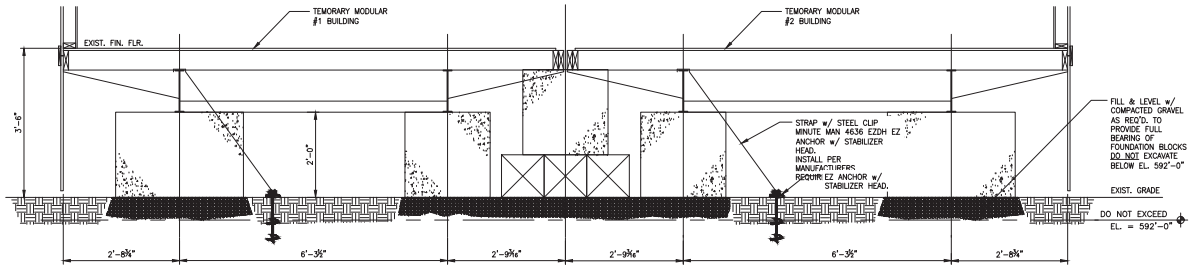
Sheet Title
FOUNDATION PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet F-101
Rev 1

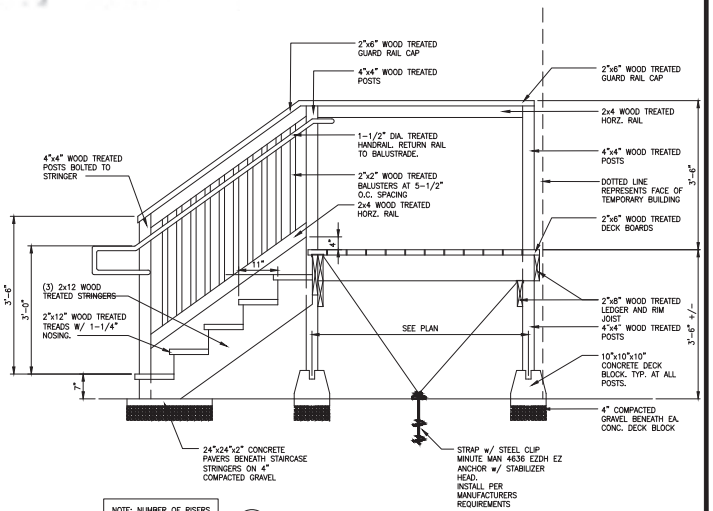
N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 F-101 FOUNDATION PLAN.DWG PLOT DATE: 4/25/2025 9:42:04 AM JEFRUSY



N 1 F-101 ENLARGED FOUNDATION PLAN
SCALE: 1/4"=1'-0"



A F-102 SECTION
SCALE: 3/4" = 1'-0"



NOTE: NUMBER OF RISERS TO BE CONFIRMED WITH FINISH FLOOR ELEVATION OF BUILDING.

2 F-102 PORCH & STAIR SECTION
SCALE: 3/4" = 1'-0"

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 F-102 ENLARGED FOUNDATION PLAN.DWG PLOT DATE: 4/25/2025 9:46:16 AM JETROSY

SGI PROJECT # 23640

Drawing No	Reference Drawings
A-1	MODULAR SOLUTIONS
F-1	WHITLEY MFG.
F-2	WHITLEY MFG.

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

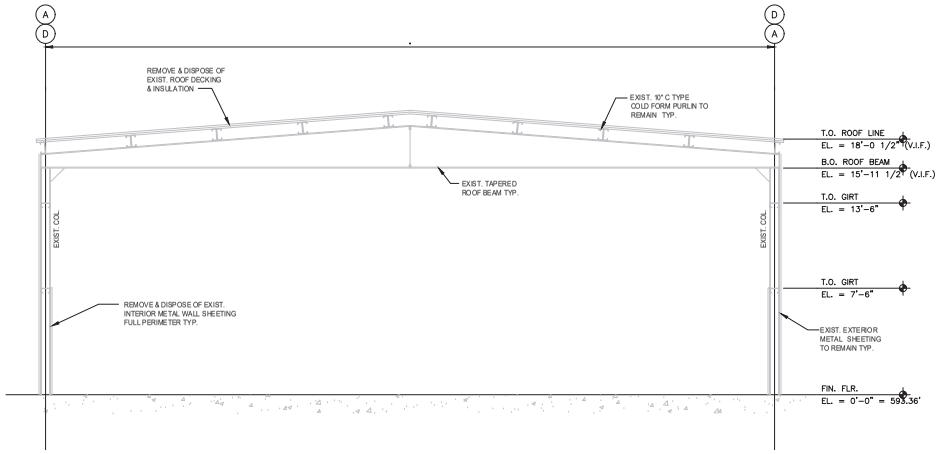
Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

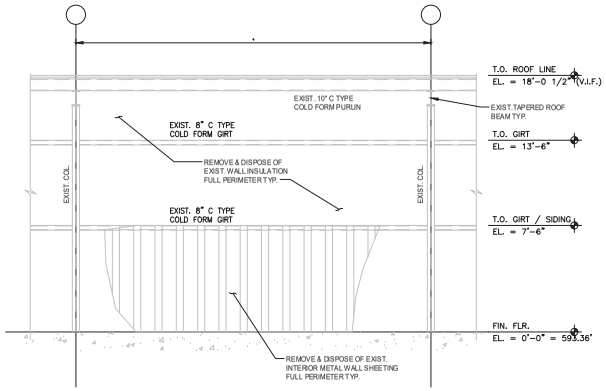
Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
FOUNDATION PLAN
SECTIONS & DETAILS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet F-102
Rev 1



BUILDING CROSS SECTION–DEMOLITION
SCALE: 1/4" = 1'-0"



TYP. INTERIOR WALL FRAMING–DEMOLITION
SCALE: 1/4" = 1'-0" (LOOKING FROM INTERIOR)

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 AD-301 ARCH DEMOLITION SECTIONS.DWG PLOT DATE: 4/25/2025 9:39:48 AM JETRUSY

SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	PK	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	PK	KJH

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ARCH DEMOLITION SECTIONS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet AD-301
Rev 1

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL, STATE, AND COUNTY CODES / ORDINANCES AND BUILDING REGULATIONS OF THE CITY OF SAGINAW/ OSHA / AND THE INSTRUCTIONS OF INSPECTING AUTHORITIES.
2. TIME IS OF THE ESSENCE OF THE CONTRACT. ALL WORK SHALL PROCEED AS EXPEDITIOUSLY AS POSSIBLE IN A WORKMANLIKE MANNER. ACCESS TO WORK AREAS VARY DEPENDING ON OWNER OCCUPANCY SCHEDULES.
3. CONTRACTOR SHALL VISIT THE PREMISES AND SHALL BE THOROUGHLY ACQUAINTED WITH THE CONDITIONS TO BE ENCOUNTERED, AS NO EXTRA COSTS WILL BE ALLOWED TO COVER WORK WHICH THE CONTRACTOR HAS NOT INCLUDED IN HIS TENDER DUE TO HIS FAILURE TO THOROUGHLY EXAMINE THE PREMISES.
4. THE BIDDER SHALL PROMPTLY NOTIFY THE ARCHITECT OF ANY AMBIGUITY, INCONSISTENCY OR ERROR WHICH THEY MAY DISCOVER UPON EXAMINATION OF THE BIDDING DOCUMENTS OR OF THE SITE.
5. SUBMISSION OF BID INDICATES THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED AS PER DRAWINGS AND SPECIFICATIONS.
6. CONTRACTOR SHALL INCLUDE COSTS OF ALL PERMIT AND FEES IN BASE BID.
7. ALL SUBSTITUTIONS SHALL BE APPROVED BY ARCHITECT/OWNER PRIOR TO BIDDING.
8. DO NOT SCALE DRAWINGS, USE ONLY THE DIMENSIONS PROVIDED.
9. FIELD CHECK ALL DIMENSIONS. THE CONTRACTOR SHALL EXAMINE AND FIELD VERIFY ALL EXISTING AND GIVEN DIMENSIONS AND CONDITIONS PRIOR TO COMMENCEMENT OF THE WORK AND FABRICATION OF CONSTRUCTION MATERIALS. VARIANCES AND DISCREPANCIES FROM THE DRAWINGS AND SPECIFICATIONS AND POTENTIAL INTERFERENCES SHALL BE REPORTED PROMPTLY TO THE ARCHITECT. THE CONTRACTOR SHALL INCORPORATE ACTUAL FIELD CONDITIONS AND DIMENSIONS IN THE WORK AND SHALL INDICATE CHANGES AND ADJUSTMENTS ON DRAWINGS SUBMITTED FOR APPROVAL. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO THE CONSTRUCTION DETAILS, MATERIAL QUANTITIES AND EXTENT OF THE CONSTRUCTION WORK SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PERFORM THE WORK TO MEET FIELD CONDITIONS ENCOUNTERED.
10. GENERAL CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THIS PROJECT, INCLUDING ALL NECESSARY SIGNS, BARRIERS AND SUPERVISION.
11. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
12. CONTRACTORS SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, INSTALLATION, TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE & PROPER COMPLETION OF THE PROJECT AS INDICATED ON THE DRAWINGS & AS SPECIFIED HEREIN AND/OR AS REQUIRED.
13. THE CONTRACTOR SHALL PROVIDE NECESSARY BARRIERS AND PROTECTION ENCLOSURES AS REQUIRED TO ALLOW THE OWNER'S NORMAL AND SAFE USE OF SITE PARKING AND BUILDING PREMISES, OFFICE SPACE ETC.
14. DURING CONSTRUCTION, MAINTAIN EXISTING MEANS OF EGRESS AND PASSAGEWAYS CLEAR OF OBSTRUCTIONS. TAKE ALL PRECAUTIONS NECESSARY TO INSURE THE SAFETY OF CONSUMER ENERGY EMPLOYEES AND CONSTRUCTION WORKERS.
15. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ADJACENT PRIVATE AND PUBLIC PROPERTY FROM DAMAGE DURING CONSTRUCTION.
16. ALL COLOR SELECTIONS SHALL BE BY THE OWNER/ ARCHITECT.
17. THE LOCATION OF ALL UTILITIES AND IMPROVEMENTS INDICATED HEREIN ARE APPROXIMATE ONLY AND WERE FROM SOURCES BELIEVED TO BE RELIABLE, BUT NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO LOCATION, TYPE OR EXTENT OF UTILITIES OR IMPROVEMENTS WHETHER OR NOT SAME ARE INDICATED OR SHOWN, AND THIS CONTRACTOR SHALL MAKE THEIR OWN INVESTIGATION AS TO THE EXTENT OF THESE OR OTHER UTILITIES, AND SHALL BE RESPONSIBLE FOR PROTECTION AND RESTORATION OF SAME IF DAMAGED AS A RESULT OF THEIR OPERATIONS.
18. OWNER SHALL HAVE FIRST CLAIM TO ALL SALVAGEABLE ITEMS.
19. CONSULT WITH OWNER REGARDING STORAGE OF ON-SITE MATERIALS AND ACCESS TO SITE AS NOT TO INTERFERE WITH NORMAL OPERATIONS.
20. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.
21. ALL EXISTING CONSTRUCTION, EQUIPMENT AND FINISHES TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION.
22. WHERE EXISTING FINISHED SURFACES TO REMAIN ARE DAMAGED BY NEW CONSTRUCTION, THE CONTRACTOR SHALL REPAIR OR OTHERWISE REPLACE DAMAGED SURFACES AS REQUIRED TO OWNERS SATISFACTION.
23. WHERE EXISTING EQUIPMENT TO REMAIN IS DAMAGED BY NEW CONSTRUCTION, THE CONTRACTOR SHALL REPAIR OR REPLACE THE DAMAGED EQUIPMENT OR COMPENSATE THE OWNERS TO HIS SATISFACTION.
24. GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS FROM SITE AND LEGALLY DISPOSE OF.
25. ALL BROCHURES, OPERATING MANUALS, SHOP DRAWINGS, CATALOGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE JOB. CONTRACTOR SHALL PROVIDE OWNER WITH COMPLETE SET OF "AS-BUILT" DRAWINGS AT COMPLETION OF JOB.
26. CAULK AROUND ALL OPENINGS & WHERE WOOD OR METAL MEETS MASONRY; ALL PENETRATIONS THROUGH FLOORS AND RATED WALLS SHALL BE SEALED WITH FIRE RATED CAULK/SEALANT.
27. ALL ELECTRICAL WORK AND REMOVAL & REPLACEMENT OF EXISTING FIXTURES, ETC. SHALL BE IN ACCORDANCE WITH "NEC 2014" (NATIONAL ELECTRICAL CODE 2023 EDITION).
28. CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE THAT WILL BE MADE GOOD AT CONTRACTORS OWN EXPENSE FOR ANY IMPERFECTIONS IN MATERIAL AND/OR WORKMANSHIP WHICH MY DEVELOP WITHIN (1) ONE YEAR FROM FINAL ACCEPTANCE. FURTHER, THIS CONTRACTOR SHALL OBTAIN WRITTEN GUARANTEES FROM ALL MANUFACTURERS STATING ON WHAT OPERATING CONDITIONS & PERFORMANCE CAPACITIES EACH EQUIPMENT PIECE GUARANTEE IS BASED.
29. CONTRACTOR SHALL RECYCLE ITEMS AND REPORT QUANTITIES OF RECYCLED ITEMS TO THE OWNER.

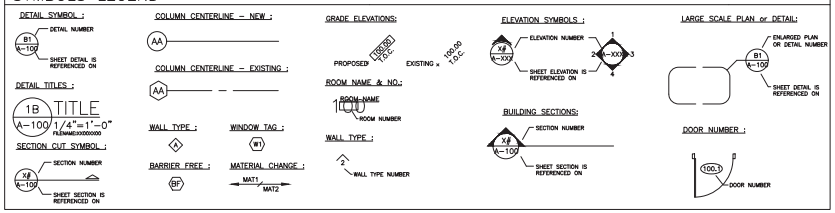
LIST OF STANDARD ABBREVIATIONS

NOT ALL ABBREVIATIONS ARE UTILIZED ON THIS DRAWING

A.B.	ANCHOR BOLT	EA.	EACH	LAM.	LAMINATE	RECPT.	RECEPTACLE	VERT.	VERTICAL
A.F.F.	ABOVE FINISH FLOOR	E. F.	EACH FACE	LAV.	LAVATORY	REFRIG.	REFRIGERATOR	VEST.	VESTIBULE
ALUM.	ALUMINUM	E. W.	EACH WAY	L.	LENGTH, LONG	REINF.	REINFORCE	V. I. F.	VERIFY IN FIELD
ARCH.	ARCHITECTURAL	E. W. C.	ELECTRIC WATER COOLER	L. F.	LINEAL FEET	REQ'D.	REQUIRED		
ALT.	ALTERNATE	EL.	ELEVATION	L. L.	LIVE LOAD	REV.	REVISION	W.	WIDTH/WIDE
ASPH.	ASPHALT	EMERG.	EMERGENCY	L. L. H.	LONG LEG HORIZONTAL	R.	RISER	W. C.	WATER CLOSET
		EQ.	EQUAL	L. L. V.	LONG LEG VERTICAL	R. D.	ROOF DRAIN	WP.	WEATHERPROOF
B. PL.	BASE PLATE	EQUIP.	EQUIPMENT	L. P.	LOW POINT	RM.	ROOM	W. W. F.	WELDED WIRE FABRIC
BM.	BEAM	ELEC.	ELECTRICAL			R. O.	ROUGH OPENING	W/	WITH
BRG. PL.	BEARING PLATE	EXIST.	EXISTING	M. H.	MANHOLE	R.T.U.	ROOF TOP UNIT	WD.	WOOD
BIT.	BITUMINOUS	E. J.	EXPANSION JOINT	MFR.	MANUFACTURER			W. PT.	WORK POINT
BD.	BOARD	E.T.R.	EXISTING TO REMAIN	M. O.	MASONRY OPENING	SCHED.	SCHEDULE	W/O	WITHOUT
BOTT.	BOTTOM			MATL.	MATERIAL	S. S.	SERVICE SINK		
BLDG.	BUILDING	FT.	FEET, FOOT	MAS.	MASONRY	S. D.	SOAP DISH	YD.	YARD
BLK.	BLOCK	FIN.	FINISH	MAX.	MAXIMUM	S. G. T.	STRUCTURAL GLAZED TILE		
B. F.	BARRIER FREE	F. E.	FIRE EXTINGUISHER	MECH.	MECHANICAL	SHT.	SHEET		
B. W.	BOTH WAYS	F. E. C.	FIRE EXTINGUISHER CABINET	MET.	METAL	SIM.	SIMILAR		
B. S.	BOTH SIDES	FLASH.	FLASHING	MIN.	MINIMUM	SPEC.	SPECIFICATIONS		
		FL.	FLOOR	MISC.	MISCELLANEOUS	SQ.	SQUARE		
CAB.	CABINET	F. D.	FLOOR DRAIN	MTD.	MOUNTED	STAG.	STAGGERED		
CLG.	CEILING	FLUOR.	FLUORESCENT	MTG.	MOUNTING	S. ST.	STAINLESS STEEL		
C/C	CENTER TO CENTER	FDN.	FOUNDATION	MULL.	MULLION	STD.	STANDARD		
CER. TILE	CERAMIC TILE			MEMB.	MEMBRANE	STL.	STEEL		
C. BD.	CHALKBOARD	GA.	GAGE, GAUGE			ST.	STORM		
CHKD. PL.	CHECKERED PLATE	GALV.	GALVANIZED	N. A.	NOT APPLICABLE	STRUCT.	STRUCTURAL		
CONC.	CONCRETE	GL.	GLASS, GLAZING	NOM.	NOMINAL	SUSP.	SUSPENDED		
CONST.	CONSTRUCTION	G. B.	GRAB BAR	N. I. C.	NOT IN CONTRACT	SYM.	SYMMETRICAL		
CONT.	CONTINUOUS	GYP.	GYPSUM	NO.	NUMBER	S. N. D.	SANITARY NAPKIN DISPENSER		
CONTR.	CONTRACTOR					S. F.	SQUARE FEET	SYMBOLS USED AS ABBREVIATIONS	
C. J.	CONTROL JOINT	HDW.	HARDWARE	O. C.	ON CENTER	SUPP.	SUPPORTED		
CORR.	CORRIDOR	HT./H.	HEIGHT/HIGH	OPG.	OPENING			∠	ANGLE
COORD.	COORDINATE	H. P.	HIGH POINT	OPP.	OPPOSITE	T. BD.	TACKBOARD	℄	CENTER LINE
C. M.	CONSTRUCTION MANAGER	H. M.	HOLLOW METAL	OPP. HD.	OPPOSITE HAND	TEL.	TELEPHONE	ϕ	DIAMETER
COMP.	COMPACTED	HORIZ.	HORIZONTAL	O. D.	OUTSIDE DIAMETER	TERR.	TERRAZZO	⊥	PERPENDICULAR
		H. B.	HOSE BIBB	O. H.	OVERHEAD	T.B.	TEST BORING		
D. L.	DEAD LOAD	HR.	HOUR			THK.	THICK, THICKNESS	#	POUND, NUMBER
DEPT.	DEPARTMENT			PR.	PAIR	THR.	THRESHOLD	PL	PLATE
DET.	DETAIL	INCN.	INCANDESCENT	PART. BD.	PARTICLE BOARD	TRANSF.	TRANSFORMER	@	AT
DIA.	DIAMETER	IN.	INCH, INCHES	PARTN.	PARTITION	T.	TREAD		
DIM.	DIMENSION	INCL.	INCLUDED (ING)	PLAS.	PLASTER	TYP.	TYPICAL		
D. O.	DOOR OPENING	I. D.	INSIDE DIAMETER	PL. LAM.	PLASTIC LAMINATE				
DBL.	DOUBLE	INSUL.	INSULATION	P. S. F.	POUNDS PER SQUARE FOOT	U. O. N.	UNLESS OTHERWISE NOTED		
DWL.	DOWEL	I. E.	INVERT ELEVATION	PT.	POINT	UR.	URINAL		
DN.	DOWN	INV.	INVERT	P. S. I.	POUNDS PER SQUARE INCH	UNGD.	UNDERGROUND		
DS.	DOWNSPOUT			PROJ.	PROJECT/PROJECTING				
DWG.	DRAWING	J. C.	JANITOR CLOSET	P. B.	PUSH BUTTON				
D. F.	DRINKING FOUNTAIN	JT.	JOINT			Q. T.	QUARRY TILE		

SYMBOLS LEGEND

NOT ALL SYMBOLS ARE UTILIZED ON THIS DRAWING



N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 A-001 ARCH GENERAL NOTES.DWG PLOT DATE: 4/25/2025 9:34:27 AM JETROSY

SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

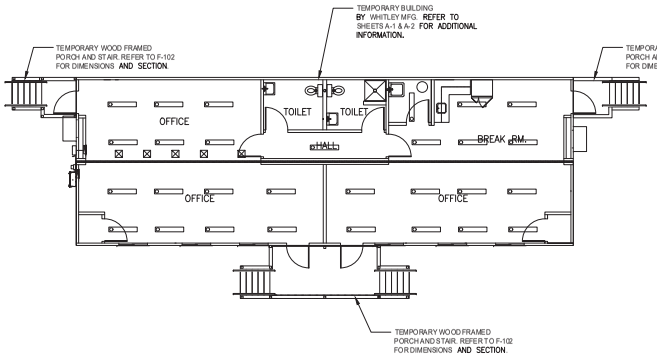
Dr P. KOTOWSKI — Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg — Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

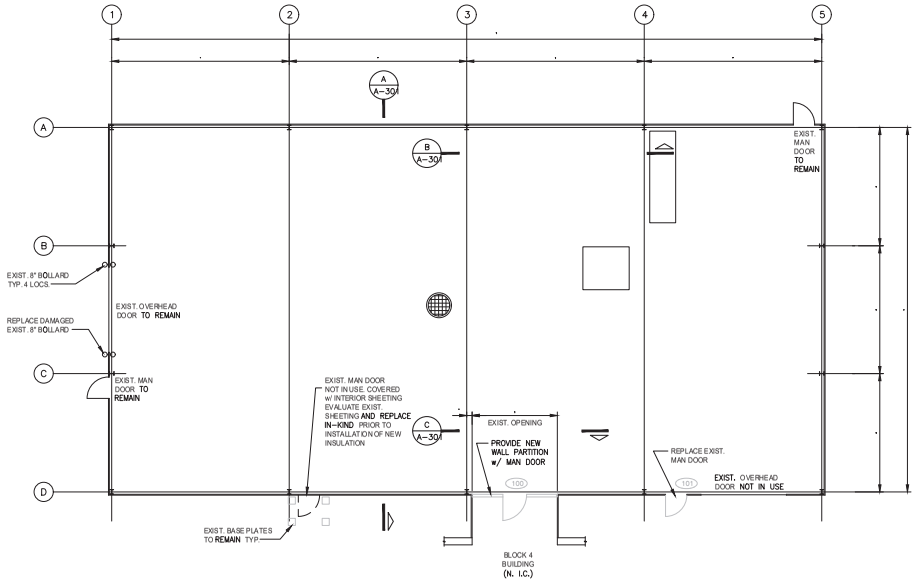
Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
GENERAL NOTES, SYMBOLS, ABBREVIATIONS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet A-001
Rev 1



FLOOR PLAN (TEMPORARY BUILDING)
SCALE: 1/8" = 1'-0"



FLOOR PLAN (WAREHOUSE)
SCALE: 1/8" = 1'-0"

DOOR SCHEDULE

DOOR NO.	ROOM NAME	SIZE WIDTH	SIZE HEIGHT	DOOR TYPE	DOOR ELEVATION	DOOR FINISH	DOOR FIRE RATING	DOOR HARDWARE SET	FRAME TYPE	FRAME ELEVATION	FRAME FINISH	FRAME FIRE RATING	THRESHOLD	DETAILS HEAD	DETAILS JAMB	COMMENTS
100	SERVICE CENTER (INTERIOR)	3'-0"	7'-0"	HM	1	PT	NONE	1	HM	A	PT	NONE	ALUM	1/A101	1/A101	
101	SERVICE CENTER (EXTERIOR)	3'-0"	7'-0"	HM	1	PT	NONE	1	HM	A	PT	NONE	ALUM	1/A101	1/A101	

LEGEND:

ALUM	ALUMINUM
IHM	INSULATED HOLLOW METAL
HM	HOLLOW METAL
PT	PAINT

DOOR & FRAME:
BASIS OF DESIGN (OR APPROVED EQUAL)

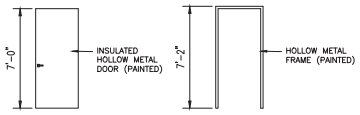
MFR: CURRIES (DOOR AND FRAME)
DOOR THICKNESS: 1-3/4"
DOOR TYPE: INSULATED HOLLOW METAL
DOOR SERIES: CURRIES 707 CONSTRUCTION
FRAME: WELDED HOLLOW METAL

DOOR HARDWARE:
BASIS OF DESIGN (OR APPROVED EQUAL)

SET 1:

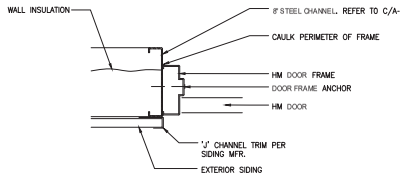
3 EA HINGE, 4 1/2 HVY WT	MPB68 4-1/2 x 4-1/2 NRP	26D	MCKINNEY
1 EA RIM EXIT DEVICE	25-R-L-NL X 510L-NL X DANE(US26D) x 3'-0" DEVICE x 299	US26D	FALCON
1 EA CLOSER	SC71A x RW/PA x FC	689	FALCON
1 EA KICK PLATE	K1050 x 4BE x 10 x 34	US32D	ROCWOOD
1 EA SEAL	160V x 36 x 84	MILL	NATIONAL GUARD
1 EA DOOR SWEEP	97V x 36	MILL	NATIONAL GUARD
1 EA THRESHOLD	425 x 36	MILL	NATIONAL GUARD

NOTE: DOOR HARDWARE TO BE KEYED PER OWNER DIRECTION.



DOOR TYPES
SCALE: 1/4" = 1'-0"

FRAME TYPES
SCALE: 1/4" = 1'-0"



1 / A-101 DOOR HEAD & JAMB DETAIL
SCALE: NTS

SGI PROJECT # 23640

Rev	Date	Description	By	App
A-1	04/25/25	AS-BUILT	PK	KJH
A-2	11/01/24	ISSUED FOR CONSTRUCTION	PK	KJH

Drawing No: Reference Drawings

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

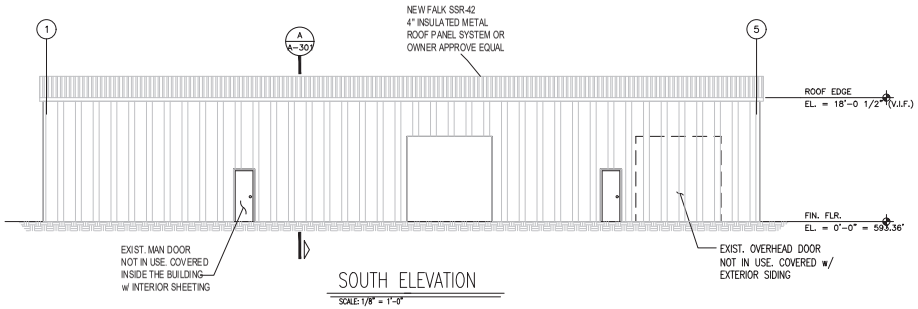
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

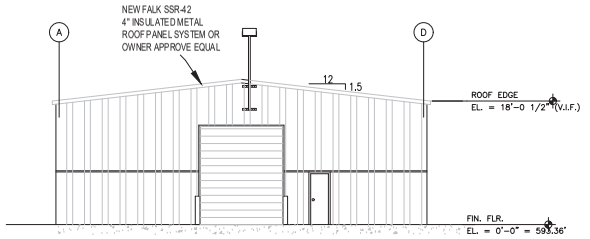
Sheet Title
ARCH. FLOOR PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet A-101
Rev 1

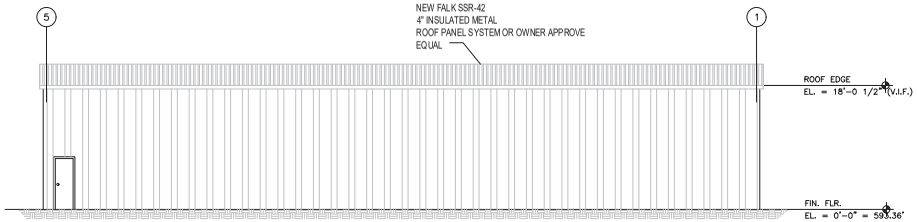
N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 A-101 ARCH FLOOR PLAN.DWG PLOT DATE: 4/25/2025 9:35:41 AM JEFRUSY



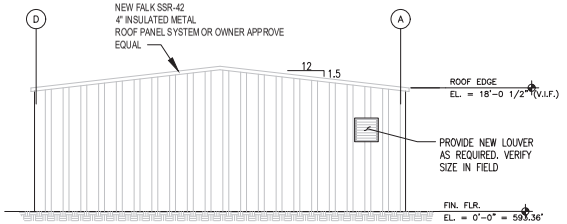
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"

NOTES:
1. REFER TO SHEET A-302 FOR MANUFACTERES DETAILS ON NEW INSULATED METAL ROOF PANEL SYSTEM.

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 A-201 ARCH ELEVATIONS.DWG PLOT DATE: 4/25/2025 9:36:30 AM JEFRUSY

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		1	04/25/25	AS-BUILT	JMC	KJH
		0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr P. KOTOWSKI — Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

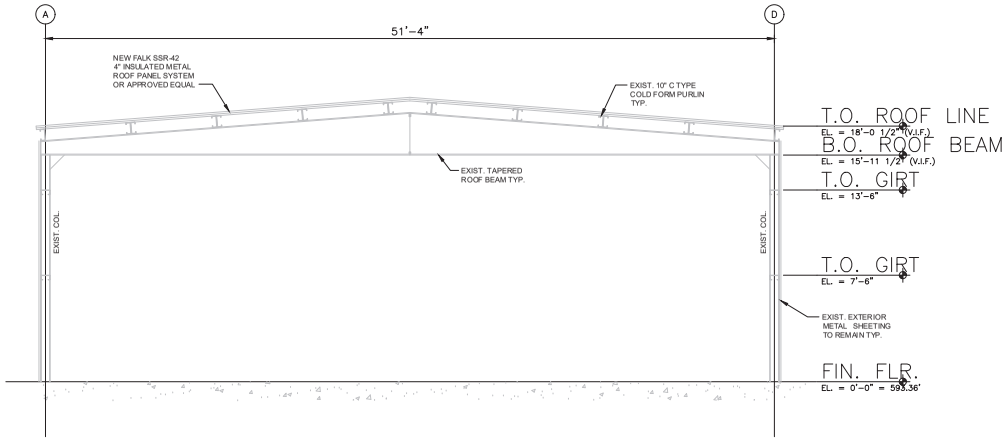
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

SGI PROJECT # 23640

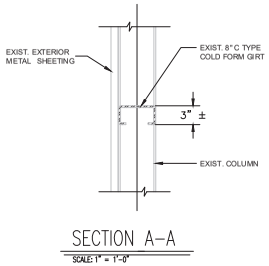
Sheet Title
ARCH ELEVATIONS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet A-201
Rev 1

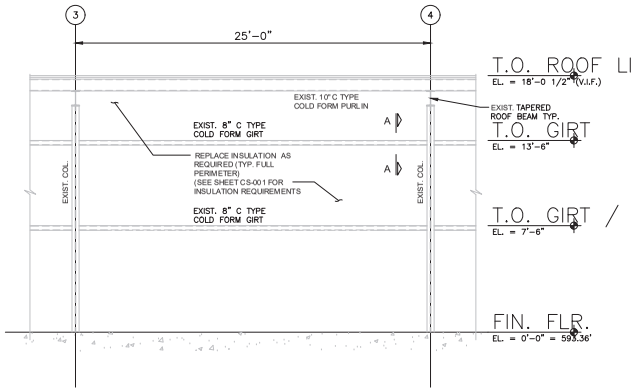


A A-101, A-102 BUILDING CROSS SECTION
SCALE: 1/4"=1'-0"

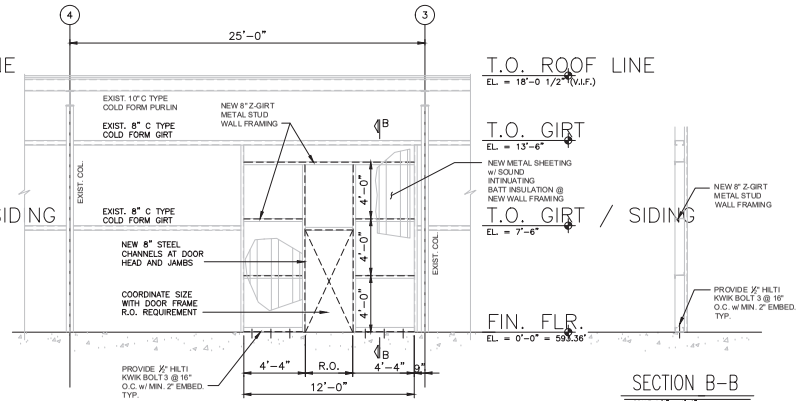
NOTES:
1. REFER TO SHEET A-302 FOR MANUFACTERES DETAILS ON NEW INSULATED METAL ROOF PANEL SYSTEM.



SECTION A-A
SCALE: 1" = 1'-0"



B A-101 TYP. INTERIOR WALL FRAMING
SCALE: 1/4"=1'-0" (LOOKING FROM INTERIOR)



SECTION B-B
SCALE: 1/4" = 1'-0"

C A-101 INTERIOR WALL FRAMING
SCALE: 1/4"=1'-0" (LOOKING FROM INTERIOR)

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 A-301 ARCH SECTIONS.DWG PLOT DATE: 4/25/2025 9:37:24 AM JEFRUSY

SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

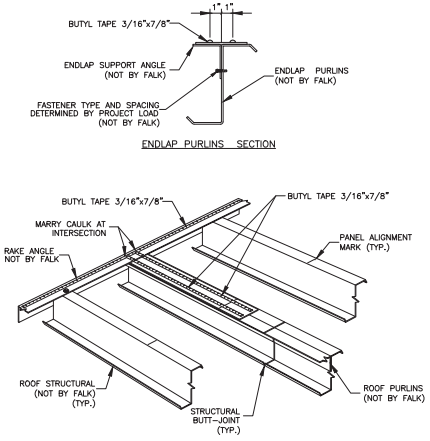
Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

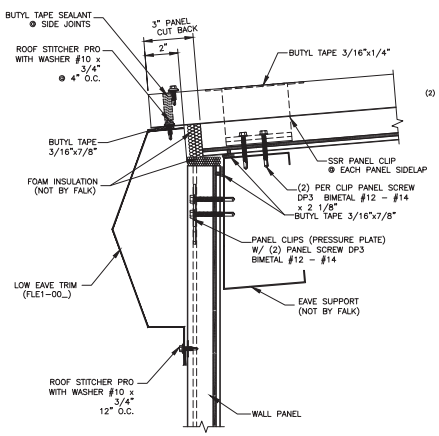
Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ARCH. SECTIONS

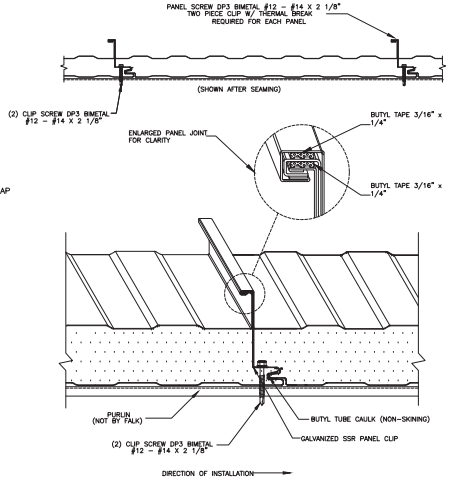
Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet A-301
Rev 1



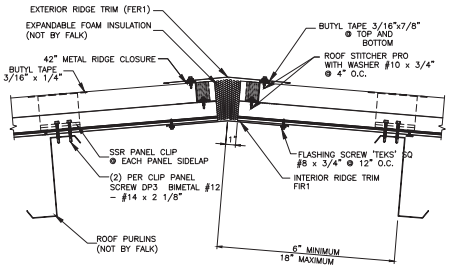
ROOF PANEL ENDLAP SEALANT DETAIL



LOW EAVE TRIM DETAIL



PANEL JOINT DETAIL



RIDGE TRIM DETAIL

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 A-302 ARCH DETAILS.DWG PLOT DATE: 4/25/2025 9:36:30 AM JEFRUSY

SGI PROJECT # 23640

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		1	04/25/25	AS-BUILT	JMC	KJH
		0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

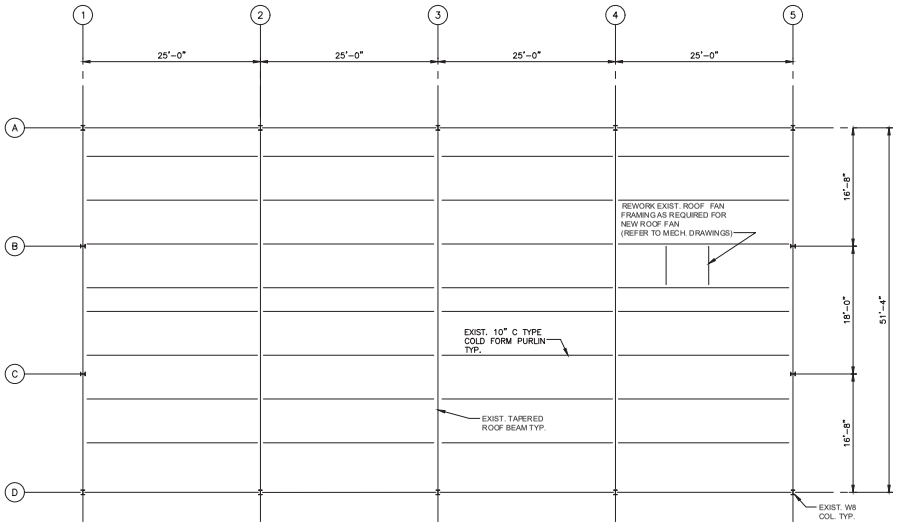
Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ARCH. DETAILS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet A-302
Rev 1



ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 S-101 ROOF FRAMING PLAN.DWG PLOT DATE: 4/25/2025 9:52:07 AM JEFRUSY

SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr P. KOTOWSKI Date
Des Z. KELLEY
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ROOF FRAMING PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet S-101
Rev 1

ELECTRICAL SPECIFICATION

PART 1 - GENERAL

COOPERATION WITH OTHER TRADES

WHEN INTERFERENCES EXIST WITH THE WORK OF OTHER TRADES, NOTIFY THE OWNER BEFORE PROCEEDING WITH THE INSTALLATION OF THE WORK. IF ADDITIONAL WORK IS REQUIRED TO REARRANGE INTERFERING EQUIPMENT AND THE CONTRACTOR HAS FAILED TO NOTIFY THE OWNER OF THE INTERFERENCE, THEN THE CORRECTIVE WORK REQUIRED TO MODIFY THE INTERFERENCE WILL BE DONE AT NO ADDITIONAL EXPENSE TO THE OWNER.

ORDINANCES AND CODES

THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE GOVERNING RULES AND REGULATIONS OF THE NATIONAL ELECTRIC CODE, ALL LOCAL GOVERNING BOARDS HAVING JURISDICTION, AND, IN ADDITION, SHALL MEET ALL THE STANDARDS AND REQUIREMENTS OF THE OWNER.

THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF APPLICABLE FEDERAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.

PROVIDE MATERIALS LISTED BY THE UNDERWRITERS' LABORATORIES, INC. AND BEARING THEIR LABEL WHERE SUCH SERVICE IS AVAILABLE FOR THE TYPE OF EQUIPMENT SPECIFIED.

WHERE PLANS AND SPECIFICATIONS CONFLICT WITH SUCH LAWS AND ORDINANCES, NOTIFY THE ARCHITECT BEFORE SUBMISSION OF THE BID. AFTER ENTERING INTO THE CONTRACT, THE CONTRACTOR WILL BE HELD RESPONSIBLE TO COMPLETE ALL WORK IN STRICT ACCORDANCE WITH ALL GOVERNING REGULATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

PERMITS

OBTAIN AND PAY FOR ALL REQUIRED PERMITS.

INSPECTIONS

GIVE ALL REQUIRED NOTICES OF INSPECTIONS REQUIRED BY THE LAWS OR OTHER REGULATIONS AND PAY ALL FEES IN CONNECTION THEREWITH.

FINAL ELECTRICAL INSPECTION IS REQUIRED BY THE LOCAL INSPECTION AUTHORITY. FORWARD A COPY OF THE FINAL APPROVAL TO THE FIRE MARSHAL DIVISION, LOCAL FIELD OFFICE.

COORDINATION AND PROJECT RECORD DOCUMENTS

PROJECT RECORD DOCUMENTS ARE REQUIRED UPON COMPLETION OF THE WORK AND BEFORE FINAL PAYMENT IS MADE.

GUARANTEE

THE COMPLETE ELECTRICAL SYSTEM OR SYSTEMS FURNISHED AND INSTALLED SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE WORK AGAINST DEFECTIVE MATERIALS AND/OR WORKMANSHIP. UPON RECEIPT OF NOTICE OF FAILURE OF ANY PART OF THE WORK DURING THE GUARANTEE PERIOD, THE AFFECTED PART OR PARTS SHALL BE REPLACED PROMPTLY AT NO ADDITIONAL COST TO THE OWNER, INCLUDING ANY DAMAGE DONE TO THE WORK OF OTHERS CAUSED BY THE FAILURE OF THE ELECTRICAL SYSTEM.

CHARACTER OF WORK

THE INSTALLATION SHALL BE SO MADE THAT ITS MANY COMPONENT PARTS WILL FUNCTION TOGETHER AS A WORKABLE SYSTEM. IT SHALL BE COMPLETE WITH ALL ACCESSORIES NECESSARY FOR ITS OPERATION, AND SHALL BE LEFT WITH ALL EQUIPMENT PROPERLY ADJUSTED AND IN WORKING ORDER.

EXECUTE THE WORK IN CONFORMITY WITH THE BEST PRACTICE, SO AS TO CONTRIBUTE TO EFFICIENCY OF OPERATION, MINIMUM MAINTENANCE, ACCESSIBILITY AND SIGHTLINESS. EXECUTE SO THAT THE INSTALLATION WILL CONFORM AND ACCOMMODATE ITSELF TO THE BUILDING STRUCTURE, ITS EQUIPMENT AND ITS USAGE.

MOUNTING HEIGHTS

MOUNT OUTLET BOXES AND EQUIPMENT AS SHOWN BELOW, UNLESS OTHERWISE INDICATED ON DRAWINGS. MOUNTING HEIGHTS SHOWN, IN GENERAL, ARE ABOVE FINISHED FLOOR TO CENTER LINE OF OUTLET BOXES OR EQUIPMENT.

BRACKET MOUNTED MIRROR LIGHTING FIXTURES: ABOVE MIRROR.

SWITCHES: 3'-10".

RECEPTACLES: FINISHED AREAS: 18".

SAFETY SWITCHES: 4'-10".

MOTOR STARTERS: 4'-10".

BRACKET EXIT LIGHTING FIXTURES: 6'-8" TO BOTTOM OF FIXTURE FOR CEILINGS UP TO 9 FEET. MOUNT AT 8'-0" FOR CEILINGS HIGHER THAN 9 FEET.

REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS BEFORE INSTALLING ANY OF THE ABOVE OUTLETS OR EQUIPMENT FOR INTERFERENCE, AND ADJUST HEIGHTS TO AVOID INTERFERENCES THAT WOULD OCCUR. IF DEVIATIONS ARE REQUIRED, OBTAIN APPROVAL OF THE OWNER BEFORE PROCEEDING WITH INSTALLATION.

DEMOLITION AND REMOVAL WORK

PROVIDE DEMOLITION AND REMOVAL WORK AS INDICATED. ITEMS FOR REUSE OR TO BE TURNED OVER TO OWNER SHALL BE CAREFULLY REMOVED, DISMANTLED AND STORED TO PREVENT DAMAGE TO SAME. WHERE EQUIPMENT IS TO BE REMOVED, ASSOCIATED CIRCUIT INCLUDING BOXES, CONDUIT, AND WIRE SHALL ALSO BE REMOVED BACK TO THE SOURCE. ITEMS NOT NOTED TO BE REUSED OR TURNED OVER TO OWNER SHALL BECOME PROPERTY OF CONTRACTOR AND SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED.

WHEN RELOCATING OR REMOVING A LIGHTING FIXTURE, RECEPTACLE OR OTHER ELECTRICAL DEVICE, BUT NOT OTHER DEVICES ON SAME CIRCUIT, CIRCUIT SHALL BE RECONNECTED FOR CONTINUED SERVICE TO REMAINING ITEMS ON CIRCUIT.

ELECTRICAL WORK INTERFERING WITH AND REQUIRING RELOCATION OR MODIFICATION FOR NEW REQUIREMENTS SHALL BE DISCONNECTED, REMOVED OR REROUTED TO SUIT FINAL INSTALLATION.

EXISTING BUILDING WORK

PERFORM ALL NECESSARY CUTTING AND PATCHING OF FLOORS, WALLS, AND CEILINGS. RELOCATE EXISTING EQUIPMENT AND CONDUITS WHICH INTERFERE WITH NEW WORK.

RESTORE ALL CUT WORK TO ITS ORIGINAL CONDITION.

ALL DIRT AND RUBBISH RESULTING FROM THIS WORK SHALL BE REMOVED FROM THE PREMISES.

EQUIPMENT IDENTIFICATION

IDENTIFY ALL PANELS, CONTROL POINTS, CONTROL CENTERS, EQUIPMENT BREAKERS, SWITCHES, ETC., AS APPROVED IN ACCORDANCE WITH THE IDENTIFICATION MARKINGS SHOWN ON THE DRAWINGS AND/OR AS DIRECTED. IDENTIFY EQUIPMENT WITH SUITABLY SIZED ENGRAVED PLASTIC LAMINATE PHENOLIC WHITE BACKGROUND WITH BLACK LETTERING AND ATTACH WITH SHEET METAL SCREWS.

DISCONNECT SWITCHES (INDIVIDUALLY OR PANEL MOUNTED), COMBINATION STARTERS AND TRANSFORMERS SHALL BE IDENTIFIED BY NAME, SOURCE OF POWER AND EQUIPMENT SERVED. PROVIDE NEW NAMEPLATES FOR REVISIONS TO EXISTING EQUIPMENT AFFECTED BY WORK IN THIS CONTRACT.

PANELBOARDS SHALL HAVE TYPED CIRCUIT DIRECTORIES IDENTIFYING EACH LOAD AND LOCATION. UP-DATE ALL EXISTING PANEL SCHEDULES WITH NEW TYPED SCHEDULES FOR PANELS AFFECTED BY WORK IN THIS CONTRACT INCLUDING ADDITIONS OR DELETIONS TO EXISTING PANELS.

CONDUCTORS SHALL BE IDENTIFIED WITH WIRE MARKERS INDICATING THE CIRCUIT NUMBER, WIRE NUMBER OR PHASE LETTER AT EVERY TERMINAL POINT OR SPLICE. PROVIDE CIRCUIT IDENTIFICATION OF EVERY UNSPLICED CONDUCTOR WITHIN EACH JUNCTION OR PULL BOX.

PARTS 2 AND 3 - PRODUCTS, INSTALLATION AND TESTING

ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 300.

RACEWAYS AND FITTINGS

CONDUIT:

ELECTRICAL METALLIC TUBING: ZINC-COATED STEEL PER ANSI C80.3-1977 "SPECIFICATION FOR ELECTRICAL TUBING, ZINC-COATED".

RIGID STEEL CONDUIT, ELBOWS, AND COUPLINGS: ZINC-COATED THREADED STEEL PER ANSI C80.1 "SPECIFICATION FOR RIGID STEEL CONDUIT, ZINC-COATED". EACH LENGTH OF CONDUIT SHALL BE THREADED ON BOTH ENDS.

LIQUID-TIGHT FLEXIBLE STEEL CONDUIT: PER UL-360 "LIQUIDTIGHT FLEXIBLE STEEL CONDUIT, ELECTRICAL", "SEALTITE ELECTRIFLEX".

RIGID NON-METALLIC CONDUIT, ELBOWS, AND COUPLINGS: SMOOTH-WALL POLYVINYLCHLORIDE (PVC), 90°C, UL LISTED AND IN COMPLIANCE WITH THE TESTING REQUIREMENTS DEFINED IN NEMA WTC-2, NEMA TC-3, UL-651, AND UL-514B. SCHEDULE 40: CARLON PLUS 40 (HEAVY WALL EPC) & SCHEDULE 80: CARLON PLUS 80 (EXTRA HEAVY EPC-80).

MANUFACTURERS: ALLIED, ANACONDA-SEALTITE, CERTAINTEED, ELECTRI-FLEX CO., APPLETON, CROUSE-HINDS, PITTSBURGH, REPUBLIC, STEELDUCT, TRIANGLE/PVIC AND WHEATLAND TUBE.

CONDUIT FITTINGS:

COUPLINGS AND CONNECTORS FOR EMT: ZINC-PLATED STEEL, COMPRESSION TYPE.

FITTINGS FOR FLEXIBLE STEEL CONDUIT: MALLEABLE IRON OR STEEL, ZINC OR CADMIUM PLATED, SECURING THE CONDUIT BY CLAMPING ACTION AROUND THE PERIPHERY OF THE CONDUIT. DO NOT FURNISH FITTINGS THAT ANCHOR THE CONDUIT BY MEANS OF SET SCREWS.

MANUFACTURERS: SAME AS LISTED FOR CONDUIT PLUS APPLETON, CROUSE-HINDS, ERICKSON, HUBBELL INC., MIDLAND-ROSS, MIDWEST, RACO, O.Z./GEDNEEY ELECTRIC CO., STEEL CITY, THOMAS & BETTS OR TOMC.

CONDUIT SUPPORT:

PIPE STRAPS USED FOR EXPOSED WORK SHALL BE ONE HOLE MALLEABLE IRON GALVANIZED. USE OF PERFORATED STRAP OR WIRE IS NOT ALLOWED. PROVIDE GALVANIZED TRAPEZE HANGERS FOR GROUPS OF CONDUITS.

INDIVIDUAL CONDUITS NOT SUPPORTED ON PIPE STRAPS SHALL BE PROVIDED WITH CLEVIS TYPE HANGERS. HANGER SUPPORTS SHALL BE ROD OR PIPE WITH THREADED CONNECTIONS.

BEAM CLAMPS FOR SUPPORT OF CONDUIT SHALL BE MALLEABLE IRON OR WROUGHT STEEL WITH HOOK RODS TO GRIP BEAM FLANGE. C-CLAMPS SHALL NOT BE USED.

MANUFACTURERS: SAME AS LISTED FOR CONDUITS, PLUS B-LINE HUBBELL INC., KINDORF, MIDLAND-ROSS, RACO, O.Z./GEDNEEY ELECTRIC CO., STEEL CITY, THOMAS & BETTS AND UNISTRUT.

INSTALLATION - RACEWAYS AND FITTINGS

CONDUIT:

USE EMT (WITH COMPRESSION FITTINGS ONLY) IN CONCEALED DRY LOCATIONS UP TO 4-INCHES WHERE CONDUITS ARE NOT SUBJECT TO MECHANICAL DAMAGE.

USE RMC IN DAMP OR WET LOCATIONS AND WHERE SUBJECT TO MECHANICAL DAMAGE.

INSTALL CONDUIT SIZES AS INDICATED. WHERE CONDUIT SIZES ARE NOT INDICATED, INSTALL SIZES PER NEC REQUIREMENTS, EXCEPT DO NOT USE CONDUIT SIZES SMALLER THAN 3/4-INCH UNLESS OTHERWISE SPECIFIED. USE 1/2-INCH FIXTURE STEMS OPTIONALLY, UNLESS OTHERWISE INDICATED.

FLEXIBLE STEEL CONDUIT SHALL BE USED FOR ALL FINAL CONNECTIONS TO CEILING MOUNTED EQUIPMENT SUCH AS LIGHTING FIXTURES AND SMOKE DETECTORS. USE IN DRY LOCATIONS.

LIQUID TIGHT FLEXIBLE STEEL CONDUIT SHALL BE USED FOR ALL FINAL CONNECTIONS TO TRANSFORMERS, VIBRATING EQUIPMENT SUCH AS MOTORS AND UNDER RAISED ACCESS FLOORING. USE IN WET LOCATIONS.

INSTALL CONDUIT A MINIMUM OF 12 INCHES FROM HOT WATER OR STEAM PIPES AND 3 INCHES FROM OTHER MECHANICAL PIPING.

SUPPORT CONDUIT EVERY 8 FEET IF SMALLER THAN 2 INCHES AND EVERY 10 FEET IF 2 INCHES OR LARGER.

DO NOT SUPPORT CONDUIT FROM PIPES, HANGERS, OR EXTENSION OF INSTALLATION OF OTHER TRADES.

SUPPORT CONDUIT FROM BUILDING STRUCTURAL MEMBERS. INSTALL PULL BOXES AT LEAST EVERY 100 FEET IN LONG CONDUIT RUNS.

DO NOT EXCEED LOADING LIMITS OF STRUCTURAL SYSTEMS WHERE GROUPS OF CONDUITS ARE SUPPORTED ON COMMMON HANGERS. SEE STRUCTURAL DRAWINGS FOR LIMITS.

EXPANSION FITTINGS:

INSTALL A CONDUIT EXPANSION FITTING IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT IN THE STRUCTURE TO WHICH IT IS ATTACHED. IN ADDITION, INSTALL AN EXPANSION FITTING IN EACH CONDUIT RUN WHICH IS MECHANICALLY ATTACHED TO SEPARATE STRUCTURES. INSTALL A BONDING JUMPER OR GROUND CLAMP TO CONNECT THE CONDUITS.

SLEEVES:

INSTALL SLEEVES AS NOTED. WHERE CONDUITS ARE TO PASS THROUGH FLOOR SLABS, AND PIPE SLOTS ARE NOT PROVIDED, INSTALL PIPE SLEEVES OF SIZE AS INDICATED. INSTALL PIPE SLEEVES WITH BOTTOM OF SLEEVES FLUSH WITH SLAB AND TOP 3 INCHES ABOVE FINISHED FLOOR.

CLOSE AND MAKE WATERTIGHT ALL OPEN SPACES AROUND INSTALLED CONDUIT WITH CAKUM AND AN APPROVED MASTIC. SUPPORT CONDUIT AT EACH LEVEL. PROVIDE APPROVED MASTIC FOR FIRE STOP AND/OR FIRE RATED WALL/FLOOR PENETRATION SYSTEM AT ALL FLOOR/WALL PENETRATIONS.

BUSHINGS:

INSTALL INSULATING BUSHINGS ON CONDUIT ENDS BEFORE THE INSTALLATION OF ANY CONDUCTORS.

PULL ROPE:

INSTALL 1/8 INCH-DIAMETER NYLON PULLING ROPE WITH WOODEN BLOCKS AND IDENTIFICATION FASTENED TO BOTH ENDS IN ALL EMPTY ELECTRICAL AND TELEPHONE CONDUITS.

PULL AND JUNCTION BOXES:

USE NEMA 12 IN INTERIOR LOCATIONS.
USE NEMA 3R/4 IN EXTERIOR LOCATIONS.

BOXES LESS THAN 5-INCHES BY 5-INCHES: CONFORM TO PARAGRAPH ON "OUTLET BOXES".

SHEET METAL BOXES: CODE GAGE, FULL SEAM WELDED WITH BENT-IN FLANGES SEAM WELDED AT CORNER JOINTS, SCREW FASTENED COVER OF SAME GAGE AS BOX, FASTEN COVER WITH BRASS MACHINE SCREWS. GALVANIZE BOX AND COVER AFTER FABRICATION. PROVIDE SIZES CONFORMING TO NEC REQUIREMENTS FOR WIRING SPACE, EXCEPT WHERE BOXES OF LARGER SIZE ARE INDICATED. FURNISH GASKETS WHEN LOCATED IN AREAS REQUIRING GASKETS.

SPECIAL BOXES SHALL BE PROVIDED AS NOTED ON THE DRAWINGS.

PROVIDE SIZES PER NEC REQUIREMENTS FOR WIRING SPACE.

MANUFACTURERS: APPLETON, CROUSE-HINDS, HOFFMAN, KEYSTONE, AND KILLARK.

INSTALLATION - PULL AND JUNCTION BOXES:

FOR JUNCTION OR PULL BOXES NOT OVER 100 CUBIC INCHES IN SIZE USE 4-11/16-INCHES X 4-11/16-INCHES OUTLET BOXES. FOR JUNCTION OR PULL BOXES OVER 100 CUBIC INCHES IN SIZE, CONSTRUCT SAME AS CABINETS WITH COVERS OF SAME GAGE METAL AS BOXES AND SECURE BY SCREWS OR BOLTS. USE GALVANIZED SHEET STEEL BOXES WITH METAL THICKNESS NOT LESS THAN U.L. GAGE. SIZE AND INSTALL BOXES PER THE LATEST EDITION OF NEC ARTICLE NO. 314. INSTALL REMOVABLE COVERS FOR ACCESS AT ALL TIMES.

OUTLET BOXES:

IN GENERAL, USE OUTLET BOXES NOT LESS THAN 4-INCHES SQUARE, AT LEAST 2-INCHES DEEP AND OF SUFFICIENT SIZE TO ACCOMMODATE THE WIRING DEVICES TO BE INSTALLED AT THE OUTLET LOCATION. FLUSH MOUNTED BOXES FOR MULTIPLE OUTLET SHALL BE OF GANG TYPE AND SHALL BE NOT LESS THAN 2-1/4 INCH DEEP AND NOT LESS THAN 3 INCHES DEEP FOR CEILING BOXES.

WHERE SHOWN ON THE DRAWINGS, AND NOTED IN THESE SPECIFICATIONS, USE THREADED-HUB, CAST METAL OUTLETS ON EXPOSED CONDUIT SYSTEMS OR FOR WEATHERPROOF DEVICES SUITABLE FOR THE WIRING DEVICES TO BE INSTALLED.

USE OUTLET BOXES WITH PLASTER COVERS FOR WIRING DEVICES IN FINISHED WALLS WHERE PRACTICABLE, TO BRING BOX OPENINGS FLUSH WITH FINISHED WALL OR NOT MORE THAN 1/4-INCH BACK OF SAME.

WHERE MOUNTING HEIGHT OR LOCATION OF OUTLETS IS NOT SHOWN OR SPECIFIED LOCATE THE OUTLET AS BEST SUITED FOR THE EQUIPMENT CONNECTED THERETO OR AS DIRECTED.

USE 4-INCH OCTAGON BOXES WITH 3/8-INCH FIXTURE STUD FOR LIGHTING FIXTURES.

WIREWAYS:

PAINTED STEEL ENCLOSURE NEMA 1 (OR OTHER AS NOTED ON DRAWINGS) WITH SCREWED FASTENED COVER, BENDS, ELBOWS, TEES, CROSSES, ADAPTERS AND ACCESSORIES REQUIRED, EASILY ASSEMBLED INTO A COMPLETE SYSTEM. PROVIDE SIZES PER NEC REQUIREMENTS FOR WIRING SPACE, EXCEPT WHERE LARGER SIZES ARE INDICATED. FURNISH GASKETS WHEN LOCATED IN AREAS REQUIRING GASKETS.

MANUFACTURERS: COPE, HOFFMAN, KEYSTONE, PARK METAL AND SQUARE D.

INSTALLATION - WIREWAYS:

INSTALL WIREWAYS COMPLETE WITH ALL REQUIRED COUPLINGS, END CLOSURES, ETC., AS REQUIRED. TAPS & SPLICES ARE PERMITTED WITHIN THE WIREWAY BUT SHALL BE LIMITED TO THE REQUIREMENTS OF NEC ARTICLE NO. 376.

WIRES AND CABLES:

PROVIDE WIRE AND CABLE FOR STANDARD SPECIFICATIONS ESTABLISHED FOR SUCH MATERIAL AND CONSTRUCTION BY ASTM, ANSI, IPCEA AND NEMA, WHERE APPLICABLE. PROVIDE COPPER CONDUCTORS OF 98% CONDUCTIVITY, NOT LESS THAN NO. 12 AWG. PROVIDE CONDUCTOR SIZES AS INDICATED. PROVIDE STRANDED CONDUCTORS.

WIRE FOR GENERAL INTERIOR AND EXTERIOR USE: SINGLE CONDUCTOR, ANNEALED COPPER, RATED 600 VOLTS AS FOLLOWS.

NEC TYPE THHN/THWN, RATED 90°C, DRY LOCATIONS AND 75°C, WET LOCATIONS.

NEC TYPE XHHW-2, RATED 90°C, DRY, DAMP, AND WET LOCATIONS.

INSTALLATION - WIRES AND CABLES:

INSTALL WIRING IN ACCORDANCE WITH ARTICLE NO. 310 OF THE NATIONAL ELECTRICAL CODE OR PER ANY OTHER CODES THAT TAKE PRECEDENCE.

INSTALL CONDUCTORS IN SUCH A MANNER THAT THE BENDING RADIUS OF ANY WIRE OR CABLE IS NOT LESS THAN THE MINIMUM RECOMMENDED BY ICEA AND/OR THE MANUFACTURER. DO NOT EXCEED MANUFACTURER'S RECOMMENDED VALUES FOR MAXIMUM PULLING TENSION OR SIDEWALL FORCE APPLIED TO ANY WIRE OR CABLE.

PROVIDE A GREEN GROUND WIRE FOR EVERY CIRCUIT.

COLOR CODING AND CONDUCTOR IDENTIFICATION:

MATCH EXISTING COLOR SCHEME OR AS REQUIRED BY THE NEC.

BRANCH CIRCUITS:

PROVIDE A SEPARATE NEUTRAL WIRE FOR EVERY BRANCH CIRCUIT REQUIREING A NEUTRAL, SHARING OF NEUTRAL WIRES IS NOT ALLOWED.

GROUND WIRE:

GROUND WIRE FOR GENERAL INTERIOR USE SHALL BE GREEN INSULATED STRANDED COPPER AND SHALL MEET REQUIREMENTS OF WIRE FOR INTERIOR AND EXTERIOR USE.

MANUFACTURERS: AMERICAN INSULATED WIRE CORP., CABLEC, CAROL, GENERAL CABLE, OKONITE, ROME, SOUTH WIRE AND TRIANGLE.

INSULATING TAPE:

SCOTCH 33 PLUS OR OKONITE TYPE CLF SERIES 602-20 FOR GENERAL USE AND SCOTCH 27 FOR HIGH TEMPERATURE AREAS.

WIRING DEVICES:

RECEPTACLES:

20 AMPERE SINGLE OR DUPLEX CONVENIENCE RECEPTACLES FOR 120 VOLT, SINGLE PHASE SERVICE. STRAIGHT BLADE, 2 POLE, 3 WIRE, NEMA CONFIGURATION 5-20R, RATED 20 AMPERES, 125 VOLTS, NEMA PERFORMANCE STANDARD, SPECIFICATION GRADE, FOR BACK AND SIDE WIRING. COLOR TO MATCH EXISTING OR PER ARCHITECT; NYLON, ARROW-HART 5362, BRYANT, OR HUBBELL INC.

GROUND-FAULT INTERRUPTER SHALL BE DUPLEX, 2 POLE, 3 WIRE, GROUNDING TYPE, RATED 20 AMPERE, 125 VOLT, NEMA CONFIGURATION 5-20R, ARROW-HART GF5342, BRYANT OR HUBBELL.

LIGHTING SWITCHES:

TOGGLE OPERATED, SINGLE POLE SINGLE THROW, SINGLE POLE DOUBLE THROW, DOUBLE POLE DOUBLE THROW, SPECIFICATION GRADE, COMPOSITION BASED, HEAVY DUTY, FLUSH, QUIET TYPE, WITH PROVISION FOR BACK AND SIDE WIRING AND RATED 20 AMPERES, 120/277 VOLTS A.C. ARROW-HART 1991 THRU 1994, BRYANT 4901 THRU 4904, OR HUBBELL HBL 1221 THRU HBL 1224.

BOXES, PROVIDE IMPLEMENTED INSTALLED BARRIERS BETWEEN ADJACENT SWITCHES.

ILLUMINATED TOGGLE SWITCHES SHALL HAVE LONG LIFE NEON LAMPS AND LEXAN HANDLES, IN EITHER RED OR IVORY, AS INDICATED. HUBBELL #1223-IL-PL, OR #1223-IL-IL.

DEVICE PLATES:

GANG TOGETHER ALL SWITCHES LOCATED IN ONE LOCATION AND COVER WITH ONE CUSTOM MADE WALL PLATE. SELECT THE CORRECT COMBINATION AND TYPE OF OPENING.

DEVICE PLATES IN FINISHED AREAS SHALL BE SMOOTH, BRUSHED STAINLESS STEEL NO. 302/304 FINISH. FOR RECEPTACLES WIRED TO THE EMERGENCY SYSTEM, THE PLATE SHALL BE ENGRAVED WITH "EMERGENCY" IN RED FILLED LETTERS.

INSTALLATION - WIRING DEVICES:

INSTALL WALL SWITCHES NEAR DOORS AT STRIKE SIDE OF DOORS AS FINALLY HUNG, 6 INCHES FROM DOOR FRAME. INSTALL SWITCHES IN 4-11/16 INCHES SQUARE BOXES WHERE POSSIBLE.

USE GANGED BOXES, 2-1/2 INCH DEEP, FOR 120 VOLT AND 277 VOLT SWITCHES AT THE SAME LOCATION WITH ISOLATING PARTITION BETWEEN 120 VOLT AND 277 VOLT SWITCHES. PROVIDE ISOLATING PARTITION BETWEEN 277 VOLT SWITCHES.

INSTALL PLUG-IN STRIPS AS INDICATED ON THE DRAWINGS. IF NOT INDICATED, INSTALL STRIPS ABOVE COUNTER 1 INCH ABOVE BACKSPLASH AND STRIPS ABOVE BASEBOARD, FLUSH WITH TOP OF BASEBOARD.

GROUNDING:

GROUNDING CONDUCTORS:

BARE GROUNDING CONDUCTORS: STRANDED ANNEALED COPPER (SIZE AS INDICATED ON THE DRAWINGS).

INSULATED GROUNDING CONDUCTORS: REFER TO "WIRES AND CABLES" IN THIS SPECIFICATION.

GROUNDING CONNECTIONS:

FOR OCCUPIED INTERIOR OF BUILDINGS, USE THE LOW EMISSION WELD PROCESS WHICH IS VIRTUALLY SMOKELESS. IGNITION SHALL BE BY MEANS OF A BATTERY POWERED ELECTRICAL IGNITION WHICH ELIMINATES ALL OPEN FLAME.

APPROVED MANUFACTURER: CADWELD "EXOLON".

COPPER COMPRESSION GROUNDING PIPE AND CLAMP-ON CONNECTIONS SHALL BE MADE WITH APPROVED BOLT CLAMPS OF CAST BRONZE OR BRASS.

MANUFACTURERS: BURNDY, PENN UNION AND THOMAS & BETTS.

GROUNDING FITTINGS FOR BONDING A GROUND CONDUCTOR TO ITS OWN CONDUIT: BURNDY TYPE NE, OR PENN UNION TYPE BD.

INSTALLATION - GROUNDING:

THOROUGHLY CLEAN ALL BONDING SURFACES OF NON-CONDUCTING MATERIALS. TIN AND SWEAT CONTACT SURFACES WHILE BOLTING. DO NOT USE SOLDER TYPE CONNECTIONS.

PROVIDE SUPPLEMENTAL GROUNDING SYSTEM / RODS / MATS AS REQUIRED TO CONFORM TO NEC.

DISCONNECT SWITCHES (FUSED OR NON-FUSED):

DISCONNECT SWITCHES, IN GENERAL, SHALL BE TYPE "HD", QUICK-MAKE, QUICK-BREAK, NON-ROTARY, (600 VOLT) AND/OR (250 VOLT) AC RATED, HORSEPOWER RATED AND CAPABLE OF INTERRUPTING STALLED MOTOR CURRENT OF CONNECTED MOTOR, FUSED OR UNFUSED AS SHOWN WITH VISIBLE BLADES. PROVIDE NEMA 1, UNLESS OTHERWISE NOTED. FOR OUTDOOR APPLICATION PROVIDE NEMA 3R.

ARRANGE HANDLES FOR PADLOCKING IN THE "OFF" OR "OPEN" POSITION AND EQUIP THE SWITCH WITH CLASS R TYPE FUSE CLIPS TO MATCH FUSES.

DISCONNECT SWITCHES LOCATED AT MOTORS CONTROLLED BY REMOTE VARIABLE FREQUENCY DRIVES (VFD'S) SHALL BE PROVIDED WITH "EARLY BREAK" CONTACTS TO DISCONNECT THE LOAD PRIOR TO DISCONNECTING THE LINE.

UNITS SHALL BE AS MANUFACTURED BY SQUARE D OR EATON.

FUSING:

FUSES FOR POWER FEEDERS AND/OR BRANCH CIRCUITS RATED 600 AMPERE OR LOWER: UL CLASS RK1 CURRENT LIMITING TYPE WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMANN LOW-PEAK LPN-RK AND LPS-RK, GOULD SHAWMUT A2D-R AND A6D-R.

FUSES FOR LIGHTING FEEDERS AND/OR LIGHTING PANELS: UL CLASS RK1, CURRENT LIMITING TYPE WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMAN LIMITRON KTN-R AND KTS-R, GOULD SHAWMUT A2K-R AND A6K-R.

FUSES FOR MOTORS: UL CLASS RK1, DUAL ELEMENT, TIME-DELAY, CURRENT LIMITING WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMANN LOW-PEAK, GOULD SHAWMUT A2D-R AND A6D-R.

SPARE FUSES: PROVIDE ONE SPARE SET OF THREE OF EACH SIZE AND TYPE OF FUSES INSTALLED.

LIGHTING SYSTEMS:

FURNISH AND INSTALL LIGHTING SYSTEMS AS REQUIRED, AND ALL MATERIALS AND EQUIPMENT, INCLUDING LUMINAIRES, LAMPS, DRIVERS, POLES, ACCESSORIES AND ASSOCIATED SYSTEMS AND EQUIPMENT, AS INDICATED OR SPECIFIED.

FURNISH LUMINAIRES AND OTHER EQUIPMENT, INCLUDING ALL MODIFICATIONS THERETO AND COMPONENT ELECTRICAL PARTS, LISTED BY UNDERWRITERS' LABORATORIES AS MEETING NATIONAL ELECTRICAL CODE REQUIREMENTS AND BEARING THE UL LABEL WHERE SUCH SERVICE IS AVAILABLE FOR EQUIPMENT SPECIFIED.

FURNISH AND INSTALL EXIT LUMINAIRES AND EMERGENCY LIGHTING UNITS THAT ARE LISTED AND LABELED FOR THEIR INDICATED USE ON THE PROJECT.

FURNISH AND INSTALL LUMINAIRES FOR USE IN DAMP OR WET LOCATIONS, UNDERWATER, AND RECESSED IN COMBUSTIBLE CONSTRUCTION SPECIFICALLY LISTED AND LABELED FOR SUCH USE. PROVIDE LUMINAIRES FOR USE IN HAZARDOUS LOCATIONS THAT ARE LISTED AND LABELED FOR THE SPECIFIC HAZARD.

FURNISH AND INSTALL SUPPORTS AND MOUNTING HARDWARE FOR ALL LUMINAIRES AS DETAILED, AS SPECIFIED OR AS OTHERWISE REQUIRED BY THE FIXTURE SPECIFIED.

PERFORM OPERATING TESTS ON LIGHTING SYSTEMS TO PROVE THAT ALL DESIGN FUNCTIONS ARE SATISFACTORILY PERFORMED.

LIGHT EMITTING DIODE (LED):

LED: LAMP SHAPE AND BASE, BAR. MEETS FEDERAL MINIMUM FOR EFFICIENCY STANDARDS, EPA TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) COMPLIANT, LUMEN MAINTENANCE PER LM-80, COLOR RENDERING INDEX (CRI) GREATER THAN 65, CORRELATED COLOR TEMPERATURE (CCT) OF 3500K UNLESS OTHERWISE NOTED, AVERAGE RATED LIFE, 50,000 HOURS MINIMUM STARTING TEMPERATURE OF MINUS 40 DEGREES CELCIUS(40 DEGREES FAHRENHEIT). OPERATE LAMPS AT FREQUENCY OF 60 HERTZ OR HIGHER. DESIGNED FOR USE WITH OCCUPANCY SENSORS PROVIDING 50,000 STARTS MINIMUM.

DRIVERS:

SINGLE OR MULTI-VOLTAGE DRIVERS, INPUT FREQUENCY 50/60 HERTZ, INPUT VOLTAGE 120 VOLTS OR 277 VOLTS, SUSTAINED VARIATIONS OF ±10% VOLTAGE AND FREQUENCY WITH NO DAMAGE TO DRIVER, NON-PCB, CBM CERTIFIED AND CLASS "P" APPROVED UNLESS OTHERWISE SPECIFIED IN THE FIXTURE SPECIFICATIONS. POWER FACTOR GREATER THAN 90%, TOTAL HARMONIC DISTORTION (THD) LESS THAN 20% FOR PRIMARY LAMP APPLICATION. LAMP CURRENT CREST FACTOR (LCCF) LESS THAN 1.5. MINIMUM DRIVER EFFICACY OF 80%. FURNISH COMMERCIAL AND RECESSED TYPE FIXTURES WITH DRIVERS HAVING A NEMA SOUND RATING OF "A" OR BETTER. CONTAIN AUTO-RESTART CIRCUITRY IN ORDER TO RESTART LAMPS WITHOUT RESETTING POWER, TOLERATE SUSTAINED OPEN CIRCUIT AND SHORT CIRCUIT OUTPUT CONDITIONS WITHOUT DAMAGE, AND SHALL BE REDUCTION OF HAZARDOUS SUBSTANCES (ROHS) COMPLIANT.

LIGHTING CONTROL SYSTEM:

AS INDICATED ON THE DRAWINGS

MANUFACTURERS: WATT STOPPER, LEVITON, SENSOR SWITCH

INSTALLATION - LIGHTING:

SUPPORTS:

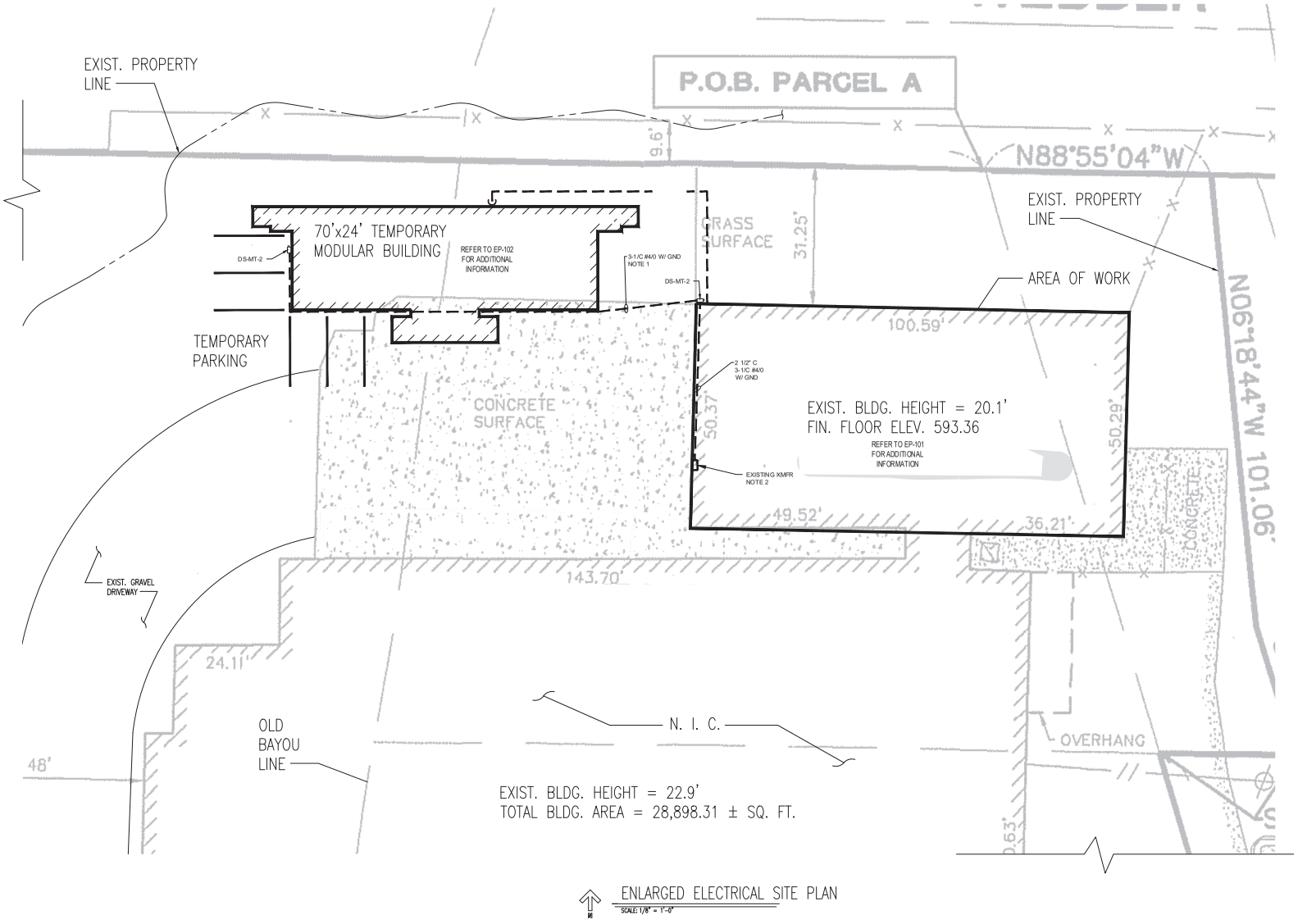
PROVIDE SUPPORTS FOR ALL LIGHTING FIXTURES AS DETAILED, AS SPECIFIED OR AS OTHERWISE REQUIRED BY THE FIXTURE SPECIFIED. SUPPORT SINGLE UNITS FROM FIXTURE STUDS IN OUTLET BOXES. IN FINISHED AREAS, PROVIDE SUPPORTS INDEPENDENT OF THE ACOUSTIC TILE OR PLASTER; SUPPORT FIXTURES FROM THE CEILING SUPPORT SYSTEM, OR FROM THE CONCRETE FLOOR OR ROOF STEEL ABOVE THE CEILING.

PROVIDE SUPPORTS FOR RECESSED FIXTURES AS RECOMMENDED BY THE FIXTURE MANUFACTURER OR AS SPECIFIED. VERIFY CEILING SUPPORT SYSTEMS AND COORDINATE FIXTURE INSTALLATION. FASTEN "LAY-IN" FIXTURES TO THE CEILING GRID.

LUMINAIRE CLEANING:

THE FOLLOWING PROCEDURE IS FOR CLEANING EXISTING LUMINAIRES.

REMOVE LENS/LOUVER AND LAMPS, DISCONNECT BALLAST AS CALLED FOR IN THE FIXTURE SCHEDULE AND MAKE THE LUMINAIRE SHOCK-FREE BY TURNING IT



ENLARGED ELECTRICAL SITE PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. DRAWINGS ARE DIAGRAMMATIC ONLY AND INDICATE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SUBJECT TO MODIFICATIONS BY THE OWNER/ENGINEER.

C. USE #12 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS LESS THAN 100 FEET FOR 120 VOLT. USE #10 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS MORE THAN 100 FEET FOR 120 VOLT.

D. REFER TO ONE-LINE DIAGRAM ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

NOTES:

1. ROUTE CABLING OVERHEAD FROM EXISTING BUILDING TO NEW TEMPORARY MODULAR BUILDING. NEW TEMPORARY MODULAR BUILDING LOCATED IN FLOOD PLAIN. CABLING REQUIRED TO BE ROUTED OVERHEAD.
2. REFER TO DRAWING EP-101 FOR CONTINUATION.

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Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	LMR	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	LMR	KJH

Dr J. MADDERN — Date
Des L. RYZYI
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg — Plot Scale as noted

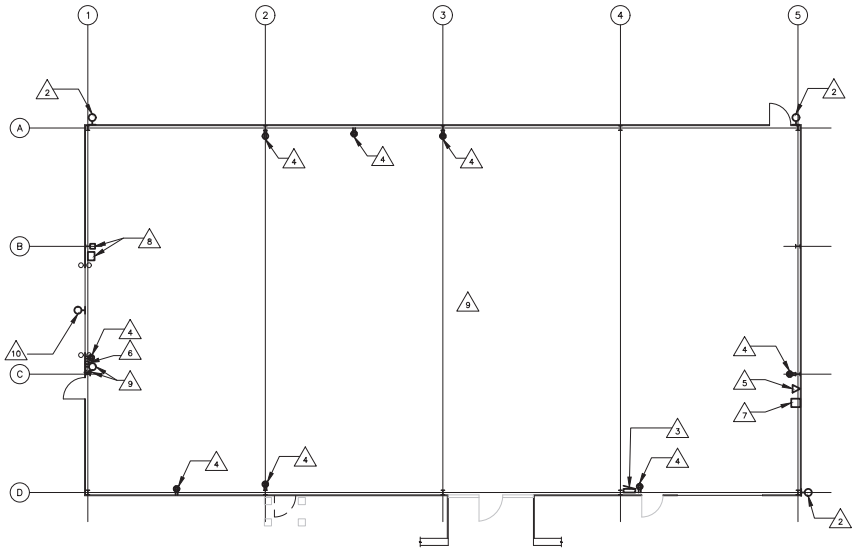
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

SGI PROJECT # 23640

Sheet Title
ENLARGED ELECTRICAL SITE PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet ES-102
Rev 1



ELECTRICAL DEMOLITION FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. REFER TO ARCHITECTURAL DRAWINGS FOR GENERAL SCOPE OF DEMOLITION WORK REQUIRED UNDER THIS CONTRACT AND COORDINATE WITH ELECTRICAL DEMOLITION WORK.

C. EXTREME CARE SHALL BE TAKEN NOT TO DISRUPT ANY ELECTRICAL SERVICES WHICH EXTEND BEYOND THE BOUNDARIES OF THE WORK AREA AND ARE TO REMAIN DURING RENOVATION. POWER TO EQUIPMENT OUTSIDE OF WORK AREA ARE TO REMAIN DURING RENOVATION. POWER TO EQUIPMENT OUTSIDE OF THE WORK AREA SHALL NOT BE TURNED OFF WITHOUT PROPER PERMISSION FROM OWNER'S REPRESENTATIVE. ANY CIRCUITS AFFECTED BY THIS RENOVATION, WHICH ARE SCHEDULED TO REMAIN, SHALL BE PROPERLY REWIRED TO MAINTAIN SERVICE AND COMPLIANCE WITH ALL NATIONAL, STATE, AND LOCAL CODES.

D. REFER TO PARTIAL ONE-LINE DIAGRAM ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

E. REFER TO PANEL SCHEDULE ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

DEMOLITION KEYED NOTES

1. EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS OTHERWISE NOTED.
2. DISCONNECT AND REMOVE EXISTING EXTERIOR LIGHT FIXTURE, INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE PANEL AND MARK CIRCUIT BREAKER AS SPARE.
3. DISCONNECT AND REMOVE EXISTING ELECTRICAL PANEL, INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE PANEL AND MARK CIRCUIT BREAKER AS SPARE.
4. DISCONNECT AND REMOVE EXISTING RECEPTACLE, INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE PANEL AND MARK CIRCUIT BREAKER AS SPARE.
5. DISCONNECT AND REMOVE EXISTING DATA OUTLET, INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE.
6. EXISTING SECURITY EQUIPMENT TO REMAIN, CONTRACTOR SHALL TEMPORALLY SUPPORT EQUIPMENT AS REQUIRED TO PERFORM REPAIRS TO THE EXISTING WALLS OF THE FACILITY. COORDINATE ELECTRICAL WORK WITH WALL REPAIR CONTRACTOR.
7. DISCONNECT AND REMOVE EXISTING CONTACTOR PANEL (DISMANTLED), INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE AND MARK CIRCUIT BREAKER AS SPARE.
8. EXISTING OVERHEAD DOOR TO REMAIN. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING OVERHEAD DOOR CIRCUIT WIRING FROM EXISTING POWER PANEL AND RE-FEED FROM NEW POWER PANEL UNDER THIS CONTRACT. REFER TO DRAWING EP-101 FOR ADDITIONAL INFORMATION.
9. EXISTING LIGHTING FIXTURES AND LIGHTING CONTROLS TO REMAIN. CONTRACTOR SHALL PROVIDE ALTERNATE PRICING TO REPLACE EXISTING LIGHT FIXTURES AND LIGHTING CONTROLS IN SPACE. REFER TO DRAWING EL-201 FOR BASIS OF DESIGN FOR NEW LIGHTING FIXTURES AND LIGHTING CONTROL TO BASE ALTERNATE PRICING.
10. CONTRACTOR TO DETERMINE WORKING CONDITION OF EXISTING EXTERIOR LIGHTING FIXTURE. IF EXISTING EXTERIOR LIGHT FIXTURE IS IN GOOD WORKING ORDER, EXISTING LIGHT FIXTURE SHALL REMAIN. IF EXISTING EXTERIOR LIGHT FIXTURE IS IN NON-WORKING ORDER, CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING EXTERIOR LIGHT FIXTURE, INCLUDING ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE PANEL AND MARK CIRCUIT BREAKER AS SPARE. EXISTING SUPPORT FOR LIGHTING FIXTURE TO REMAIN AND BE REUSED TO MOUNT LIGHTING FIXTURE UNDER THIS CONTRACT. REFER TO DRAWING EL-101 FOR ADDITIONAL INFORMATION.

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 ED-101 ELECTRICAL DEMOLITION FLOOR PLAN.DWG PLOT DATE: 4/25/2025 9:53:56 AM JEFRUSY

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JDM	LMR
0	11/01/24	ISSUED FOR CONSTRUCTION	JDM	LMR

Dr J. MADDERN Date
Des L. RYZYI
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

SGI PROJECT # 23640

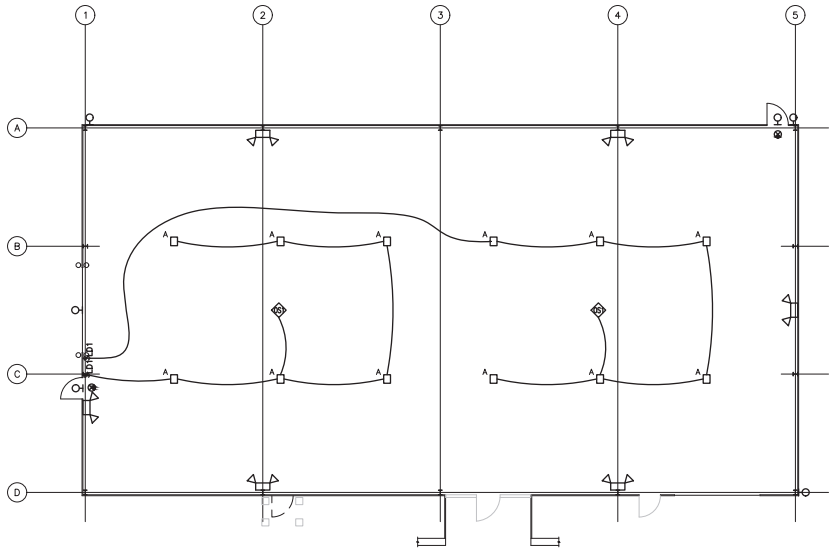
Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ELECTRICAL DEMOLITION FLOOR PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet ED-101
Rev 1

FIXTURE SCHEDULE

SYMBOL	TYPE	SIZE AND MOUNTING	VOLTAGE, (INPUT WATTAGE)	LAMPS AND LUMENS	MANUFACTURER / CATALOG NUMBER	REMARKS
□	A	14" (NOMINAL) LINEAR HIGHBAY	120V (88W)	4000K WHITE LIGHT EMITTING DIODES – 12,261 LUMENS (NOMINAL)	LITHONIA "CPHB" SERIES – CPHB 12LM MVOLT 40K	NOTE 1
○	B	WALLPACK	120V (51W)	4000K WHITE LIGHT EMITTING DIODES – 6,615 LUMENS (NOMINAL)	LITHONIA "ARC 2 LED" SERIES – ARC2 LED P5 40K MVOLT PE DDBXD	NOTE 2
○	C	MANDOOR FIXTURE	120V (17W)	4000K WHITE LIGHT EMITTING DIODES – 2,151 LUMENS (NOMINAL)	LITHONIA "ARC1LED" SERIES – ARC1 LED P2 40K MVOLT E4WH PE DDBXD	SEE NOTE 3
○	D	OVERHEAD DOOR FLOODLIGHT FIXTURE (YOKE MOUNT)	120V (111W)	4000K WHITE LIGHT EMITTING DIODES – 16,487 LUMENS (NOMINAL)	LITHONIA "ESXF4" SERIES – ESXF4 ALO SWW2 UVOLT YS DDB	SEE NOTE 4
⊗	X	EXIT LIGHT – CEILING OR WALL MOUNT	120V (4.3W)	RED LIGHT EMITTING DIODES	LITHONIA "LQHM" SERIES – LHQM LED HORO	SEE NOTE 5, 6
⏢	Y	SURFACE MOUNTED EMERGENCY FIXTURE	120V (4.77)	2-LED FLOOD LAMPS	LITHONIA "ELM6L" SERIES – ELM6L UVOLT LTP SDRT HO	SEE NOTE 5, 6



ELECTRICAL LIGHTING FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. DRAWINGS ARE DIAGRAMMATIC ONLY AND INDICATE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SUBJECT TO MINOR MODIFICATIONS BY THE OWNER/ENGINEER.

C. COORDINATE EXACT LOCATION OF DEVICES WITH OTHER TRADES FOR AVOIDANCE OF ANY OBSTRUCTIONS. VERIFY WALL SWITCHING OF ELECTRICAL LIGHTING PLANS FOR PROPER TYPES OF OPTIONS REQUIRED ON ALL FIXTURES. VERIFY CEILING TYPES ON ARCHITECTURAL REFLECTED CEILING PLANS FOR PROPER INSTALLATIONS OF TRIMS AND FOR EXACT MOUNTING LOCATIONS ON ALL FIXTURES.

D. USE #12 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS LESS THAN 100 FEET FOR 120 VOLT. USE #10 CONDUCTORS IF BRANCH CIRCUIT RUN EXCEEDS 100 FEET FOR 120 VOLT.

E. LIGHTING FIXTURE MANUFACTURER AND MODE/SERIES NUMBER LISTED IN SCHEDULE ARE BASIS OF DESIGN. ALTERNATE MANUFACTURER AND EQUIPMENT THAT MEETS THE SALIENT CHARACTERISTICS OF THE LIGHTING FIXTURES LISTED ARE ACCEPTABLE. THE ENGINEER RESERVES THE RIGHTS FOR THE MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE TO PROVIDE PROOF THAT SELECTED EQUIPMENT MEETS ALL FUNCTIONS, PLANS, AND SPECIFICATIONS ARE MET OR EXCEEDED. ALL "OR EQUALS" ARE SUBJECT TO APPROVAL BY ARCHITECT-ENGINEER.

F. LIGHTING CONTROL AND SENSORS SHOWN ON DRAWINGS ARE INDICATED TO DEMONSTRATE DESIGN INTENT. ACTUAL NUMBERS AND LOCATIONS OF DEVICES SHALL BE AS RECOMMENDED BY THE LIGHTING CONTROL MANUFACTURER/SUPPLIER. CONTRACTOR SHALL FURNISH AND INSTALL POWER PACKS, AUXILIARY RELAYS, LOW VOLTAGE TRANSFORMERS, TRANSFORMER DEVICES, ETC. AS REQUIRED AND RECOMMENDED BY THE LIGHTING CONTROL SYSTEM MANUFACTURER/SUPPLIER. REFER TO LIGHTING CONTROL SEQUENCE OF OPERATION ON THIS DRAWING FOR ADDITIONAL INFORMATION ON LIGHTING CONTROL FOR EACH SPACE.

G. LETTER NEXT TO LIGHTING FIXTURE INDICATE FIXTURE TYPE. REFER TO FIXTURE SCHEDULE ON DRAWING EL-600 FOR ADDITIONAL INFORMATION.

H. REFER TO PANEL SCHEDULE ON DRAWING EP-601 FOR ADDITIONAL INFORMATION.

I. EMERGENCY AND EXIT LIGHTING FIXTURES TO BE INSTALLED UNDER THIS CONTRACT SHALL BE FED FROM THE SAME CIRCUIT AS NORMAL LIGHTING IN SPACE AND SHALL BE CONNECTED AHEAD OF THE SWITCH.

NOTES

1. FURNISH AND INSTALL LIGHT FIXTURE AT 16'-0" ABOVE FINISHED FLOOR.
2. FURNISH AND INSTALL LIGHT FIXTURE AT 14'-0" ABOVE FINISHED FLOOR.
3. MOUNT BOTTOM OF FIXTURE 2" ABOVE DOOR FRAME.
4. FURNISH AND INSTALL NEW LIGHT FIXTURE ON EXISTING MOUNT IF EXISTING LIGHT FIXTURE IS NON-OPERATIONAL, REFER TO DEMOLITION NOTE 11 ON ED-101 FOR ADDITIONAL INFORMATION. RE-CONNECT EXISTING CIRCUIT WIRING TO NEW FIXTURE.
5. MOUNT BOTTOM OF FIXTURE 8'-0" ABOVE FINISHED FLOOR.
6. FIXTURE SHALL MEET NFPA LIFE SAFETY CODE 101 AND BE LISTED UNDER UL924.
7. FURNISH AND INSTALL WALL MOUNTED ON/OFF SWITCH WITH DIMMING, NLIGHT MODEL NPODM DX WH OR EQUIVALENT BY WATTSTOPPER OR LEVITON.
8. FURNISH AND INSTALL CEILING MOUNTED OCCUPANCY SENSOR, NLIGHT MODEL NCM 6 OR EQUIVALENT BY WATTSTOPPER OR LEVITON.

LIGHTING CONTROL SEQUENCE OF OPERATION

LIGHTING CONTROL SYSTEM HAS BEEN DESIGNED TO MEET SPECIFIC OPERATIONAL REQUIREMENTS AND FUNCTIONALITY AS FOLLOWS:

1. WAREHOUSE
   a. CONTROLLED BY: LOCAL CEILING MOUNTED OCCUPANCY SENSOR(S) WITH LOCAL WALL MOUNTED ON/OFF WALLPODS AT MAIN ACCESS DOOR(S) FOR MANUAL OVERRIDE OF AUTOMATIC CONTROL. LIGHT FIXTURES SHALL ILLUMINATE ALL FIXTURES TO 100% UPON ENTRY OF PERSONNEL AT ANY ENTRY POINT. ALL FIXTURES SHALL REDUCE TO 30% AFTER OCCUPANCY SENSORS DO NOT DETECT ACTIVITY IN A LIGHTING ZONE FOR 15 MINUTES AND SHALL SHUT OFF COMPLETELY AFTER 30 MINUTES OF NO DETECTION. LOCAL WALLPODS AT MAIN ACCESS DOORS SHALL BE PROVIDED FOR MANUAL OVERRIDE OF AUTOMATIC CONTROL.
   b. CIRCUIT CAPABILITY: SINGLE.
   c. TIME DELAY: 30% AT 15 MINUTES, OFF AT 30 MINUTES.
   d. SYSTEM BRANCH: NORMAL.
   e. AUTOMATIC SWITCHING MODE: AUTOMATIC ON; MANUAL OR AUTOMATIC OFF.

SYMBOLS

LD1 WALL MOUNTED ON/OFF SWITCH WITH DIMMING – SEE NOTE 7

VS CEILING MOUNTED OCCUPANCY SENSOR – SEE NOTE 8

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JDM	LMR
0	11/01/24	ISSUED FOR CONSTRUCTION	JDM	LMR

Drawing No | Reference Drawings

Dr J. MADDERN Date
Des L. RYZYI
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg | Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

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SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
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Sheet Title
ELECTRICAL LIGHTING FLOOR PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet EL-101
Rev 1

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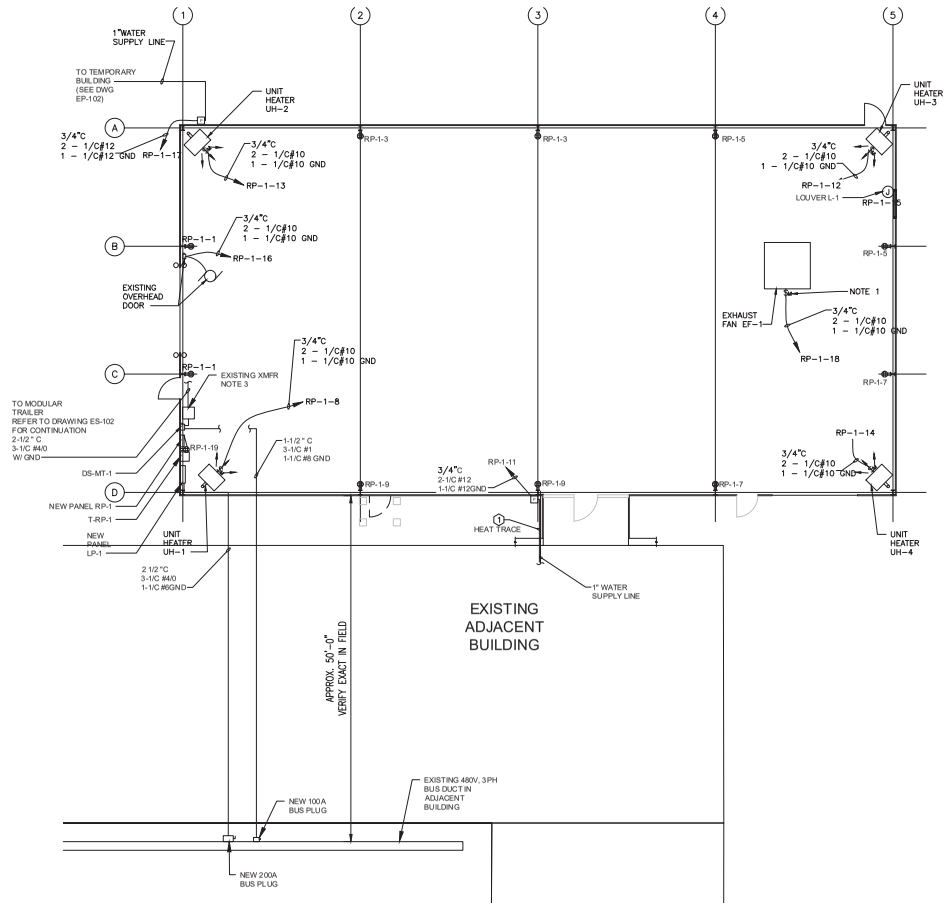

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. DRAWINGS ARE DIAGRAMMATIC ONLY AND INDICATE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SUBJECT TO MODIFICATIONS BY THE OWNER/ENGINEER.

C. USE #12 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS LESS THAN 100 FEET FOR 120 VOLT. USE #10 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS MORE THAN 100 FEET FOR 120 VOLT.

D. REFER TO ONE-LINE DIAGRAM ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

E. REFER TO PANEL SCHEDULES ON DRAWING EP-601 FOR ADDITIONAL INFORMATION.

F. ALL POWER WIRING FOR MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL AND INTERLOCKING WIRING.

NOTES:

1. MOTOR RATED TOGGLE DISCONNECT SWITCH SUPPLIED WITH UNIT.
2. FURNISH AND INSTALL A SQUARE D CLASS 2510 TYPE KG1A MOTOR RATED MANUAL SWITCH WITH A NEMA 12 ENCLOSURE FOR UNIT. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.
3. CONTRACTOR TO UTILIZE EXISTING OWNER PROVIDED 50KVA, 480-240/120,1PH TRANSFORMER CURRENTLY FOR THIS INSTALLATION. COORDINATE WITH OWNER FOR LOCATION OF TRANSFORMER.

SYMBOLS

- 20A GFCI QUAD RECEPTACLE
- MOTOR RATED TOGGLE DISCONNECT SWITCH – REFER TO NOTE 2
- (J) JUNCTION BOX

SYMBOL – (X)

ITEM	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SELF REGULATING HEATER CABLE	RAYCHEM	3BTV1-CT	AS REQUIRED
⊡	ELECTRONIC TEMPERATURE CONTROLLER	RAYCHEM	JBS-100-ECP-A	AS REQUIRED
⊡	END SEAL CONNECTION KIT	RAYCHEM	E-100-A	AS REQUIRED

ELECTRICAL POWER FLOOR PLAN

SCALE: 1/8" = 1'-0"

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SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JDM	LMR
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Dr J. MADDERN Date
Des L. RYZYI
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

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SAGINAW SERVICE CENTER
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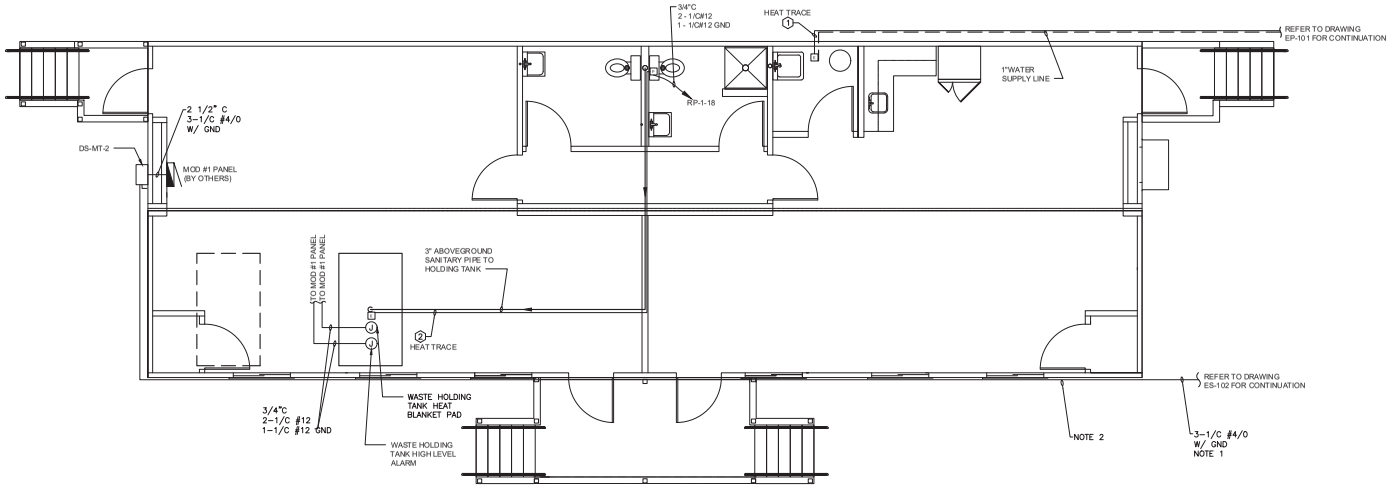
GCON Saginaw Site Improvements

Sheet Title
ELECTRICAL POWER FLOOR PLAN

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet EP-101
Rev 1



ELECTRICAL POWER FLOOR PLAN – MODULAR BUILDING PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. DRAWINGS ARE DIAGRAMMATIC ONLY AND INDICATE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SUBJECT TO MODIFICATIONS BY THE OWNER/ENGINEER.

C. USE #12 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS LESS THAN 100 FEET FOR 120 VOLT. USE #10 CONDUCTORS FOR 20A CIRCUIT HOME RUNS IF BRANCH CIRCUIT RUN IS MORE THAN 100 FEET FOR 120 VOLT.

D. REFER TO ONE-LINE DIAGRAM ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

E. REFER TO PANEL SCHEDULES ON DRAWING EP-601 FOR ADDITIONAL INFORMATION.

NOTES:

1. ROUTE CABLING OVERHEAD FROM EXISTING BUILDING TO NEW TEMPORARY MODULAR BUILDING. NEW TEMPORARY MODULAR BUILDING LOCATED IN FLOOD PLAIN. CABLING REQUIRED TO BE ROUTED OVERHEAD.
2. ROUTE CABLING IN CONDUIT ALONG OUTSIDE OF BUILDING TO DISCONNECT SWITCH.

SYMBOL – ⓧ

ITEM	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SELF REGULATING HEATER CABLE	RAYCHEM	3BTV1-CT	AS REQUIRED
2	SELF REGULATING HEATER CABLE	RAYCHEM	5BTV1-CT	AS REQUIRED
⊡	ELECTRONIC TEMPERATURE CONTROLLER	RAYCHEM	JBS-100-ECP-A	AS REQUIRED
⊡	END SEAL CONNECTION KIT	RAYCHEM	E-100-A	AS REQUIRED

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Drawing No	Reference Drawings
A-1	WHITLEY MFG.
A-2	WHITLEY MFG.

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	LMR	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	LMR	KJH

Dr R. SMITH Date
Des J. TUCCI
App C. MIRANDA
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

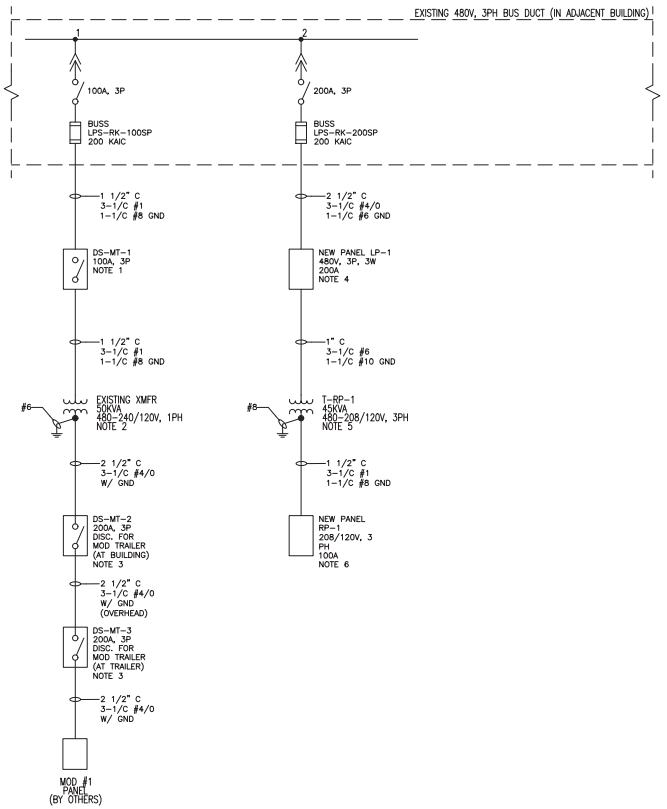
Consumers Energy
JACKSON, MICHIGAN

SGI PROJECT # 23640

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ELECTRICAL POWER FLOOR PLAN – MODULAR BUILDING

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet EP-102
Rev 1



GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

NOTES

1. FURNISH AND INSTALL A 100A, 3P, NEMA 12 DISCONNECT SWITCH, SQUARE D MODEL HU363AWK OR APPROVED EQUAL.
2. CONTRACTOR TO UTILIZE EXISTING OWNER PROVIDED 50KVA, 480-240/120,1PH TRANSFORMER CURRENTLY FOR THIS INSTALLATION. COORDINATE WITH OWNER FOR LOCATION OF TRANSFORMER.
3. FURNISH AND INSTALL A 200A, 3P, NEMA 3R DISCONNECT SWITCH, SQUARE D MODEL HU364AWK OR APPROVED EQUAL.
4. FURNISH AND INSTALL A 200A MCB 480V, 3PH, 3W PANELBOARD, SQUARE D INTERIOR NF442L2C WITH BOX (NEMA 12) CAT #MH6WP AND NC56S FRONT; PK27GTACU EQUIPMENT GROUND BAR AND NQN2CU NEUTRAL BAR OR EQUIVALENT
5. FURNISH AND INSTALL A 45 KVA, 480-208/120V, 3PH, 4 W TRANSFORMER, SQUARE D MODEL EXN45T5H OR EQUIVALENT.
6. FURNISH AND INSTALL A 100A MCB 208/120V, 3PH, 4W PANELBOARD, SQUARE D INTERIOR NQ430L1C WITH BOX (NEMA 12) CAT #MH44WP AND NC44S FRONT; PK27GTACU EQUIPMENT GROUND BAR AND NQN1CU NEUTRAL BAR OR EQUIVALENT.

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SGI PROJECT # 23640

Drawing No	Reference Drawings

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JDM	LMR
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Dr J. MADDERN Date
Des L. RYZYI
App W. DUTTON
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

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Sheet Title
PARTIAL ELECTRICAL ONE-LINE DIAGRAM

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet EP-600
Rev 1

PANEL DESIGNATION: NEW PANEL LP-1 — **MAIN:** 200A BREAKER — **P-P VOLTAGE:** 480
PANEL LOCATION: REFER TO POWER PLANS — **BUSSING:** 225A
FED FROM: REFER TO ONE-LINE DIAGRAM — **GROUND BUS:** STANDARD — **PHASE:** 3
FEEDER SIZE: REFER TO ONE-LINE DIAGRAM — **MOUNTING:** SURFACE — **WIRE:** 3
NEMA: 1 — **NEUTRAL:** 100%

Remarks	LIGHT LOAD	RECEPT LOAD	CONT LOAD	nonC LOAD	INTER. USE	OC PROT	CCT	Ø A	Ø B	Ø C	CCT	OC PROT	INTER. USE	nonC LOAD	CONT LOAD	RECEPT LOAD	LIGHT LOAD	Remarks
SPARE						60A	1	X			2							SPARE
							3		X		4	60A						
							5			X	6							
SPARE							7	X			8							SPARE
						30A	9		X		10	30A						
							11			X	12							
	639	1440	0	0	0		13	X			14	---						SPACE
PANEL RP-1 VIA TRANSFORMER T-RP-1	528	1440	0	696	0	100A	15		X		16	---						SPACE
	187	720	0	0	0		17			X	18	---						SPACE
SPACE						---	19	X			20	---						SPACE
SPACE						---	21		X		22	---						SPACE
SPACE						---	23			X	24	---						SPACE
SPACE						---	25	X			26	---						SPACE
SPACE						---	27		X		28	---						SPACE
SPACE						---	29			X	30	---						SPACE
SPACE						---	31	X			32	---						SPACE
SPACE						---	33		X		34	---						SPACE
SPACE						---	35			X	36	---						SPACE
SPACE						---	37	X			38	---						SPACE
SPACE						---	39		X		40	---						SPACE
SPACE						---	41			X	42	---						SPACE

LOAD DESCRIPTION	CONNECTED LOAD ØA	ØB	ØC	TOTAL	DEMAND FACTOR	DEMAND LOAD ØA	ØB	ØC	TOTAL	
LIGHTING LOAD (VOLT-AMPS)	639	528	187	1354	1.00	639	528	187	1354	
180VA RECEPTACLE LOAD (VOLT-AMPS)	1440	1440	720	3600	1.00 (FIRST 10kVA)	1440	1440	720	3600	RECEPTACLE DEMAND FACTOR PER ARTICLE 220.44 OF THE NATIONAL ELECTRICAL CODE.
	AMOUNT OVER 10kVA			0	0.50 (> 10kVA)	0	0	0	0	
CONTINUOUS LOAD (VOLT-AMPS)	0	0	0	0	1.00	0	0	0	0	
NON-CONTINUOUS LOAD (VOLT-AMPS)	0	696	0	696	0.65	0	452	0	452	
INTERMITTENT USE LOAD (VOLT-AMPS)	0	0	0	0	0.25	0	0	0	0	
TOTAL LOAD (kVA)	2.08	2.66	0.91	5.65	125% OF LIGHT, CONT AND RECEPT (<=10kVA) LOAD PLUS OTHER LOAD	2.08	2.42	0.91	5.41	"NEW PANEL LP-1"
TOTAL AMPACITY (AMPS)	7.5	9.6	3.3	6.8		7.5	8.7	3.3	6.5	
MINIMUM FEEDER SIZING (AMPS)	9.4	11.4	4.1	8.3	<---- PER NEC ARTICLE 215.2 ---->	9.4	10.5	4.1	8.0	

PANEL DESIGNATION: NEW PANEL RP-1 — **MAIN:** 100A BREAKER — **P-P VOLTAGE:** 208
PANEL LOCATION: REFER TO POWER PLAN DRAWING — **BUSSING:** 100A
FED FROM: REFER TO ONE-LINE DIAGRAM — **GROUND BUS:** STANDARD — **PHASE:** 3
FEEDER SIZE: REFER TO ONE-LINE DIAGRAM — **MOUNTING:** SURFACE — **WIRE:** 4
NEMA: 1 — **NEUTRAL:** 100%

Remarks	LIGHT LOAD	RECEPT LOAD	CONT LOAD	nonC LOAD	INTER. USE	OC PROT	CCT	Ø A	Ø B	Ø C	CCT	OC PROT	INTER. USE	nonC LOAD	CONT LOAD	RECEPT LOAD	LIGHT LOAD	Remarks
(2) QUAD RECEPTACLES		720				20A	1	X			2	20A						HIGHBAY LIGHTING
(2) QUAD RECEPTACLES		720				20A	3		X		4	20A						HIGHBAY LIGHTING
(2) QUAD RECEPTACLES		720				20A	5			X	6	20A					528	EXTERIOR LIGHTING
(2) QUAD RECEPTACLES		720				20A	7	X			8	20A		516				UNIT HEATER UH-1
(2) QUAD RECEPTACLES		720				20A	9		X		10	20A						SPARE
HEAT TRACE						20A	11			X	12	20A		516				UNIT HEATER UH-3
UNIT HEATER UH-2				516		20A	13	X			14	20A		516				UNIT HEATER UH-4
LOUVER L-1					50	20A	15		X		16	20A	1000					OVERHEAD DOOR
OUTDOOR HEAT TRACE					500	20A	17			X	18	20A		696				EXHAUST FAN EF-1
DEDICATED RECEPTACLE @ PANELS		180				20A	19	X			20	20A						SPARE
SPARE						20A	21		X		22	20A						SPARE
SPARE						20A	23			X	24	20A						SPARE
SPARE						20A	25	X			24	20A						SPARE
SPARE						20A	27		X		28	20A						SPARE
SPARE						20A	29			X	30	20A						SPARE
SPACE						---	31	X			32	---						SPACE
SPACE						---	33		X		34	---						SPACE
SPACE						---	35			X	36	---						SPACE
SPACE						---	37	X			38	---						SPACE
SPACE						---	39		X		40	---						SPACE
SPACE						---	41			X	42	---						SPACE

LOAD DESCRIPTION	CONNECTED LOAD ØA	ØB	ØC	TOTAL	DEMAND FACTOR	DEMAND LOAD ØA	ØB	ØC	TOTAL	
LIGHTING LOAD (VOLT-AMPS)	528	528	298	1354	1.00	528	528	298	1354	
180VA RECEPTACLE LOAD (VOLT-AMPS)	1,620	1,440	720	3780	1.00 (FIRST 10kVA)	1,620	1,440	720	3780	RECEPTACLE DEMAND FACTOR PER ARTICLE 220.44 OF THE NATIONAL ELECTRICAL CODE.
	AMOUNT OVER 10kVA			0	0.50 (> 10kVA)	0	0	0	0	
CONTINUOUS LOAD (VOLT-AMPS)	0	0	0	0	1.25	0	0	0	0	
NON-CONTINUOUS LOAD (VOLT-AMPS)	1,548	0	1212	2760	1.00	1,548	0	1212	2760	
INTERMITTENT USE LOAD (VOLT-AMPS)	0	1050	1000	2050	1.00	0	1050	1000	2050	
TOTAL LOAD (kVA)	3.70	3.02	3.23	9.94	125% OF LIGHT, CONT AND RECEPT (<=10kVA) LOAD PLUS OTHER LOAD	3.70	3.02	3.23	9.94	"NEW PANEL RP-1"
TOTAL AMPACITY (AMPS)	30.8	25.1	26.9	27.6		30.8	25.1	26.9	27.6	
MINIMUM FEEDER SIZING (AMPS)	35.2	29.2	29.0	31.2	<---- PER NEC ARTICLE 215.2 ---->	35.2	29.2	29.0	31.2	

GENERAL NOTES

A. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. REFER TO ONE-LINE DIAGRAM ON DRAWING EP-600 FOR ADDITIONAL INFORMATION.

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JDM	LMR
0	11/01/24	ISSUED FOR CONSTRUCTION	JDM	LMR

Drawing No | Reference Drawings

Dr xx — Date
Des
App
App
Acad Title XXX.dwg — Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
ELECTRICAL PANEL SCHEDULES

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet EP-601
Rev 1

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 EP-601 ELECTRICAL PANEL SCHEDULES.DWG PLOT DATE: 4/25/2025 9:59:40 AM JEFROSY

MECHANICAL SPECIFICATIONS

WORK INCLUDED:

FURNISH ALL LABOR AND MATERIAL, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS:

PLUMBING
HEATING, VENTILATING AND AIR CONDITIONING
TEMPERATURE CONTROLS

DEFINITIONS:

"PROVIDE": TO FURNISH AND COMPLETELY INSTALL SPECIFIED PRODUCTS AND INCIDENTALS, WHETHER SPECIFICALLY INDICATED OR NOT, NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. INCLUDES ALL GENERAL AND SPECIALIZED LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE INSTALLATION.

"PIPING": A COMPLETE SYSTEM, INCLUDING PIPE, TUBING, FITTINGS, HANGERS, SUPPORTS, VALVES, AND ALL SPECIALTIES THAT COMPRISE A FULLY FUNCTIONAL PIPING SYSTEM, WHETHER SPECIFICALLY INDICATED OR NOT.

CODES, ORDINANCES, AND STANDARDS:

ALL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE LATEST ADOPTED FEDERAL, STATE AND LOCAL CODES, ORDINANCES, AND STANDARDS HAVING JURISDICTION OVER THE WORK.

WHERE CONTRACT DOCUMENT REQUIREMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, ORDINANCES AND STANDARDS, THE CONTRACT DOCUMENT REQUIREMENTS SHALL BE TAKEN AS MINIMUM.

ALL EQUIPMENT CONTAINING ELECTRICAL WIRING AND/OR ELECTRICAL COMPONENTS SHALL HAVE A UNDERWRITERS LABORATORIES (UL) "PACKAGE" LABEL.

PERMITS, FEES AND INSPECTIONS:

SECURE ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS. FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

EXAMINATION OF SITE:

VISIT PROJECT SITE AND BECOME FULLY COGNIZANT OF ALL EXISTING ARCHITECTURAL, MECHANICAL, ELECTRICAL, STRUCTURAL AND SITE CONDITIONS, OR EXISTING CODE VIOLATIONS WHICH MAY AFFECT THE WORK.

NOTIFY ARCHITECT PRIOR TO SUBMITTING BID IF REVISIONS TO CONTRACT DOCUMENTS ARE NECESSARY TO RECTIFY ANY OF THE AFOREMENTIONED EXISTING CONDITIONS.

NO "EXTRAS" TO CONTRACT PRICE WILL BE ALLOWED AFTER RECEIVING BID IN ORDER TO RECTIFY EXISTING CONDITIONS IN ORDER TO MEET THE DESIGN INTENT OF THE CONTRACT DOCUMENTS OR SATISFY CODE REQUIREMENTS.

COORDINATION WITH OTHER TRADES:

COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED TRADES. WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT. RELOCATION OF CONFLICTING WORK INSTALLED DUE TO LACK OF COORDINATION OR POOR COORDINATION WILL NOT BE CONSIDERED EXTRA WORK.

APPROVED MANUFACTURERS:

EQUIPMENT FURNISHED IS SUBJECT TO "BUY AMERICA" REQUIREMENTS. CONTRACTOR MUST PROVIDE A SIGNED "CERTIFICATE OF COMPLIANCE" FORM WHICH IS INCLUDED IN THE FRONT END DOCUMENTS.

USE ONLY MATERIALS SPECIFICALLY INDICATED IN CONTRACT DOCUMENTS, OR COMPARABLE MATERIALS BY OTHER LISTED ACCEPTABLE MANUFACTURERS. NOTE THAT "ACCEPTABLE MANUFACTURER" DOES NOT CONSTRUE AUTOMATIC APPROVAL OF SPECIFIC MATERIALS BY ONE OR ALL OF THE LISTED ACCEPTABLE MANUFACTURERS. ARCHITECT RESERVES THE RIGHT OF FINAL DETERMINATION OF ACCEPTABILITY OF EACH ITEM.

FURNISHING OF MATERIALS AND MANUFACTURERS OTHER THAN THOSE INDICATED AS ACCEPTABLE IN THE CONTRACT DOCUMENTS WILL BE CONSIDERED VOLUNTARY SUBSTITUTES.

SUBMIT ALL VOLUNTARY SUBSTITUTES ON THE PROPOSAL FORM WITH APPROPRIATE " ADD " OR " DEDUCT " TO CONTRACT PRICE. DO NOT USE VOLUNTARY SUBSTITUTES FOR BASE BID. IF FOUND ACCEPTABLE , ARCHITECT WILL AUTHORIZE USE OF SUBSTITUTE IN WRITTEN FORM BY LETTER OR ADDENDUM TO CONTRACT DOCUMENTS.

SHOP DRAWINGS AND SUBMITTALS:

SUBMIT COMPLETE SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.

SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.

PRODUCT DATA: FOR EQUIPMENT SUBMITTALS INCLUDE THE FOLLOWING AS APPLICABLE:
COMPLETE FAN PERFORMANCE CURVES FOR SUPPLY AIR AND EXHAUST AIR, WITH SYSTEM OPERATING CONDITIONS INDICATED AS TESTED ON AN AMCA CERTIFIED CHAMBER.
SOUND PERFORMANCE DATA FOR SUPPLY AIR AND EXHAUST AIR AS TESTED ON AN AMCA CERTIFIED CHAMBER.
MOTOR RATINGS, ELECTRICAL CHARACTERISTICS, MOTOR AND FAN ACCESSORIES.
DIMENSIONED DRAWINGS FOR EACH TYPE OF INSTALLATION, SHOWING ISOMETRIC AND PLAN VIEWS, TO INCLUDE LOCATION OF ATTACHED DUCTWORK AND SERVICE CLEARANCE REQUIREMENTS.
ESTIMATED GROSS WEIGHT OF EACH INSTALLED UNIT.
INSTALLATION, OPERATING AND MAINTENANCE MANUAL (IOM) FOR EACH MODEL.
MICROPROCESSOR CONTROLLER (DDC) SPECIFICATIONS TO INCLUDE AVAILABLE OPTIONS AND OPERATING PROTOCOLS. INCLUDE COMPLETE DATA ON ALL FACTORY-SUPPLIED INPUT DEVICES.
COLOR CHART INCLUDING A PALETTE OF AVAILABLE STANDARD PAINT FINISHES.

SUBMIT TWO (2) HARD COPIES AND ONE (1) ELECTRONIC COPY OF ALL SHOP DRAWINGS FOR REVIEW BY ARCHITECT. ONE (1) COPY WILL BE RETAINED BY ARCHITECT AND ONE (1) COPY TO BE INCLUDED IN OPERATION AND MAINTENANCE MANUAL.

NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

OPERATION AND MAINTENANCE MANUALS:

PRIOR TO FINAL ACCEPTANCE BY OWNER, PROVIDE ALL PERSONNEL, EQUIPMENT, AND LABOR AS NECESSARY TO INSTRUCT OWNER'S PERSONNEL IN PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT INSTALLED IN THIS PROJECT. PROVIDE INSTRUCTIONAL SESSION DURING TIME PERIOD AGREED TO WITH OWNER.

CUTTING AND PATCHING:

ALL CUTTING AND PATCHING SHALL BE PROVIDED BY THE GENERAL TRADES UNDER THE DIRECTION OF THE MECHANICAL TRADES. COST WILL BE PAID BY THE MECHANICAL TRADE REQUESTING THE WORK.

RESTORED SURFACES SHALL BE OF SAME MATERIALS AND QUALITY AS ADJACENT SURFACES, AND SHALL MATCH SURROUNDING SURFACES, AND/OR BE RESTORED TO PRE-CONSTRUCTION CONDITION.

REPAIR AND/OR REPLACE EXISTING ACTIVE SERVICES INTENDED TO REMAIN IN SERVICE, BUT DAMAGED DURING THE COURSE OF CONSTRUCTION. ABSORB ALL RELATED COSTS. NO "EXTRAS" WILL BE PAID TO RESTORE EXISTING ACTIVE SERVICES DAMAGED DURING CONSTRUCTION.

ARCHITECT WILL DETERMINE COURSE OF ACTION WHEN EXISTING INACTIVE SERVICES ARE DAMAGED DURING COURSE OF CONSTRUCTION. ABSORB ALL COSTS RELATIVE TO ADDITIONAL DEMOLITION, TERMINATION, RELOCATION AND/OR RESTORATION OF EXISTING, DAMAGED INACTIVE SERVICES AS DIRECTED BY ARCHITECT.

DEMOLITION:

DEMOLITION DRAWINGS ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, PLUMBING FIXTURES, DUCTS, PIPING AND APPROXIMATE SIZES AND APPROXIMATE LOCATIONS. DO NOT SCALE DRAWINGS FOR EXACT MEASUREMENTS.

ALL MECHANICAL WORK SHOWN ON THE DEMOLITION DRAWINGS HAS BEEN TAKEN FROM THE OWNER'S RECORD DRAWINGS AND/OR CERTAIN FIELD OBSERVATIONS. EXACT SIZES, LOCATIONS, ARRANGEMENT AND ELEVATIONS OF ALL EXISTING MECHANICAL EQUIPMENT, EXISTING DUCTWORK, EXISTING PIPING AND EXISTING MECHANICAL DEVICES SHALL BE VERIFIED IN THE FIELD.

THE CONTRACTOR SHALL INCLUDE, IN HIS QUOTE, ALLOWANCES FOR REASONABLE DEVIATIONS BETWEEN WHAT IS SHOWN AND ACTUAL JOB CONDITIONS IN ORDER TO COMPLETE THE WORK IN THE SCOPE INDICATED.

REMOVE, RECONNECT, CAP, PLUG AND REPLACE EXISTING PIPING AND DUCTWORK ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS. REMOVE AND/OR REPLACE EXISTING EQUIPMENT, VALVES, CONTROLS, ETC., ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

INTERRUPTION OF EXISTING ACTIVE PIPING: WHERE THE WORK MAKES TEMPORARY SHUT-DOWNS OF SERVICE UNAVOIDABLE, SHUT-DOWN AT TIME AS APPROVED BY THE OWNER, WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME, IF REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK. UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK. SALVAGE MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE.

SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. THE MATERIALS ARE TO BE REMOVED FROM THE SYSTEMS BY THIS CONTRACTOR AND TURNED OVER TO THE OWNER IN THEIR ORIGINAL CONDITIONS. THE OWNER SHALL MOVE AND STORE THE MATERIALS. WHERE THE OWNER WAIVES POSSESSION RIGHTS, THESE MATERIALS SHALL BECOME THE PROPERTY OF THIS CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF THE SAME, AWAY FROM THE PREMISES.

CLEANING AND FINISHING:

PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER. THOROUGHLY CLEAN ALL PLUMBING FIXTURES, EXPOSED PIPING, FLOOR DRAIN GRATES, AND CLEANOUT COVERS AS APPLICABLE.

GUARANTEE:

PROVIDE A ONE (1) YEAR GUARANTEE COVERING ALL LABOR AND MATERIAL PROVIDED IN THIS PROJECT. GUARANTEE SHALL INCLUDE ALL SHIPPING AND TRANSPORTATION CHARGES NECESSARY TO RETURN DEFECTIVE MATERIALS TO MANUFACTURER, AS WELL AS LABOR CHARGES NECESSARY TO REMOVE AND REPLACE DEFECTIVE MATERIALS. DEFECTIVE MATERIALS AND/OR EQUIPMENT MAY BE REPAIRED IN LIEU OF REPLACED WITH PRIOR APPROVAL OF ARCHITECT AND/OR OWNER

ELECTRICAL WORK:

PROVIDE ALL ELECTRICAL WORK ASSOCIATED WITH, AND NECESSARY TO COMPLETE THIS PROJECT, WHICH IS NOT INCLUDED AS ELECTRICAL TRADES WORK.

ROOF FLASHING:

FLASH ALL VENTS AND OTHER PIPING STUBBED UP THROUGH ROOF WITH A WATERPROOF FLASHING CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL METAL OR ALUMINUM NOT LESS THAN .040-INCH THICK. EXTEND BASE OF FLASHING ON ROOF NOT LESS THAN 10-INCHES FROM PIPE. EXTEND FLASHING UP THE PIPE NOT LESS THAN 6-INCHES AND IN CONTACT WITH THE PIPE FOR 1-INCH AT THE TOP. PROVIDE VANDAL-PROOF HOOD.

TESTING & BALANCING:

GENERAL:

TEST AND ADJUST ALL NEW PIPING AND HVAC SYSTEMS INSTALLED IN THE PROJECT. PROVIDE ALL TESTING INSTRUMENTS, GAUGES, PUMPS AND OTHER EQUIPMENT REQUIRED OR NECESSARY FOR TEST.
REPAIR ALL DEFECTS DISCLOSED BY TESTS WITHOUT ADDITIONAL COST TO THE OWNER. REPEAT TESTS AFTER ANY DEFECTS DISCLOSED ARE REPAIRED OR REPLACED, UNLESS WAIVED BY ARCHITECT. ARRANGE AND PAY THE COST OF ALL UTILITIES USED ON TESTS. COMPLETE ALL TESTS BEFORE COVERING IS APPLIED.
ISOLATE ALL PIPING SYSTEM COMPONENTS NOT CONSTRUCTED TO WITHSTAND TEST PRESSURES.

BALANCING:

BALANCE ALL OUTLETS AND TERMINAL BOXES TO WITHIN 10% OF RATED C.F.M. IN ACCORDANCE WITH AABC AND NEBB, SUBMIT BALANCE REPORT.

PIPE IDENTIFICATION:

IDENTIFY ALL NEW PIPING INSTALLED IN THIS PROJECT IN ACCORDANCE WITH ANSI A13.11981, OSHA , AND OWNER'S STANDARDS.

PIPING NOTES:

PLUMBING SYSTEM:

THE WORK UNDER THIS SECTION SHALL CONSIST OF PROVIDING AND INSTALLING NEW PLUMBING FIXTURES, EQUIPMENT, AND PIPING, INCLUDING ALL LABOR AND MATERIALS, FOR A COMPLETE PLUMBING SYSTEM, TESTED AND READY FOR USE, AS INDICATED ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND AS DESCRIBED HEREIN.

SANITARY AND VENT PIPE, FITTINGS:

ABOVE GRADE, BELOW GRADE AND/OR BELOW FLOOR SLABS WITHIN BUILDING WALL, UP TO 6" DIAMETER.
PIPE: ASTM D2665 SCHEDULE 40 PVC-DWV INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
FITTINGS: ASTM D1544 SOLVENT CEMENTED. FERNCO FITTING SHALL BE FOR FINAL PIPING CONNECTION TO WASTE TANK.
SOLVENT CEMENT: ASTM D2564.
INSTALLATION: IN ACCORDANCE WITH ASTM D2321.
WHEN PENETRATING FIRE RATED ASSEMBLY THE PIPING MATERIAL NEEDS TO COMPLY WITH UL 723 AND ASTM E84.

UNDERGROUND PIPING DOMESTIC COLD WATER:

PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE.
FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT

ABOVEGROUND PIPING DOMESTIC HOT AND COLD WATER:

DOMESTIC HOT WATER:

PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE.
FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT. FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

DOMESTIC COLD WATER 4" AND SMALLER:

PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE.
FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT. FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

DOMESTIC HOT AND COLD WATER VALVES:

PROVIDE ALL VALVES NECESSARY FOR THE PROPER OPERATION AND DRAINAGE OF THE SYSTEMS. PROVIDE DRAIN VALVES AT ALL LOW POINTS IN ALL SYSTEMS. PROVIDE DRAIN VALVES IN EACH HORIZONTAL RUNOUT FROM EACH RISER ON ALL FLOORS SO THAT ALL HORIZONTAL PIPING ON ALL FLOORS CAN BE INDIVIDUALLY DRAINED WITHOUT DRAINING THE ENTIRE PIPING SYSTEM.

PROVIDE BALL VALVES AT EACH PIECE OF EQUIPMENT REQUIRING A WATER CONNECTION, IN RISERS AND MAIN BRANCHES AT POINTS OF TAKE-OFF FROM THEIR SUPPLY AND RETURN MAINS, ADJACENT TO CONTROL VALVES AND ALL EQUIPMENT REQUIRING DISCONNECTION FOR REPAIRS.

PROVIDE CHECK VALVES WHERE SHOWN OR NECESSARY TO PREVENT BACKFLOW.

PROVIDE BALANCING VALVES IN LINES WHERE IT IS NECESSARY TO REGULATE THE QUANTITY OF WATER FLOWING IN A CIRCUIT.

ALL VALVES SHALL BE LINE SIZE UNLESS OTHERWISE INDICATED.

ALL PRODUCTS THAT CONSTITUTE A PART OF ANY VALVE ASSEMBLY SHALL BE ASBESTOS-FREE.

MILWAUKEE CATALOG NUMBERS ARE USED UNLESS OTHERWISE INDICATED TO ESTABLISH A STANDARD.

BALL VALVES:

BALL VALVES 1/4" TO 1" PIPE SIZE: APOLLO 77C-140-01 FULL PORT, TWO PIECE WITH SCREWED ENDS, BRONZE BODY AND END PIECE, STAINLESS STEEL BALL, TEFLON SEAT RINGS, STAINLESS STEEL STEM, REINFORCED PTFE TEFLON PACKING WITH BRASS PACKING GLAND, ZINC PLATED STEEL HANDLE WITH PLASTIC GRIP SECURED BY ZINC PLATED STEEL HANDLE NUT, 150 PSI STEAM, 600 PSI WOG WORKING PRESSURE.

NATURAL GAS PIPING:

PIPE: ASTM A53, SEAMLESS GRADE B, SCHEDULE 40 BLACK STEEL.
FITTINGS: ANSI B16.3, 150 LB., MALLEABLE IRON SCREWED: ANSI B16.9, STEEL BUTTWELD.
JOINTS: 2" AND SMALLER, ANSI B2.1 THREADS: 2 1/2" AND LARGER, ANSI B16.25 BUTTWELD.

NATURAL GAS SYSTEM VALVES:

FOR PIPING 2" AND SMALLER MILWAUKEE VALVE CO., INC., MODEL #BB-1-100 "BUTTERBALL" OR APPROVED EQUAL AGA CERTIFIED AND UL LISTED QUARTER-TURN BUTTERFLY VALVE, BRONZE BODY, THREADED ENDS, STAINLESS STEEL STEM AND DISC, VITON SEAL WITH POSITIVE SHUT-OFF AND RATED FOR 175 LB. WORKING PRESSURE.

PIPING INSTALLATION:

INSTALL ALL PIPING PARALLEL OR PERPENDICULAR TO BUILDING WALL AND COLUMNS IN LOCATIONS TO AVOID INTERFERENCE WITH DUCTWORK, STRUCTURE, OTHER PIPING, LIGHTING AND ELECTRICAL EQUIPMENT OR OTHER EQUIPMENT.

DO NOT LOCATE PIPING ABOVE OR WITHIN 3 FEET HORIZONTALLY OF ELECTRICAL PANELS OR EQUIPMENT.

FOR PIPING PASSING THROUGH WALLS, PACK VOID BETWEEN PIPE AND STRUCTURE WITH APPROVED, NON-COMBUSTIBLE MATERIAL.

DO NOT ALLOW CONTACT BETWEEN PIPING AND MASONRY OF CONCRETE SURFACES.

PROVIDE ALL THE NECESSARY HANGERS, RODS, SUPPORTS, CHANNELS, ANGLES, STRUCTURAL MEMBERS AND CONCRETE INSERTS TO PROPERLY SECURE PIPING AND RELATED EQUIPMENT. ALL SUPPORTS AND PARTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF ANSI CODE FOR PRESSURE PIPING B31.1, MSS STANDARD PRACTICE SP-58, AND MICHIGAN PLUMBING CODE TABLE 308.5

PROTECT ALL INSULATED PIPE LINES AGAINST INSULATION DAMAGE AT ALL HANGERS BY THE USE OF 1 FOOT LONG, 12 GAUGE STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES WITH 12" OD AND LESS (INCLUDING INSULATION) AND 2 FOOT LONG, 1/2" STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES OVER 12" OD (INCLUDING INSULATION). SECURELY CEMENT ALL SHIELDS TO THE INSULATION. PROVIDE RIGID PIPE INSULATION AT EACH HANGER.

FIXTURE CONNECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

FIXTURE	SOIL OR WASTE	VENT	TRAP	HOT WATER	COLD WATER
WATER CLOSETS (TANK)	4"	2"			1/2"
WATER CLOSETS (FLUSH VALVE)	4"	2"			1"
URINALS	2"	1 1/2"	1 1/4"		1"
LAVATORY	1 1/2"	1 1/2"	1 1/4"	1/2"	1/2"
SINK	1 1/2"	1 1/2"	1 1/4"	1/2"	1/2"
SERVICE SINK	3"	1 1/2"	3"	3/4"	3/4"
WATER COOLER	1 1/2"	1 1/2"	1 1/4"		1/2"

OTHERS AS INDICATED IN THE CONTRACT DOCUMENTS.

LEGEND OF ABBREVIATIONS

AFF	– ABOVE FINISHED FLOOR
APPROX. OR ~	– APPROXIMATELY
BFP	– BACK FLOW PREVENTER
B.O.	– BOTTOM OF
BOT.	– BOTTOM
CAP.	– CAPACITY
CFM	– CUBIC FEET PER MINUTE
CONC.	– CONCRETE
CONST.	– CONSTRUCTION
CONT.	– CONTINUOUS
CO.	– CLEAN OUT
DIA	– DIAMETER
DN	– DOWN
E.W.	– EACH WAY
EA.	– EACH
EF	– EXHAUST FAN
EL.	– ELEVATION
EQUIP.	– EQUIPMENT
EXIST.	– EXISTING
°F	– DEGREES FAHRENHEIT
FD	– FLOOR DRAIN
GALV.	– GALVANIZED
GPM	– GALLONS PER MINUTE
HOR.	– HORIZONTAL
HP	– HORSEPOWER
HVAC	– HEATING/VENTILATING/AIR CONDITIONING
HW	– HOT WATER (DOMESTIC)
IN	– INCHES
LAV.	– LAVATORY
MAX.	– MAXIMUM
MBH	– BTUH (1,000'S)
MIN.	– MINIMUM
MISC.	– MISCELLANEOUS
N.T.S.	– NOT TO SCALE
QTY	– QUANTITY
RAD.	– RADIUS
RD	– ROOF DRAIN
REF.	– REFERENCE
REQ'D.	– REQUIRED
RM.	– ROOM
SCH.	– SCHEDULE
SHT	– SHEET
SI	– SOLID INTERCEPTOR
SP	– SUMP PUMP
STD.	– STANDARD
TEMP	– TEMPERATURE
T.O.	– TOP OF
TYP.	– TYPICAL
U.N.O.	– UNLESS NOTED OTHERWISE
VAV	– VARIABLE AIR VOLUME BOXES/ TERMINAL REHEAT
V.I.F.	– VERIFY IN FIELD
VERT.	– VERTICAL
VTR	– VENT THRU ROOF
W.C.	– WATER CLOSET

LEGEND:

- – – – – EXISTING PIPE (UNDERGROUND)
- — — — NEW PIPE (UNDERGROUND)
- – – – – EXISTING PIPE (ABOVEGROUND)
- ———— NEW PIPE (ABOVEGROUND)
- ——V—— EXISTING VENT
- ——V—— NEW VENT
- ——G—— NATURAL GAS
- — · · — NEW HOT WATER
- ———— NEW COLD WATER
- – – – – NEW COMPRESSED AIR
- EXISTING DUCT WORK (TO REMAIN)
- EXISTING DUCT WORK (TO BE REMOVED)
- NEW DUCT WORK
- FLEXIBLE CONNECTION
- POINT OF CONNECTION, NEW TO EXISTING
- FIRE DAMPER AND ACCESS DOOR
- VOLUME DAMPER
- VARIABLE AIR VOLUME BOX
- SUPPLY
- RETURN/ EXHAUST
- SUPPLY
- THERMOSTAT
- CAP
- PIPING CONNECTION – UP
- PIPING CONNECTION – DOWN
- PIPING CONNECTION – BOTTOM
- VALVE
- REDUCER
- G – GAS METER

SGI PROJECT # 23640

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		1	04/25/25	AS-BUILT	RWS	JET
		0	11/01/24	ISSUED FOR CONSTRUCTION	RWS	JET

Dr R. SMITH Date
Des J. TUCCI
App C. MIRANDA
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
MECHANICAL & PLUMBING SPECIFICATIONS

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet M-000
Rev 1

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 M-000 MECHANICAL & PLUMBING SPECIFICATIONS.DWG PLOT DATE: 4/25/2025 11:04:47 AM JEFRUSY

UNIT HEATER SCHEDULE

MARK	SERVICE	DESIGN BASIS				AIR FLOW (CFM)	FAN DIAMETER (INCHES)	OUTPUT (MBH)	EAT (°F)	TEMP RISE (°F)	HEATING HOT WATER			NATURAL GAS					ELECTRICAL						REMARKS
		MAKE	MODEL	WIDTH (W") x HEIGHT (H") x DEPTH (D")	WEIGHT (LBS)						EWT (°F)	LWT (°F)	GPM	INPUT (MBH)	GAS CONSUMPTION (CFH)	THERMAL EFFICIENCY	GAS CONN (INCHES)	VENT CONN (INCHES)	MOTOR HP	MOTOR RPM	VOLT / PHASE	FULL LOAD AMPS	MOP	NORMAL POWER CONS	
UH-1 TO 4	WAREHOUSE	MODINE	HD100AS0111FDAN	35 1/2" X 20 1/2" X 30 5/8"	143	1,490	18	83	-	52.0	....	....	....	100	-	83	1/2	4	1/8	1100	115 / 1	5.1	15	2.5 A	SUSPENDED / REMOTE THERMOSTAT

INTAKE LOUVER SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPLICATION	WIDTH	HEIGHT	FREE AREA		FREE VELOCITY	AIR FLOW	APD	DRIVE ARRANGEMENT	ACTUATOR MODEL	DESIGN BASIS		REMARKS
					INCHES	INCHES	SQ.FT.	(%)	FPM	CFM	IN W.C.			MAKE	MODEL	
L-1	WALL	WAREHOUSE	INTAKE	NON-DUCTED	48	48	5.81	36.3%	795	4,620		11-1FITL-0	SIEMENS MODEL: GVD226.1U	GREENHECK	EAD-401	NOTE 1, LINKED WITH EF-1

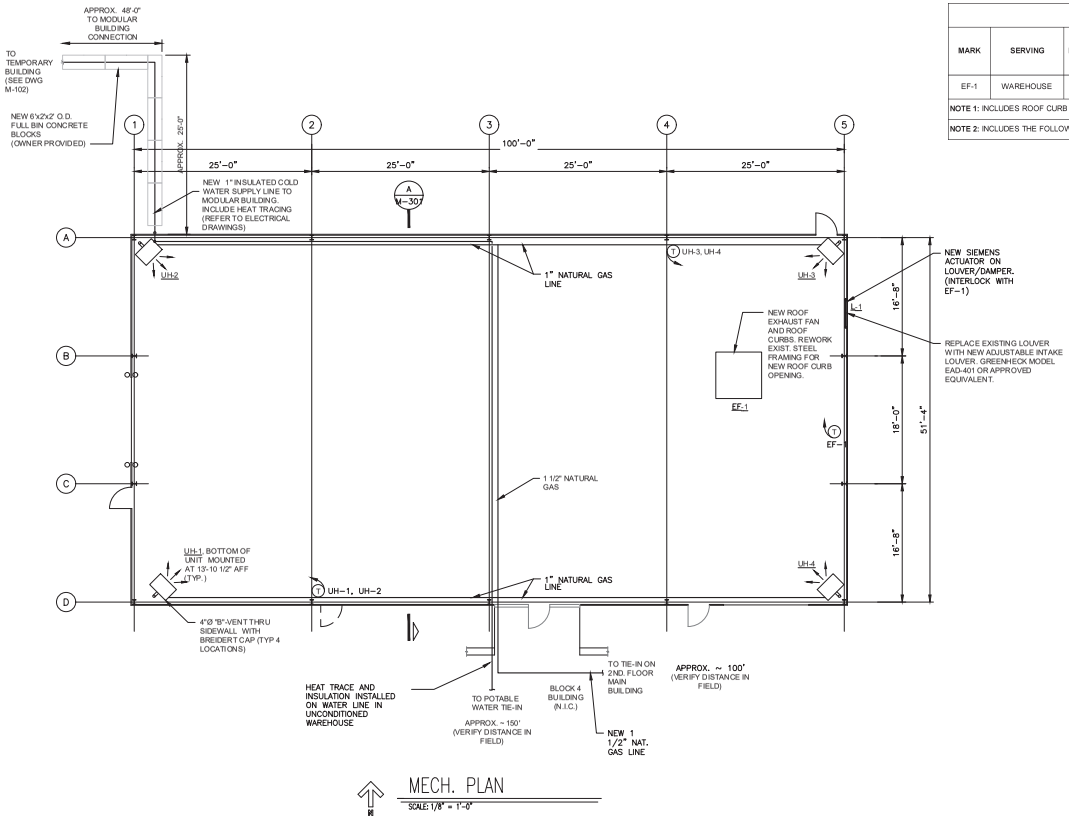
NOTE 1: INCLUDE KYNAR FINISH (COLOR TO BE SELECTED BY ARCHITECT)

ROOF EXHAUST FAN SCHEDULE

MARK	SERVING	LOCATION	FAN TYPE	TYPE	AIR QUANTITY (CFM)	ESP ("W.C.)	RPM	DRIVE	HP	ELECTRICAL		DESIGN BASIS		DRAWING NUMBER	REMARKS
										VOLT	PHASE	MAKE	MODEL		
EF-1	WAREHOUSE	ROOF	AXIAL	PROPELLER	4,620	0.100	682	BELT	1/2	115	1	GREENHECK	RBUMO-1L24-5	THIS SHT	NOTE 1, 2

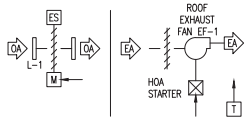
NOTE 1: INCLUDES ROOF CURB & ALUMINUM DAMPERS.

NOTE 2: INCLUDES THE FOLLOWING OPTIONS/ACCESSORIES: PERMATECTOR FINISH, INLET GUARD, MAGNETIC DAMPER LATCHES.



MECH. PLAN
SCALE: 1/8" = 1'-0"

CONTROL DIAGRAM
ROOF EXHAUST FAN EF-1



WAREHOUSE VENTILATION

ROOF EXHAUST FAN EF-1: 4,620 CFM @ 0.100" ESP
DESIGN BASIS: GREENHECK MODEL RBUMO-1L24-5
1/2 HP (115/160) NEMA-3R DISCONNECT SWITCH
ALUMINUM BUTTERFLY DAMPER

OUTDOOR AIR INTAKE (L-1):
COMBINATION LOUVER/DAMPER L-1 (4,620 CFM)
GREENHECK MODEL EAD-401, SIZE 48"x48" FREE AREA 5.81 SQ. FT.
DAMPER ACTUATOR SIEMENS MODEL GVD226 .1U / 120 VOLT
INTERLOCK L-1 WITH EF-1

SEQUENCE OF OPERATION

CONTROLS SHALL BE ELECTRIC (120V)

WITH HAND-OFF-AUTO SWITCH IN THE "AUTO" POSITION:
- ON A CALL FOR COOLING, ROOM THERMOSTAT OPENS OUTSIDE AIR INTAKE DAMPER, PROVING DAMPER END SWITCH, ALLOWING ROOF EXHAUST FAN TO START.

WITH HAND-OFF-AUTO SWITCH IN THE "HAND" POSITION:
- OUTSIDE AIR INTAKE DAMPER OPENS, PROVIDING DAMPER END SWITCH, ALLOWING ROOF EXHAUST FAN TO START.

WITH HAND-OFF-AUTO SWITCH IN THE "OFF" POSITION:
- THE ROOF EXHAUST FAN IS DE-ENERGIZED.

SET POINTS

ROOM THERMOSTAT (T) SET AT 80°F (ADJUSTABLE)

NOTES

1. REFER TO SHEET M-000 FOR PIPE SPECIFICATIONS AND PIPE SUPPORT DISTANCES.

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 M-101 MECH PLAN.DWG PLOT DATE: 4/25/2025 10:06:14 AM JEFRUSY

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Drawing No | Reference Drawings

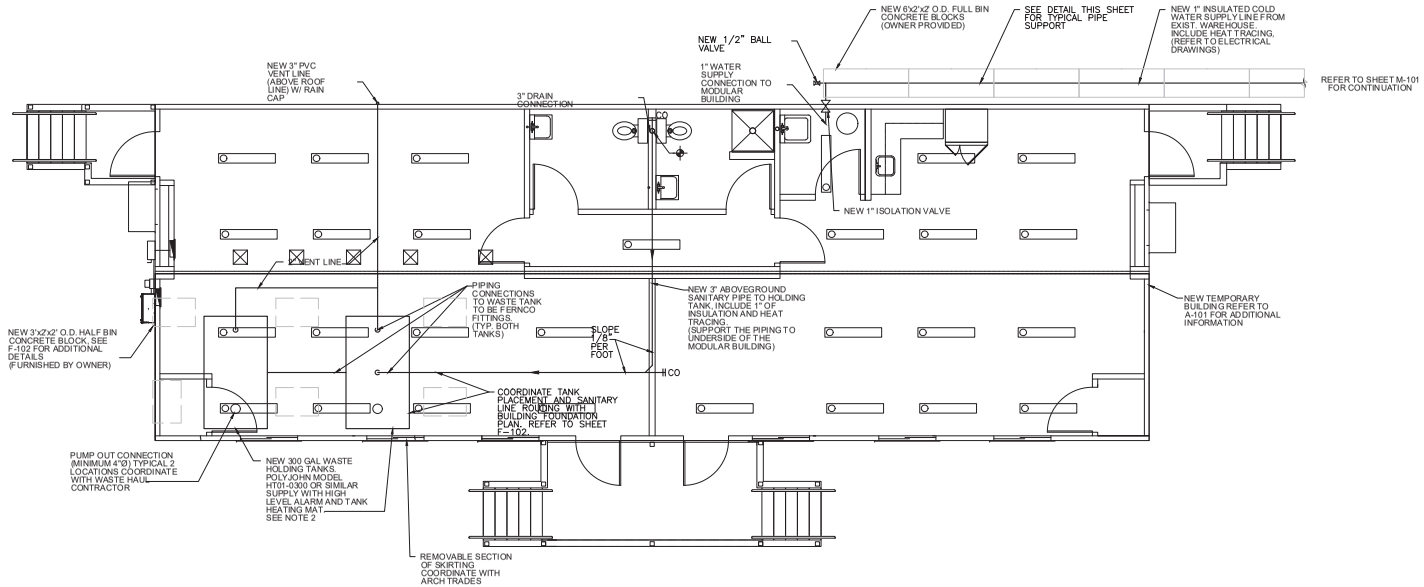
Dr R. SMITH | Date
Des J. TUCCI
App C. MIRANDA
App K. HIRZEL
Acad Title XXX.dwg | Plot Scale as noted

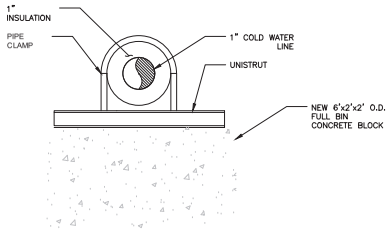
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
MECH. PLAN – WAREHOUSE

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet M-101
Rev 1





WATERLINE PIPE SUPPORT
SCALE: 1'-0" = 1'-0"

MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"

NOTES

1. REFER TO SHEET M-000 FOR PIPE SPECIFICATIONS.
2. COORDINATE PLACEMENT OF WASTE HOLDING TANKS WITH WASTE REMOVAL CONTRACTOR.
3. REFER TO MODULAR TRAILER PACKAGE DETAILS FOR PLUMBING FIXTURE CONNECTIONS. ALL FIXTURES ARE ASSUMED TO BE PRE-PLUMBED TO ONE MAIN CONNECTION.

SGI PROJECT # 23640

Drawing No	Reference Drawings
P-1	WHITLEY MFG.

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr R. SMITH Date
Des J. TUCCI
App C. MIRANDA
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

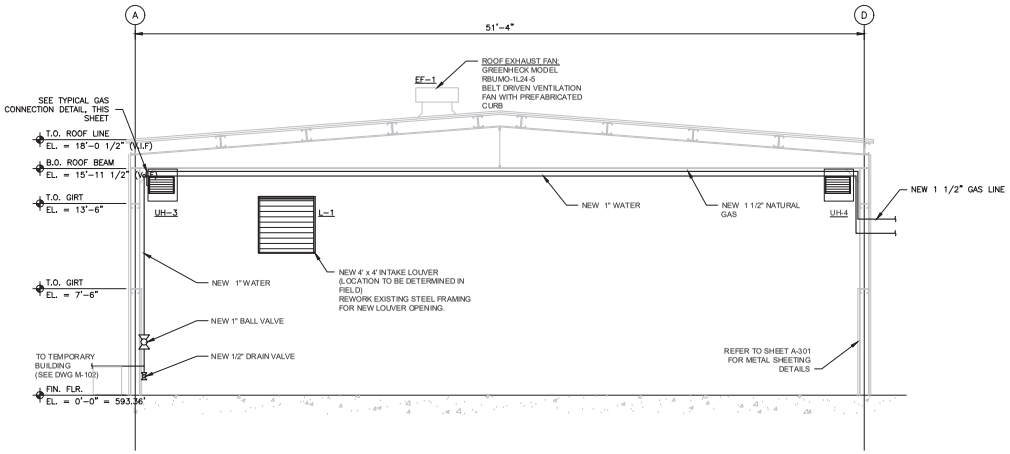
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

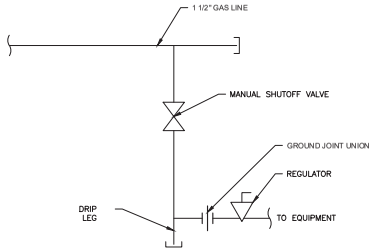
Sheet Title
MECH. PLAN – MODULAR BUILDING

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet M-102
Rev 1

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 M-102 MODULAR BUILDING PLAN.DWG PLOT DATE: 4/25/2025 10:07:15 AM JETRUSY



A / M-101 BUILDING CROSS SECTION
SCALE: 1/4"=1'-0" (LOOKING EAST)



TYPICAL GAS CONNECTION AT UNIT HEATER DETAIL
SCALE: NTS

NOTES

1. REFER TO SHEET M-000 FOR PIPE SPECIFICATIONS.

SGI PROJECT # 23640

Rev	Date	Description	By	App
1	04/25/25	AS-BUILT	JMC	KJH
0	11/01/24	ISSUED FOR CONSTRUCTION	JMC	KJH

Dr R. SMITH Date
Des J. TUCCI
App C. MIRANDA
App K. HIRZEL
Acad Title XXX.dwg
Plot Scale as noted

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
SAGINAW SERVICE CENTER
2119 RIVER STREET
SAGINAW, MICHIGAN, 48601
GCON Saginaw Site Improvements

Sheet Title
MECH. SECTION

Scale: AS NOTED
Work Order # XXX
Drawing Number XXXX-SAG-XXXX
Sheet M-301
Rev 1

Drawing No | Reference Drawings

N:\2023 PROJECT FILES\23640 CE GCON SAGINAW SITE IMPROVEMENTS\CAD\23 M-301 MECH SECTIONS.DWG PLOT DATE: 4/25/2025 10:08:01 AM JEFRUSY

LEASE

CONSUMERS' FILE # MI00000000000

THIS LEASE (hereinafter "Lease") is made as of the signature date of the last of the parties to sign this Lease, between Law Properties, LLC, a Michigan limited liability company, 1131 Weiss Road, Bay City, MI 48706 (hereinafter "Lessor"), and Consumers Energy Company, a Michigan corporation, One Energy Plaza, Jackson, Michigan 49201, (hereinafter "Consumers").

Lessor, in consideration of the rents to be paid and the mutual covenants and undertakings of the parties as herein set forth, hereby demises and leases to Consumers, and Consumers hereby rents from Lessor, that certain building consisting of approximately 5,000 square feet, more or less, together with the parking area, land and land improvements adjacent to the building, and together with all rights and appurtenances belonging thereto, at property commonly known as 2119 River Street, Saginaw, MI 48601, Saginaw County, Michigan, as shown on the attached **Exhibit A**, and legally described as:

A PARCEL OF LAND IN N.E. 1/4 OF SEC. 35,T. 12 N.,R. 4 E.AND PART OF BLKS. 3 & 4 CURTIS & KINGS ADDITION TO THE VILLAGE OF SALINA,AND PART OF VACATED RIVER ST.LYING ADJACENT TO SAID BLK. 4,VIZ. BEG.AT THE INTERSECTION OF THE S'LY.LINE OF WEBBER ST.WITH THE W'LY.LINE OF RIVER ST.,THENCE W'LY.ALONG S'LY.LINE OF WEBBER ST. 238.06 FT.THENCE S. 1 DEG. 4 MIN. 56 SEC. W. 472.42 FT.,THENCE S. 89 DEG. 7 MIN. 34 SEC.E. 396.99 FT.TO W'LY LINE OF RIVER ST.,THENCE N'LY.ALONG W'LY.LINE OF RIVER ST.TO N'LY.LINE OF KETCHAM ST.,THENCE E'LY.ALONG SAID N'LY.ST.LINE TO CENTERLINE OF RIVER ST.,THENCE N'LY.ALONG SAID CENTERLINE TO A POINT,SAID POINT BEING 105.77 FT.S'LY.ASMEASURED ALONG SAID CENTERLINE FROM S'LY.LINE OF WEBBER ST.,THENCE N'LY. 06 DEG. 18 MIN. 44 SEC.W. 101.06 FT.TO S'LY.LINE OF WEBBER ST.,THENCE W'LY.ALONG S'LY LINE OF WEBBER ST.TO POINT OF BEGINNING.(ACT 198 OF 1974 IFT #11-9100 & #11-9600, 11-9130, 11-9560, 11-9650 11-9140

Tax Parcel No. 11 0043 00100
(hereinafter "Premises")

1. Term. The term of this Lease shall be for three (3) years commencing July 1, 2023 and ending midnight June 30, 2026 (hereinafter "Primary Term"), unless sooner terminated as provided for in this Lease.

2. Rent. Consumers shall pay rent to Lessor during the Primary Term of this Lease according to the table below:

Lease Year	Monthly	Annually	Lease Period
Year 1	$1,500.00	$18,000.00	
Year 2	$1,500.00	$18,000.00	Primary Term
Year 3	$1,500.00	$18,000.00	

Such payments shall be payable monthly in advance on the first day of each month, unless said day shall fall on a non-business day, in which case, the rent shall be due on the first business day following the first day of the month. If the Lease commencement date is other than the first day of the month, then the rent from the Lease commencement date to the first day of the following month shall be prorated on a per diem basis at the rate of one-thirtieth ($1/30^{th}$) of the monthly rental rate, and Consumers shall pay such prorated installment and the first full month's rent withing ten (10) days from and after the execution of this Lease. Thereafter monthly rent payments shall be made as herein provided. Rent shall be paid to Lessor at 1131 Weiss Road, Bay City, MI 48706, unless Lessor directs otherwise in writing. If Lessor fails to perform under this agreement, rent may be withheld until such time as Lessor performs, provided that Consumers notifies Lessor that rent is being withheld for a specific nonperformance on the part of Lessor.

3. Extension of Lease Term. Provided that Consumers is not in material default of the terms and conditions beyond any applicable cure periods under this Lease, Lessor hereby grants to Consumers the right to extend this Lease for two (2) additional one-year (1 year) terms (each one-year term individually referred to as "Extended Term"), which shall commence upon the expiration of the Primary Term or upon the expiration of any exercised Extended Term, by giving Lessor written notice of its intent to extend thirty (30) days in advance of the then expiring Primary Term or exercised Extended Term, as the case may be. Consumers shall pay rent to Lessor during the first exercised Extended Term of this of this Lease in the amount of one thousand five hundred and 00/100 dollars ($1,500.00) per month payable monthly in advance on the first day of each month, unless said day shall fall on a non-business day, in which case, the rent shall be due on the first business day following the first day of the month. In the event that a second option to extend the lease is exercised, Consumers shall pay rent to Lessor during the second exercised Extended Term of this of this Lease in the amount of two thousand and 00/100 dollars ($2,000.00) per month payable monthly in advance on the first day of each month, unless said day shall fall on a non-business day, in which case, the rent shall be due on the first business day following the first day of the month.

4. Option to Terminate. [Intentionally Deleted]

5. Possession. If Lessor is unable to deliver possession of the Premises at the commencement hereof, Lessor shall not be liable for any damage caused thereby, but Consumers shall not be liable for any rent until possession is delivered. Consumers may terminate this Lease if possession of the Premises is not delivered within seven (7) days of the commencement of the term hereof.

6. Care and Maintenance of Premises. Consumers acknowledges that the Premises are in good order and repair, unless otherwise indicated herein. Lessor shall, at its sole cost and expense and at all times during the Primary Term and any exercised Extended Term of this Lease, maintain

the Premises in good state of repair and safe condition, including but not limited to, the foundation, exterior and structural components of Lessor's Building and systems or equipment upon the Premises. However, as consideration for this Lease, Consumers has agreed to provide certain improvements to Lessor's Building which shall be installed and maintained by Consumers for the initial term of the lease or until the improvements are completed, whichever is later. Lessor shall perform appropriate preventative maintenance on the existing heating, ventilation, air conditioning systems within the Premises, if any, including the changing of any applicable belts or filters. Lessor will perform any necessary repairs within a reasonable time, under the circumstances, after notice thereof from Consumers. Lessor shall, at its sole cost and expense, maintain in good condition for such portions adjacent to the Premises, such as sidewalks, driveways, parking area, lawn, landscaping and shrubbery, ~~and shall, at its sole cost and expense during the Primary Term and any exercised Extended Term of this Lease, provide for snow removal and salting of driveways, parking areas, and sidewalks at the Premises~~, which shall be performed in a manner standard and customary for other commercial property in the area. Consumers shall be responsible for repairing damage or breakage at the Premises caused by Consumers' negligence or misuse, and shall surrender the Premises, at the termination of this Lease, in as good condition as received, normal wear and tear excepted. Consumers shall be responsible, at its sole cost and expense, for janitorial, cleaning services, maintaining fire extinguishers, maintaining eye wash stations, replacing HVAC filters, and replacing fluorescent and other electric light bulbs at the Premises during the Primary Term or any exercised Extended Term of this Lease. Consumers shall pay for its own electrical power, gas, water and sewage service, garbage collection, and extermination services at the Premises, during the Primary Term or any Extended Term of this Lease. To the extent such utilities cannot be separately metered, such payment for utilities shall be based upon Consumers pro rata share of the utilities for the building. The pro rata distribution of utilities shall be found by subtracting the average of the prior three (3) years' utility bills for the month in question from the current electric bill. Consumers may hire contractors of Consumers' choosing to perform such services at the Premises.

7. Use and Alterations. Consumers may use and occupy the Premises for office, warehouse, truck storage, equipment storage, tool storage, material storage, training, testing and other lawful purposes related to Consumers' business. Consumer shall, at its sole cost, expense, and discretion install the improvements listed on the attached **Exhibit B**. Consumers may, at Consumers' sole cost and expense, install and maintain telecommunications wiring, equipment and infrastructure, internet service, cable service, security and badge access systems, and surveillance equipment at the Premises as show in the attached **Exhibit C**. Consumers shall not, without first obtaining the written consent of Lessor, which consent shall not be unreasonably conditioned, withheld or delayed, make any other alterations, additions, or improvements in or to the Premises.

8. Fixtures and Property of Consumers. Any trade fixtures or other property installed in or attached to the Premises by or at the expense of Consumers, except any listed in Exhibit B, shall remain the property of Consumers, and Consumers shall have the right to remove same; provided, however, that in the event of such removal, Consumers shall repair any damage caused by such removal and return the Premises to a condition no worse than it was prior to Consumers taking possession thereof excepting normal wear and tear.

9. Ordinances and Statutes. Consumers shall comply with all statutes, ordinances and requirements of all municipal, state and federal authorities now enforce, or which may hereafter be enforce, pertaining to the Premises, in connection with the use thereof by Consumers.

10. Assignments and Subletting. Consumers shall not assign this Lease or sublet any portion of the Premises without prior written consent of the Lessor, which shall not be unreasonably conditioned, withheld or delayed. Any such assignment or subletting without said consent shall be void and, at the option of the Lessor, Lessor may terminate this Lease.

11. Entries and Inspection. Consumers shall permit Lessor or Lessor's agents to enter upon the Premises, so long as accompanied by a Consumers' representative, at reasonable times and upon reasonable notice, for the purpose of inspecting the same, and will permit Lessor at any time within sixty (60) days prior to the expiration of this Lease to permit persons desiring to Lease the Premises to inspect same, thereafter, upon giving Consumers 24 hour notice in advance, so long as accompanied by a Consumers' representative.

12. Indemnification of Lessor. Consumers shall indemnify and hold Lessor harmless from and against any liability for death or injuries to persons or damage to personal property to the extent caused by Consumers' negligent or reckless use and occupancy of the Premises but such obligations shall in no event apply to any death, personal injury, or property damage arising from or related to (i) the building and its components and fixtures except those installed by or owned by Consumers; (ii) the obligations imposed on Lessor in this Lease; (iii) Lessor's right of entry onto the Premises as provided for in this Lease; or (iv) the negligence of intentional acts of the Lessor.

13. Insurance. Consumers represents that it now carries and agrees it will continue to carry during the term of this Lease, Excess Liability Insurance with minimum limits of $1,000,000 per occurrence and which covers bodily injury and property damage liability arising from its premises; operations; products; completed operations and includes contractual liability. Such coverage is and may continue to be subject to a self-insured retention consideration prudent and consistent with other utility companies of similar size and operation as Consumers.

14. Property Insurance. Lessor shall, at its sole cost and expense, during the Primary Term and any exercised Extended Term of this Lease carry insurance against fire, vandalism, malicious mischief and such other perils as are from time to time included in a standard extended coverage endorsement, insuring the improvements to Lessor's building and land in an amount determined solely by Lessor, but not less one hundred percent (100%) of the full replacement cost, if available, and with or without deductible, at the option of Lessor.

15. Waiver of Subrogation. Lessor and Consumers hereby remises, releases, and discharges the other and any director, officer, agent, employee or representative of such party from any and all liability whatsoever or responsibility arising from loss, damage, or injury by fire or other casualty for which the injured party carried insurance (permitting waiver of liability and containing waiver of subrogation) at the time of such loss, damage, or injury to the extent of any recovery by the insured party under such insurance.

16. Eminent Domain. If the Premises or any part thereof or any estate therein, or any other part of the building materially affecting Consumers' use of the Premises, shall be taken by eminent domain, this Lease shall terminate on the date when an order of taking is entered. The rent shall be apportioned as of the termination date, and any rent paid for any period beyond that date shall be repaid to Consumers. Lessor shall be entitled to all damages and compensation awarded for any taking under the power of eminent domain, but the Lessor shall not be entitled to the award made for Consumers' loss of business, taking of Consumers' leasehold interest, the removal of reinstallation of trade fixtures, or moving allowance.

17. Destruction of Premises. In the event of a partial destruction of the Premises, from any cause, during the Primary Term or any exercised Extended Term of this Lease which does not, in Consumers sole opinion, render the Premises substantially unusable for Consumers' purposes, Lessor shall forthwith repair the same, provided that such repairs can be made within sixty (60) days under existing governmental laws and regulations, but such partial destruction shall not terminate this Lease, except that Consumers shall be entitled to proportionate reduction of rent while such repairs are being made, based upon the extent to which the making of such repairs shall interfere with the business of Consumers on the Premises; provided, that if Lessor does not restore the Premises within said sixty (60) days, Consumers may terminate this Lease by giving written notice of termination to Lessor, which shall be immediately effective, in which event Lessor shall refund to Consumers any unearned rent paid in advance.

In the event of a partial or complete destruction of the Premises, from any cause, during the Primary Term or any exercised Extended Term of this Lease which does, in Consumers' sole opinion, render the Premises substantially unusable for Consumers' purposes, Consumers may terminate this Lease by giving written notice of termination to Lessor, which shall be immediately effective, in which event Lessor shall refund to Consumers any unearned rent paid in advance.

18. Lessor's Remedies on Default. If Consumers defaults in the payment of rent under this Lease and fails to cure its default within seven (7) days after written notice from Lessor to do so or fails to observe or perform any other obligations under this Lease and fails to cure its default within thirty (30) days of written notice from Lessor to do so (or if such default is of such nature that it cannot be completely cured within such period, if Consumers does not commence such curing within thirty (30) such days and thereafter proceed with reasonable diligence and in good faith to cure such default), then Lessor may terminate this Lease on not less than thirty (30) days' notice to Consumers. On the date specified in such notice this Lease shall cease and terminate and Consumers shall then quit and surrender the Premises to Lessor. If this Lease shall have been so terminated by Lessor, Lessor may at any time thereafter resume possession of the Premises by any lawful means and remove Consumers or other occupants and their effects.

19. Taxes. Lessor shall be responsible for paying all property taxes and assessments levied against the Premises and the real property on which the Premises is located. If Lessor fails to do so by the due date, Consumers may, at its option, pay any such taxes or assessments and deduct such payment from the rent due for the next month or months, as appropriate. Consumers shall pay any applicable taxes on its personal property at the Premises.

20. Waiver. No failure of Lessor to enforce any term hereof shall be deemed to be a waiver.

21. Notices. Any notice required or permitted to be given under the terms of this Lease shall be given in writing by certified or registered U. S. mail, return receipt requested, or by national overnight courier service (such as Federal Express or UPS):

If to Lessor: Law Properties, LLC
Attention: Dennis Law
2119 River St
Saginaw, MI 48601

If to Consumers: Consumers Energy Company
Attention: Operations Support – Real Estate
1945 W. Parnall Road
Jackson, Michigan 49201

or such other address as the party to whom such notice is to be given may specify from time to time to by notice to the other party. Notice sent by registered or certified U.S. mail, postage prepaid, return receipt requested, and properly addressed to the party as provided above, shall be deemed to have been given when mailed, as evidenced by the receipt of said mailing. Notices given by national overnight courier service and properly addressed to the applicable party provided above shall be deemed to have been given on the first business day after having been deposited with such courier service.

22. Signs. Consumers shall have the right to attach one sign on the exterior of the Landlord's Building with Consumers' logo and identifying the Premises. It is the sole responsibility of Consumers to ensure that any and all signage Consumers attaches to the exterior of the building is in compliance with local codes and ordinances.

23. Heirs, Assigns, Successors. This Lease is binding upon and inures to the benefit of, the parties hereto and each of their respective successors, representatives, heirs, and permitted assigns.

24. Quiet Enjoyment. Lessor covenants that if Consumers shall perform its obligations under this Lease, Consumers shall, during the Primary Term and any exercised Extended Term of this Lease, freely, peaceably, and quietly occupy and enjoy the full possession of the Premises.

25. Environmental. Lessor shall indemnify, hold Consumers harmless, and assume all liability for environmental contamination, in, on, under or emanating from Lessor's building and land, including the Premises, excepting only contamination resulting from a negligent release by Consumers. The provisions of this Section 25 will survive the term or any termination of this Lease.

26. Notice of Lease. Upon the execution of this Lease, each party shall execute, acknowledge and deliver to the other a recordable Notice of Lease substantially in the form of **Exhibit D**. Consumers may record this notice at any time, in its absolute discretion. Upon termination or expiration of this Lease, Consumers shall execute and record a "Notice of Termination of Lease" stating that its leasehold estate has terminated or expired.

27. Entire Agreement. This Lease constitutes the entire agreement of the parties hereto with respect to its subject matter. There are no agreements, representations, statements, or understandings which have been relied on by the parties which are not stated in this Lease. The terms of this Lease shall not be changed, superseded or supplemented except in writing signed by Lessor and Consumers.

28. Severability. If a court of competent jurisdiction determines any provision of this Lease is invalid or otherwise unenforceable, all of the remaining provisions shall remain in full force and effect, and Lessor and Consumers shall in good faith negotiate and mutually agree upon a replacement provision that mostly nearly accomplishes the intent and purpose of the provisions so found to be invalid or unenforceable while avoiding the reason by which such provision was found to be invalid or unenforceable.

29. Execution in Counterparts. This Lease may be executed in multiple counterparts, and all such counterparts once so executed shall together be deemed to constitute one final agreement, as if one document had been signed by both Lessor and Consumers, and each such counterpart, upon execution and delivery, shall be deemed a complete original, binding on both Lessor and Consumers. An email copy of an original signature shall be deemed to have the same force and effect as the original signature.

30. Choice of Law. This Lease shall be governed by, interpreted and construed under the laws of the State of Michigan.

31. Captions and Headings. The captions and headings herein are for convenience and reference only and shall not be used to construe or interpret this Lease.

32. Non-Binding Effect Prior to Signing. This Lease shall only become effective and binding only upon execution and delivery by both Lessor and Consumers.

33. Authority to Execute. Each person executing this Lease is fully authorized to execute this Lease on behalf of the party he or she represents.

IN WITNESS WHEREOF, Lessor and Consumers have caused this Lease to be executed by their duly authorized representatives.

LESSOR:	CONSUMERS:
Law Properties, LLC	Consumers Energy Company
By: [signature]	By: [signature]
Name: Dennis A. Law	Name: DARA L. JONES
Its: Member	Its: REAL ESTATE SUPERVISOR
Date: 7-13-2023	Date: 6/29/23

Exhibit A
Description of The Premises

Exhibit B
Consumers Improvements

As additional consideration for the lease, Consumers shall install the following items consistent with reasonable commercial building standards:

- new 100 amp electric
- new roof
- new heating/insulation

Exhibit C
Optional Consumers Improvements

Consumers is permitted to make the following improvements to the building at its sole cost and expense:

Various security infrastructure, including:

- An integrated Consumers Energy access control system
- Card readers and electronic strikes at all exterior swing doors
- Sensors at all exterior overhead doors
- Card readers, electronic strikes and locking hardware at selected interior doors
- Pan-Tilt-Zoom (PTZ) cameras at building exterior and interior
- Consumers Energy network infrastructure including associated routers, switches and cabling.
- Installation of door wall between Southwest corner of office 108 and Northern wall of warehouse TR1

Exhibit D

NOTICE OF LEASE

This document is recorded to give notice that on 7-13-23, Consumers Energy Company (Lessee), a Michigan Corporation, of One Energy Plaza, Jackson, Michigan 49201, has entered into a lease with Law Properties, LLC (Lessor), a Michigan limited liability company, of 1131Weiss Road, Bay City, MI 48706, to lease that certain building consisting of approximately 5,000 square feet, more or less, together with the parking area, land and land improvements adjacent to the building, and together with all rights and appurtenances belonging thereto, situated in City of Saginaw, County of Saginaw, State of Michigan, to-wit:

A PARCEL OF LAND IN N.E. 1/4 OF SEC. 35,T. 12 N.,R. 4 E.AND PART OF BLKS. 3 & 4 CURTIS & KINGS ADDITION TO THE VILLAGE OF SALINA,AND PART OF VACATED RIVER ST.LYING ADJACENT TO SAID BLK. 4,VIZ. BEG.AT THE INTERSECTION OF THE S'LY.LINE OF WEBBER ST.WITH THE W'LY.LINE OF RIVER ST.,THENCE W'LY.ALONG S'LY.LINE OF WEBBER ST. 238.06 FT.THENCE S. 1 DEG. 4 MIN. 56 SEC. W. 472.42 FT.,THENCE S. 89 DEG. 7 MIN. 34 SEC.E. 396.99 FT.TO W'LY LINE OF RIVER ST.,THENCE N'LY.ALONG W'LY.LINE OF RIVER ST.TO N'LY.LINE OF KETCHAM ST.,THENCE E'LY.ALONG SAID N'LY.ST.LINE TO CENTERLINE OF RIVER ST.,THENCE N'LY.ALONG SAID CENTERLINE TO A POINT,SAID POINT BEING 105.77 FT.S'LY.ASMEASURED ALONG SAID CENTERLINE FROM S'LY.LINE OF WEBBER ST.,THENCE N'LY. 06 DEG. 18 MIN. 44 SEC.W. 101.06 FT.TO S'LY.LINE OF WEBBER ST.,THENCE W'LY.ALONG S'LY LINE OF WEBBER ST.TO POINT OF BEGINNING.(ACT 198 OF 1974 IFT #11-9100 & #11-9600, 11-9130, 11-9560, 11-9650 11-9140

COMMONLY KNOWN AS: 2119 River Street, Saginaw, MI 48601
TAX PARCEL ID: 11 0043 00100

[REMAINDER OF PAGE INTENTIONALLY BLANK]
[SIGNATURES TO FOLLOW]

LESSOR
Law Properties, LLC

By: Dennis A. Law
Its: Member

LESSEE
Consumers Energy Company

By: TARA L. JONES
Its: REAL ESTATE SUPERVISOR

STATE OF MICHIGAN)
) ss.
COUNTY OF Saginaw)

The foregoing instrument was acknowledged before me in Saginaw County, Michigan, on 7-13-23, by Dennis A. Law of Law Properties, LLC, on behalf of the limited liability company.

STACIE L VANOCHTEN
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF BAY
My Commission Expires Jan. 16, 2025
Acting in the County of Saginaw

Stacie L. VanOchten

Notary Public for Bay County, Michigan
Acting in the County of Saginaw
My Commission Expires: January 16, 2025

STATE OF MICHIGAN)
) ss.
COUNTY OF Jackson)

The foregoing instrument was acknowledged before me in Jackson County, Michigan, on June 29, 2023, by Tara L. Jones of Consumers Energy Company, on behalf of the corporation. Real Estate Supervisor

Carrie J Main

Notary Public for _____ County, Michigan
Acting in the County of _____
My Commission Expires: _____

Carrie J Main
NOTARY PUBLIC - STATE OF MICHIGAN
County of Hillsdale
My Commission Expires January 6, 2029
Acting in the County of Jackson

Renovations

List of Projects and Capital Expenditures
Exhibit A-93 (QAG-13)

Consumers Energy
Count on Us®

Kalamazoo Service Center

Project Summary

Consumers Energy
Count on Us®

Kalamazoo Service Center – Health Assessment

Facility Assessment - Kalamazoo Service Center						
Location	Kalamazoo		Maximum Possible Points (80)	Servicable > 48 Points	Poor < 48 Points	Good > 64 Points
Zone	SWOM					
Safety						
Compatible Use	4		5	3	2	4
Site Conditions	5		5	3	2	4
Traffic/Site Flow	3		5	3	2	4
Environmental Hazard	0		5	3	2	4
Quality						
Branding	3		5	3	2	4
Workplace Efficiency	3		5	3	2	4
Years since last major systems upgrade	0		5	3	2	4
Cost						
Facility Operating Costs	5		5	3	2	4
Non Facility Cost Impact	4		5	3	2	4
Space Optimization	1		5	3	2	4
Delivery						
Drive Time	3		5	3	2	4
Customer Response	4		5	3	2	4
Sustainability	1		5	3	2	4
Morale						
Employee Pride	1		5	3	2	4
Retention	4		5	3	2	4
Wellness	5		5	3	2	4
Total	***46***		***80***	***48***	***32***	***64***

Kalamazoo Service Center – Health Assessment

Safety (20 Points)	Comments	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Compatible Use	Use of property is compatible with adjoining properties and surrounding area.	Industrial zoning and use	Residential use, retail use, criminal activity	Residential zoning, high crime area	Residential zoning	Mixed Commercial / Residential zoning	Commercial zoning for Service Centers, mixed Commercial / Industrial zoning for non-Service Centers	Industrial zoning for Service Centers, Commercial zoning for non-Service Centers	Industrial zoning for Service Centers, Central Business District zoning for non-Service Centers
Site Conditions	Physical condition of site	Full utilities, good paving, fencing, drainage	No utilities, poor paving, fencing, drainage	Site not adequate to support operational requirements, located in flood plain,	Site not adequate to support operational requirements	significant upgrades, such as storm water detention, fire water, potable water, sanitary sewer, paving, etc.	Site in serviceable condition with full utilities or good condition with partial utilities	Site in good condition, full utilities	Site in good condition with undeveloped space to accommodate future growth
Traffic/Site Flow	Road network, site access drive, vehicle turning space	Close to highway, access from two roads, space for truck trailer to pull off road, one way gates	Secondary road, no truck pull off space at gate, two way gates, insufficient turning space	Unimproved road frontage / site traffic flows crossing	Non Class A road frontage / Site heavy traffic and light traffic flows crossing	with impediments, railroad tracks, intersections, etc. / Site traffic flows crossing	Class A road frontage / Site traffic flows mixed	Class A road frontage with secondary frontage / Site traffic flows separated	with secondary frontage and nearby highway access / Site traffic flows separated
Environmental Hazard	Environmental hazards	LEED certification, no environmental hazards	Former MGP site, soil contamination, abandoned underground fuel tanks, abandoned transformer storage, asbestos fire proofing, asbestos duct wrap, asbestos pipe wrap, lead paint,	Immediate hazards to employees present during normal use of site	Hazardous materials present, with reoccurring or continuous exposure hazard, former MGP site, current 201 site	Hazardous materials present in manageable form, former MGP site, current 201 site	Hazardous materials present in manageable form	No environmental impacts, hazardous materials abated or encapsulated	LEED Certified facility with no environmental impacts

Quality (15 Points)	***Employee/Customer Engagement***	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Branding	Projects positive image to community and potential employees	Well cared for facility, curb appeal, neat landscaping, coordinated site signage	Dilapidated facility, dated appearance, overgrown landscaping, mismatched site signage	damaged or deteriorated structures, landscape materials overgrown or absent, failed pavement, etc.	Structures deteriorated, landscape materials overgrown or absent, failing paving, no signage	Structures poorly maintained, landscape materials overgrown or absent, poor signage	for, landscape materials in serviceable condition, uncoordinated signage	Structures well cared for, landscape materials in good condition, coordinated signage	New facility, landscape materials in good condition, coordinated signage
Workplace Efficiency	Space is fully utilized	Space provided for all operational functions, space size meets needs, proper inventory stored	Space not provided for all operational functions, space oversized, space not fully utilized, unused materials (junk) stored	Space inadequate for intended occupancy	Hard wall offices, empty or vacant spaces	Hard wall offices, fully utilized	Mix of hard wall offices and systems furniture, fully utilized	Modular systems furniture, fully utilized	Flexible, open and collaborative workspaces, modular systems furniture, fully utilized
Years since last major systems upgrade	Condition of facility is code compliant, building systems are within normal operational life cycle and supports working environment	New construction or recently completed full renovation	Building old and unrenovated or only minimal or partial renovation work completed	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade	initial construction or last major systems upgrade

Kalamazoo Service Center – Health Assessment

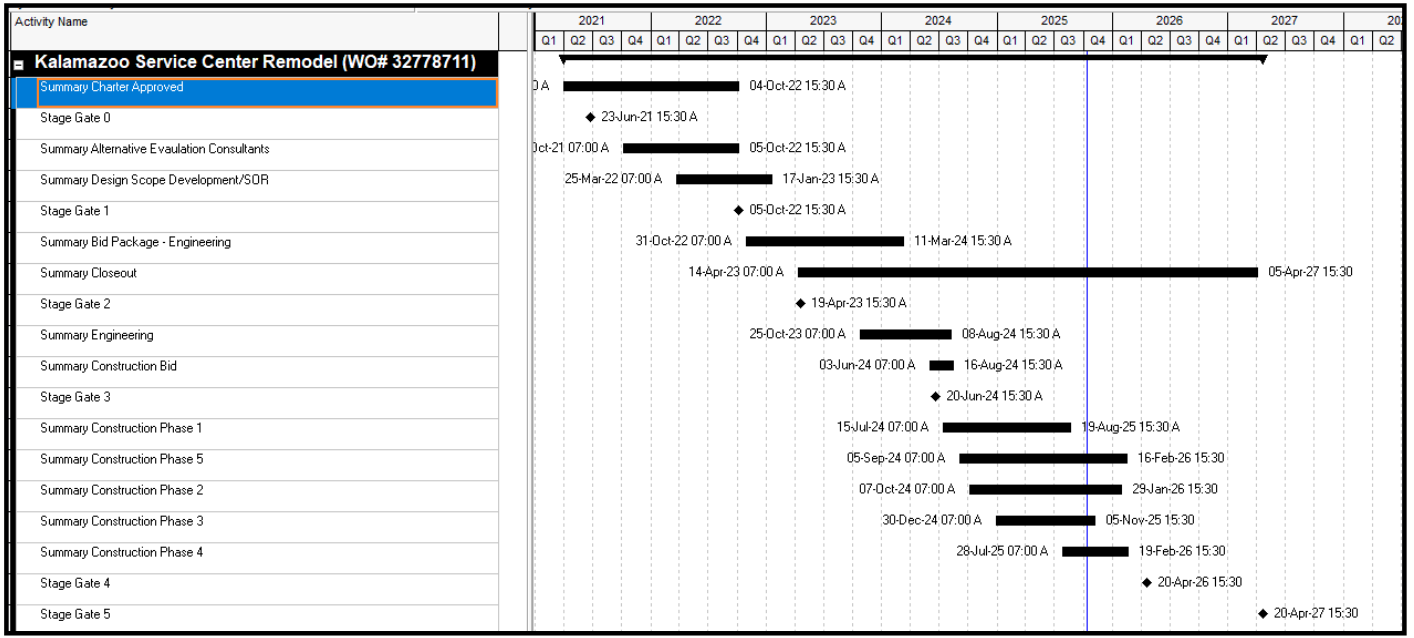
Cost (15 Points)	Pro		Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Facility Operating Costs	O&M costs to operate and maintain facility	Cost per square foot for facility less than statewide average cost per square foot ($5.31)	Cost per square foot for facility more than statewide average cost per square foot ($5.31)	costs greater than $10.00 per square foot	costs between $8.00 to $10.00 per square foot	costs between $7.25 to $7.99 per square foot	costs between $7.00 to $7.24 per square foot	costs between $5.75 to $6.99 per square foot	Combined operating costs less than $5.75 per square foot
Non Facility Cost Impact	O&M cost impacts to operations	Building correct size, centrally located within customer base area, able to accommodate necessary materials, able to maneuver onsite	Building too large, eccentrically located within customer base area, unable to accommodate necessary materials, difficult to maneuver onsite	Building eccentrically located within service territory, inadequate space	Building eccentrically located within service territory, underutilized space	Building eccentrically located within service territory	Building centrally located within service territory	Building accommodates operational needs, centrally located within service territory	Building accommodates operational need, space utilized efficiently, centrally located within service territory
Space Optimization	Reduce excess square footage	Space fully utilized, space utilized efficiently	Space under utilized, space utilized inefficiently, indoor parking area	Building vacant	Building partially occupied or partially vacant	Building occupied inefficiently, includes IPA	Building fully occupied, includes IPA	Building fully occupied, no IPA	occupied, no IPA, includes cold storage

Delivery (15 Points)	Customer Service	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Drive Time	Service territory area of proper size	Centrally located within service area(s), drive time balanced across territory and within targeted limits	Eccentrically located within service area(s), drive time unbalanced across territory and/or exceeds targeted limits	service territory and size of service territory allows drive time >1:20 Gas and >1:30 Electric	service territory and size of service territory allows drive time < 1:20 Gas and <1:30 Electric	service territory and size of service territory allows drive time < 1:10 Gas and <1:15 Electric	service territory and size of service territory allows drive time < 1:00 Gas and <1:00 Electric	service territory and size of service territory allows drive time < 0:50 Gas and <0:45 Electric	service territory and size of service territory allows drive time < 0:40 Gas and <0:30 Electric
Customer Response	Meets needs of customers	Customer response time metrics fall below targets	Customer response times exceed targets	response times meet target <90% of time, Electric CAIDI >215 minutes	response times meet target >90% of time, Electric CAIDI <215 minutes	response times meet target >95% of time, Electric CAIDI <195 minutes	response times meet target >97% of time, Electric CAIDI <180 minutes	response times meet target >98% of time, Electric CAIDI <165 minutes	response times meet target >99% of time, Electric CAIDI <150 minutes
Sustainability	Facility incroprates reduced energy utilization and minimizes environmental impact	Facility constructed in accordance with recent Energy Codes, includes onsite stormwater treatment, Green building certification	Facility constructed with no insulation, utilizes enegy intensive equipment, no onsite storm water treatment	Minimal roofing insulation	Upgraded roofing insulation	Upgraded roofing insulation and windows	Upgraded roofing insulation, windows and building envelope	insulation, windows, and building envelope with onsite storm water treatment	LEED Certified (or higher LEED rated) facility

Kalamazoo Service Center – Health Assessment

Morale (15 Points)	Employee Wellness	Pro	Con	Score 0 Does not satisfy criteria	Score 1 Does not satisfy most listed criteria	Score 2 Does not satisfy some listed criteria	Score 3 Satisfies minimal criteria	Score 4 Satisfies most listed criteria	Score 5 Satisfies all listed criteria
Employee Pride	Employees are engaged	Employee engagement scores > company average	Employee engagement scores < company average	Deteriorated facility	Deteriorated or dated facility with limited amenities	Dated facility with minimal amenities	Dated facility with full amenities and onsite parking	Modern facility with full amenities	Modern facility with full amenities, onsite parking
Retention	Facilities located in a desirable area, space is attractive to Millennials and supports millennial work styles	Downtown location, local amenities available, space supports varied work styles	Remote location, few local amenities, fixed work space	Remote location, no local amenities	some amenities available within 20 minutes driving distance	Remote location, amenities available within 20 minutes driving distance	Remote location, amenities available within 15 minutes driving distance	Diverse location, amenities available within 10 minutes driving distance	Diverse location, amenities available within walking distance
Wellness	Wellness facilities	Wellness room, space for trainer, drinking fountain, shower facilities nearby, space for wellness classes, well maintained exercise equipment, mirrors, lockers	Wellness room combined with non-compatible uses (i.e.: conference room), aged exercise equipment, poorly maintained exercise equipment, remote shower facilities	No shower, drinking fountain, Wellness or Nursing Mother Room, no additional space available	Shower and drinking fountain, no Wellness or Nursing Mother Room, no additional space available	Wellness Room or Nursing Mother Room, shower and drinking fountain, no additional space available	Nursing Mother Room, shower and drinking fountain, with space available to add Wellness or NMR	Wellness Room and Nursing Mother room, shower and drinking fountain, with space available for Trainer	Wellness room, Trainer room, Nursing Mother Room, shower and drinking fountain nearby

Kalamazoo Service Center – Project Schedule



Kalamazoo Service Center – Project Expenditures v. Rate Case U-20963 Allowance

KALAMAZOO SERVICE CENTER PROJECT SPEND ($)	2018 Total	2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Kalamazoo Service Center Case No. U-20963 Allowance	Total Project Forecast Spend Thru 9/30/25 to U20963 Allowance	Variance - Total Project Spend Thru 9/30/25 to U20963 Allowance	(%) U20963 Allowance Forecast Spend Thru 9/30/25
Electric Allocation	30,965	148,508	877	25,008	181,585	482,479	4,550,695	8,262,773	16,646,000	13,682,890	(2,963,110)	82%
Gas Allocation	25,998	125,289	741	21,191	152,887	407,048	3,811,479	6,937,324	14,056,000	11,481,957	(2,574,043)	82%
Total	56,963	273,797	1,618	46,199	334,472	889,527	8,362,174	15,200,097	30,702,000	25,164,847	(5,537,153)	82%

KALAMAZOO SERVICE CENTER PROJECT SPEND ($)	2018 Total	2019 Total	2020 Total	2021 Total	2022 Total	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Project Forecast Spend 10/1/25 Thru 12/31/25	Total Project Forecast Thru 12/31/25	Kalamazoo Service Center Case No. U-20963 Allowance	Total Project Forecast Spend Thru 12/31/25 to U20963 Allowance	(%) U20963 Allowance Forecast Spend Thru 12/31/25
Electric Allocation	30,965	148,508	877	25,008	181,585	482,479	4,550,695	8,262,773	1,282,794	14,965,684	16,646,000	(1,680,316)	90%
Gas Allocation	25,998	125,289	741	21,191	152,887	407,048	3,811,479	6,937,324	1,077,019	12,558,976	14,056,000	(1,497,024)	89%
Total	56,963	273,797	1,618	46,199	334,472	889,527	8,362,174	15,200,097	2,359,813	27,524,660	30,702,000	(3,177,340)	90%

Note: Cashflows shown do not include Cost of Removal (COR) totaling $2,460,301 included in the Kalamazoo Service Center – Project Cashflow visual, Page 9

Kalamazoo Service Center – Project Cashflow

Kalamazoo Major Systems Upgrade (FM-00155)							
	Budgetary Baseline	Previous Years Total	Actuals YTD 2025	Forecast 2025	Forecast 2026	Total Project Thru 9/30/25	Total Project
Engineering	$0	$1,092,500	$90,000	$32,000	$0	$1,182,500	$1,214,500
Procurement	$1,378,990	$1,224	$487,569	$192,966	$0	$488,793	$681,759
Construction	$28,980,401	$8,484,981	$14,621,845	$1,487,754	$3,357,517	$23,106,826	$27,952,097
Internal	$3,683,397	$1,368,164	$1,478,866	$647,093	$1,355,054	$2,847,030	$4,849,177
Contingency	$704,744	$0	$0	$0	$50,000	$0	$50,000
Unassigned	$0	$0	$0	$0	$0	$0	$0
Project Totals	$34,747,532	$10,946,868	$16,678,280	$2,359,813	$4,762,571	$27,625,148	$34,747,532

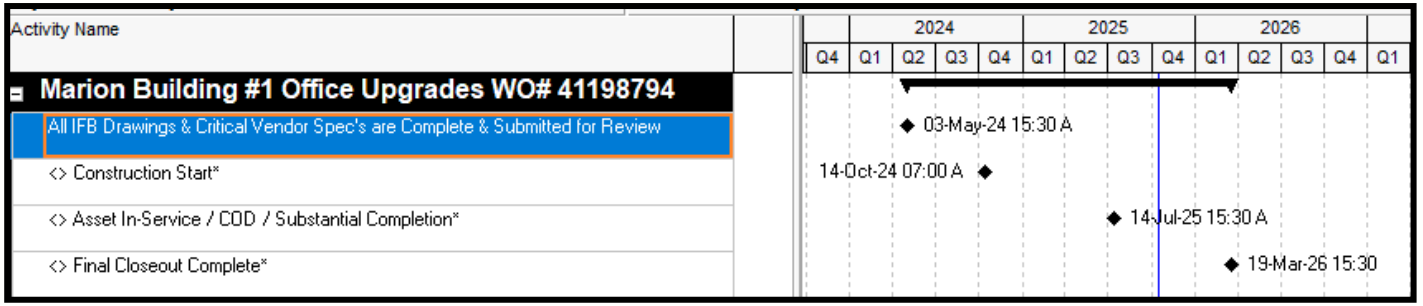
Note: Cashflow shown includes Cost of Removal (COR) totaling $2,460,301 not included in the Kalamazoo Service Center – Project Expenditures visual, Page 8

Marion Building Renovation

Project Summary

Consumers Energy
Count on Us®

Marion Building Renovation – Project Schedule



Marion Building Renovation – Project Expenditures

MARION BUILDING RENOVATION PROJECT SPEND ($)	2023 Total	2024 Total	2025 YTD Total Thru 9/30/25	Total Project Spend Thru 9/30/25
Gas Allocation	256,819	1,133,778	1,675,270	3,065,867
Total	256,819	1,133,778	1,675,270	3,065,867

Note: Cashflows shown do not include Cost of Removal (COR) totaling $498,797 included in the Marion Building Renovation – Project Cashflow visual, Page 13

Marion Building Renovation – Project Cashflow

MCS - BLDG #1(A) OFFICE RENOVATIONS ABATE (41198794)					
	Budgetary Baseline	Previous Years Total	Actuals YTD 2025	Forecast 2025	Actuals to-Date
Construction	$2,717,708	$1,206,112	$1,918,046	$0	$3,124,158
Engineering	$0	$0	$0	$0	$0
Procurement	$184,677	$0	$28,074	$0	$28,074
Internal	$518,220	$184,485	$227,947	$6,534	$412,433
Contingency	$146,637	$0	$0	$0	$0
Unassigned	$0	$0	$0	$0	$0
Project Totals	$3,567,243	$1,390,597	$2,174,067	$6,534	$3,564,664

Note: Cashflow shown includes Cost of Removal (COR) totaling $498,797 not included in the Marion Building Renovation – Project Expenditures visual, Page 12

Marion Building Renovation – ASHRE 90.1 Standard

13.	Energy Conservation (MUEC/ASHRAE 90.1)		
Climate Zone	5A		
		R–value (min)	U–factor (max)
Office	Roof – Metal Bldg.	R–19 + R–11 Ls	U–0.037
	Walls – Wd. Framed	R–13 + R–7.5 c.i.	U–0.051
	Walls – Metal Bldg.	R–0 + R–19 c.i.	U–0.050
Garage – Pre–Engineered Metal Building (Semi–heated)	Roof – Metal Bldg.	R–19	U–0.082
	Walls – Metal Bldg.	R–0 + R–9.8 c.i.	U–0.094
Slab on Grade – Unheated		R–15 for 24"	
Doors – Swinging			U–0.500
Doors – Non–swinging			U–0.500
Fenestration	Mtl. Framing (Fixed)	SHGC 0.40 (max)	VT 1.10

OEP 5 Refresh

Project Summary

Consumers Energy
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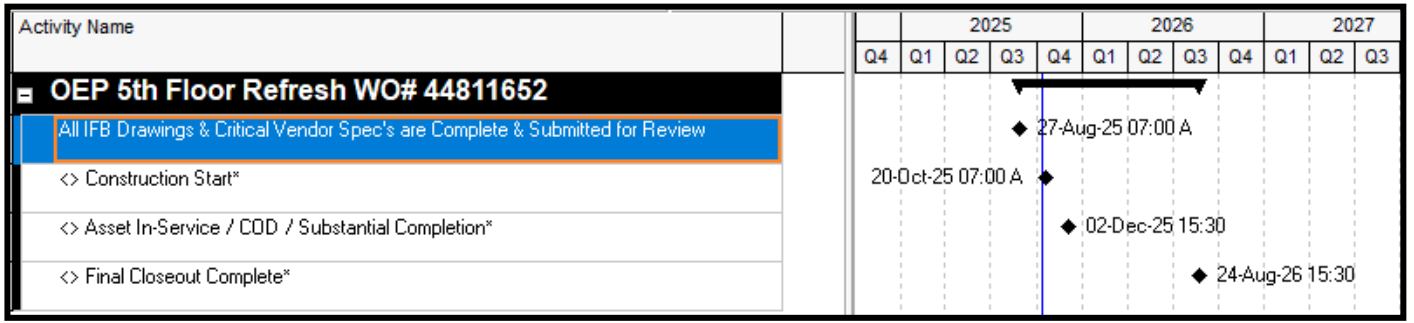
OEP 5 Refresh – Project Schedule



OEP 5 Refresh – Project Cashflows

OEP EP5 S4 FURNITURE & LIGHTS UPGRADES (44811652)						
	Budgetary Baseline	Previous Years Total	Actuals YTD 2025	Forecast 2025	Forecast 2026	Actuals Thru 9/30/25
Engineering	$0	$0	$0	$0	$0	$0
Procurement	$775,900	$0	$0	$750,000	$0	$0
Construction	$652,052	$0	$112,796	$654,628	$0	$112,796
Internal	$142,562	$0	$27,940	$75,340	$69,345	$27,940
Contingency	$77,093	$0	$0	$25,000	$0	$0
Unassigned	$0	$0	$0	$0	$0	$0
Project Totals	$1,647,607	$0	$140,736	$1,504,968	$69,345	$140,736

Note: Cashflow shown includes Cost of Removal (COR) totaling $12,688 included in the OEP 5 Refresh – Project Expenditures visual, Page 18

OEP 5 Refresh – Project Expenditures

OEP 5 REFRESH PROJECT SPEND ($)	2025 YTD Total Thru 9/30/25	Forecast Project Spend 10/1/25 Thru 12/31/25	Total Project Spend Thru 12/31/25
Gas Allocation	58,441	731,660	790,101
Electric Allocation	69,607	871,451	941,058
Total	128,048	1,603,111	1,731,159

Note: Cashflows shown do not include Cost of Removal (COR) totaling $12,688 included in the OEP 5 Refresh – Project Cashflow visual, Page 17

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KALAMAZOO CONSUMERS ENERGY MAJOR SYSTEMS UPGRADE - LEED O + M

CONSUMERS ENERGY

Kalamazoo, Michigan

ISSUED FOR BID

CONSTRUCTION DOCUMENTS

DESIGN TEAM

ARCHITECT/ENGINEER

TowerPinkster
Architecture · Engineering · Interiors

242 E. KALAMAZOO AVE, SUITE 100
KALAMAZOO, MICHIGAN 49007
PHONE: 269.343.6133
FAX: 269.343.6633

Scott Thompson
- Senior Project Manager

Judson Brood
- Senior Architectural Project Coordinator

Ryan Eversole
- Senior Structural Engineer

Ella Segur
- Senior Interior Designer

Bill Gallagher
- Senior Mechanical Designer

Ryan Schwartz
- Electrical Designer

Nathan Withers
- Senior Technology Designer

CONSTRUCTION MANAGER

CHRISTMAN SINCE 1894

801 BROADWAY AVE NW STE 300
GRAND RAPIDS, MI 50504
PHONE: 616.454.4454

John Gorman
- Senior Project Manager

Stephen Koster
- Assistant Project Manager

Lee DeZeeuw
- Project Superintendent

SITE ADDRESS

CONSUMERS ENERGY
2500 EAST CORK STREET
KALAMAZOO, MI 49001

REFERENCED CODES

BUILDING:	2015 MICHIGAN BUILDING CODE, 2015 MICHIGAN REHAB CODE AND 2012 NFPA 101 LIFE SAFETY CODE
ENERGY:	2015 MICHIGAN ENERGY CODE
PLUMBING:	2021 MICHIGAN PLUMBING CODE
MECHANICAL:	2021 MICHIGAN MECHANICAL CODE
FUEL GAS:	(IFGC) 2021 INTERNATIONAL FUEL GAS CODE
ELECTRICAL:	2023 NATIONAL ELECTRICAL CODE WITH MICHIGAN AMENDMENTS
BARRIER-FREE:	2015 MICHIGAN BUILDING CODE AND 2009 ICC & C A117.1
USE GROUP:	B & S-1
CONSTRUCTION TYPE:	IIB
AUTOMATIC SPRINKLERS:	YES

PROJECT AREA

EXISTING FIRST FLOOR AREA:	117,245 SQ. FT.
EXISTING SECOND FLOOR AREA:	28,050 SQ. FT.
EXISTING MEZZANINE AREAS:	1,515 SQ. FT.
TOTAL FINISHED PROJECT:	146,810 SQ. FT.

MICHIGAN REHAB CODE - LEVEL 2

ALTERNATES

1. BOOT WASH AREAS	- OFFICE	- BASE BID
2. WHITE BOX CEILING AREA	- OFFICE	- BASE BID
3. STOREFRONT SYSTEM & DOORS	- OFFICE MAIN ENTRANCE VESTIBULE	- BASE BID
4. AHU-19 FOR A&E SCHEDULING	- MAINTENANCE GARAGE	- BASE BID
5. BREAK ROOM CASEWORK	- MAINTENANCE GARAGE	

STATE OF MICHIGAN
SCOTT D. THOMPSON
NO. 6201050501
LICENSED PROFESSIONAL ENGINEER
5-31-2024

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD/JB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KD/JB	KH	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KD/JB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD/JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
COVER SHEET

SCALE:	DRAWING NUMBER	SHEET	REV
JOB: FM-00155-Tow	3084-KAL-SC01	G-001	D

22-133.010

DRAWING INDEX - ISSUED FOR 90% REVIEW

GENERAL			
G-001	COVER SHEET	ISSUED FOR BID	2024-05-31
G-002	DRAWING INDEX	ISSUED FOR BID	2024-05-31
G-003	ABBREVIATIONS, DEVICE ALIGNMENT	ISSUED FOR BID	2024-05-31
G-004	CODE REVIEW	ISSUED FOR BID	2024-05-31
G-101	FIRST FLOOR CODE COMPLIANCE PLAN	ISSUED FOR BID	2024-05-31
G-102	SECOND FLOOR CODE COMPLIANCE PLAN	ISSUED FOR BID	2024-05-31
G-111	FIRST FLOOR PHASING PLAN	ISSUED FOR BID	2024-05-31
G-112	SECOND FLOOR PHASING PLAN	ISSUED FOR BID	2024-05-31
G-113	OVERALL ROOF PHASING PLAN	ISSUED FOR BID	2024-05-31
CIVIL DEMOLITION			
C-100	SITE PLAN	ISSUED FOR BID	2024-05-31
STRUCTURAL GENERAL			
SG-001	STRUCTURAL GENERAL NOTES	ISSUED FOR BID	2024-05-31
SG-002	STATEMENT OF SPECIAL INSPECTIONS	ISSUED FOR BID	2024-05-31
SG-003	TYPICAL STRUCTURAL DETAILS	ISSUED FOR BID	2024-05-31
STRUCTURAL			
S-101A	FOUNDATION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
S-101B	FOUNDATION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
S-102B	ENLARGED PLANS	ISSUED FOR BID	2024-05-31
S-201A	SECOND FLOOR FRAMING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
S-201B	ROOF FRAMING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
S-201C	ROOF FRAMING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
S-202A	ROOF FRAMING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
S-301	FOUNDATION AND FRAMING DETAILS	ISSUED FOR BID	2024-05-31
ARCHITECTURAL GENERAL			
AG-001	GENERAL ARCHITECTURAL NOTES AND INTERIOR PARTITION TYPES	ISSUED FOR BID	2024-05-31
ARCHITECTURAL DEMOLITION			
AD-101	OVERALL FIRST FLOOR DEMOLITION PLAN	ISSUED FOR BID	2024-05-31
AD-101A	FIRST FLOOR DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
AD-101B	FIRST FLOOR DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
AD-101C	FIRST FLOOR DEMOLITION PLAN - UNIT C	ISSUED FOR BID	2024-05-31
AD-102A	SECOND FLOOR DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
AD-103	OVERALL ROOF DEMOLITION PLAN	ISSUED FOR BID	2024-05-31
AD-201	EXTERIOR DEMOLITION ELEVATIONS	ISSUED FOR BID	2024-05-31
AD-202	EXTERIOR DEMOLITION ELEVATIONS	ISSUED FOR BID	2024-05-31
ARCHITECTURAL			
A-101	OVERALL FIRST FLOOR PLAN	ISSUED FOR BID	2024-05-31
A-101A	FIRST FLOOR PLAN - UNIT A	ISSUED FOR BID	2024-05-31
A-101B	FIRST FLOOR PLAN - UNIT B	ISSUED FOR BID	2024-05-31
A-101C	FIRST FLOOR PLAN - UNIT C	ISSUED FOR BID	2024-05-31
A-102	OVERALL SECOND FLOOR PLAN	ISSUED FOR BID	2024-05-31
A-102A	SECOND FLOOR PLAN - UNIT A	ISSUED FOR BID	2024-05-31
A-103	OVERALL ROOF PLAN	ISSUED FOR BID	2024-05-31
A-103A	ROOF PLAN - UNIT A	ISSUED FOR BID	2024-05-31
A-103B	ROOF PLAN - UNIT B	ISSUED FOR BID	2024-05-31
A-111A	FIRST FLOOR REFLECTED CEILING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
A-111B	FIRST FLOOR REFLECTED CEILING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
A-111C	FIRST FLOOR REFLECTED CEILING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
A-112A	SECOND FLOOR REFLECTED CEILING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
A-201	EXTERIOR ELEVATIONS	ISSUED FOR BID	2024-05-31
A-202	EXTERIOR ELEVATIONS	ISSUED FOR BID	2024-05-31
A-311	WALL SECTIONS AND DETAILS	ISSUED FOR BID	2024-05-31
A-312	WALL SECTIONS AND DETAILS	ISSUED FOR BID	2024-05-31
A-313	WALL SECTIONS AND DETAILS	ISSUED FOR BID	2024-05-31
A-314	WALL SECTIONS AND DETAILS	ISSUED FOR BID	2024-05-31
A-315	ROOF DETAILS	ISSUED FOR BID	2024-05-31
A-401	ENLARGED TOILET ROOM AND LOCKER ROOM PLANS	ISSUED FOR BID	2024-05-31
A-402	TOILET ROOM, LOCKER ROOM, BARRIER-FREE DETAILS, TYP. MOUNTING HEIGHTS, ETC.	ISSUED FOR BID	2024-05-31
A-421	ENLARGED STAIR PLANS, STAIR SECTIONS AND DETAILS	ISSUED FOR BID	2024-05-31
A-422	ENLARGED ELEVATOR PLANS AND SECTIONS	ISSUED FOR BID	2024-05-31
A-501	PLAN DETAILS	ISSUED FOR BID	2024-05-31
A-601	DOOR SCHEDULES	ISSUED FOR BID	2024-05-31
A-602	DOOR SCHEDULES, DOOR AND FRAME ELEVATIONS, HEAD AND JAMB DETAILS	ISSUED FOR BID	2024-05-31
INTERIORS GENERAL			
IG-001	INTERIOR GENERAL NOTES AND MATERIAL SELECTION SCHEDULE	ISSUED FOR BID	2024-05-31
INTERIORS			
I-101A	FIRST FLOOR FINISH PLAN - UNIT A	ISSUED FOR BID	2024-05-31
I-101B	FIRST FLOOR FINISH PLAN - UNIT B	ISSUED FOR BID	2024-05-31
I-101C	FIRST FLOOR FINISH PLAN - UNIT C	ISSUED FOR BID	2024-05-31
I-102A	SECOND FLOOR FINISH PLAN - UNIT A	ISSUED FOR BID	2024-05-31
I-201	INTERIOR ELEVATIONS	ISSUED FOR BID	2024-05-31
I-401	ENLARGED FINISH PLANS, ELEVATIONS AND DETAILS	ISSUED FOR BID	2024-05-31
I-402	ENLARGED FINISH PLANS, ELEVATIONS AND DETAILS	ISSUED FOR BID	2024-05-31
I-421	ENLARGED STAIR FINISH PLANS AND DETAILS	ISSUED FOR BID	2024-05-31
MECHANICAL & PLUMBING GENERAL			
MG-001	MECHANICAL & PLUMBING GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS	ISSUED FOR BID	2024-05-31
PLUMBING DEMOLITION			
PD-100A	FOUNDATION PLUMBING DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
PD-100B	FOUNDATION PLUMBING DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
PD-101A	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
PD-101B	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
PD-101C	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT C	ISSUED FOR BID	2024-05-31
PD-102A	SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MECHANICAL DEMOLITION			
MD-101A	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MD-101B	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
MD-101C	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT C	ISSUED FOR BID	2024-05-31
MD-102A	SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MD-103	OVERALL ROOF MECHANICAL DEMOLITION PLAN	ISSUED FOR BID	2024-05-31
MD-103A	ROOF MECHANICAL DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MD-103B	ROOF MECHANICAL DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
MD-103C	ROOF MECHANICAL DEMOLITION PLAN - UNIT C	ISSUED FOR BID	2024-05-31
FIRE PROTECTION			
FP-101	OVERALL FIRST FLOOR FIRE PROTECTION PLAN	ISSUED FOR BID	2024-05-31
FP-102	SECOND FLOOR FIRE PROTECTION PLAN	ISSUED FOR BID	2024-05-31
PLUMBING			
P-100A	FOUNDATION PLUMBING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
P-100B	FOUNDATION PLUMBING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
P-101A	FIRST FLOOR PLUMBING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
P-101B	FIRST FLOOR PLUMBING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
P-101C	FIRST FLOOR PLUMBING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
P-102A	SECOND FLOOR PLUMBING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
P-103A	ROOF PLUMBING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
P-103B	ROOF PLUMBING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
P-103C	ROOF PLUMBING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
P-301	ENLARGED PLUMBING PLANS	ISSUED FOR BID	2024-05-31
P-401	PLUMBING RISER DIAGRAMS	ISSUED FOR BID	2024-05-31
P-501	PLUMBING SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
P-502	PLUMBING SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
MECHANICAL ZONING			
MZ-101A	FIRST FLOOR HVAC ZONING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MZ-101B	FIRST FLOOR HVAC ZONING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
MZ-101C	FIRST FLOOR HVAC ZONING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
MZ-102A	SECOND FLOOR HVAC ZONING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
MECHANICAL			
M-101A	FIRST FLOOR SHEET METAL PLAN - UNIT A	ISSUED FOR BID	2024-05-31
M-101B	FIRST FLOOR SHEET METAL PLAN - UNIT B	ISSUED FOR BID	2024-05-31
M-101C	FIRST FLOOR SHEET METAL PLAN - UNIT C	ISSUED FOR BID	2024-05-31
M-102A	SECOND FLOOR SHEET METAL PLAN - UNIT A	ISSUED FOR BID	2024-05-31
M-103	ROOF MECHANICAL PLAN - OVERALL	ISSUED FOR BID	2024-05-31
M-103A	ROOF MECHANICAL PLAN - UNIT A	ISSUED FOR BID	2024-05-31
M-103B	ROOF MECHANICAL PLAN - UNIT B	ISSUED FOR BID	2024-05-31
M-103C	ROOF MECHANICAL PLAN - UNIT C	ISSUED FOR BID	2024-05-31
M-201A	FIRST FLOOR HVAC PIPING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
M-201B	FIRST FLOOR HVAC PIPING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
M-202A	SECOND FLOOR HVAC PIPING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
M-301	ENLARGED MECHANICAL ROOM PLAN	ISSUED FOR BID	2024-05-31
M-401	HVAC PIPING SCHEMATICS	ISSUED FOR BID	2024-05-31
M-501	MECHANICAL SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
M-502	MECHANICAL SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
M-503	MECHANICAL SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
M-504	MECHANICAL SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
M-601	MECHANICAL CONTROLS	ISSUED FOR BID	2024-05-31
M-602	MECHANICAL CONTROLS	ISSUED FOR BID	2024-05-31
M-603	MECHANICAL CONTROLS	ISSUED FOR BID	2024-05-31
M-604	MECHANICAL CONTROLS	ISSUED FOR BID	2024-05-31
M-605	MECHANICAL CONTROLS	ISSUED FOR BID	2024-05-31
ELECTRICAL - GENERAL			
EG-001	ELECTRICAL SYMBOLS AND GENERAL NOTES	ISSUED FOR BID	2024-05-31
ELECTRICAL SITE			
ES-101	ELECTRICAL SITE PLAN	ISSUED FOR BID	2024-05-31
ELECTRICAL DEMOLITION			
ED-101A	FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
ED-101B	FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT B	ISSUED FOR BID	2024-05-31
ED-101C	FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT C	ISSUED FOR BID	2024-05-31
ED-102A	SECOND FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A	ISSUED FOR BID	2024-05-31
ED-150	ROOF ELECTRICAL DEMOLITION PLAN	ISSUED FOR BID	2024-05-31
ELECTRICAL			
E-101	OVERALL FIRST FLOOR POWER PLAN	ISSUED FOR BID	2024-05-31
E-101A	FIRST FLOOR POWER PLAN - UNIT A	ISSUED FOR BID	2024-05-31
E-101B	FIRST FLOOR POWER PLAN - UNIT B	ISSUED FOR BID	2024-05-31
E-101C	FIRST FLOOR POWER PLAN - UNIT C	ISSUED FOR BID	2024-05-31
E-102A	SECOND FLOOR POWER PLAN - UNIT A	ISSUED FOR BID	2024-05-31
E-150	OVERALL ROOF POWER PLAN	ISSUED FOR BID	2024-05-31
E-160	ENLARGED ELECTRICAL PLANS	ISSUED FOR BID	2024-05-31
E-201A	FIRST FLOOR LIGHTING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
E-201B	FIRST FLOOR LIGHTING PLAN - UNIT B	ISSUED FOR BID	2024-05-31
E-201C	FIRST FLOOR LIGHTING PLAN - UNIT C	ISSUED FOR BID	2024-05-31
E-202A	SECOND FLOOR LIGHTING PLAN - UNIT A	ISSUED FOR BID	2024-05-31
E-401	ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION	ISSUED FOR BID	2024-05-31
E-402	ELECTRICAL ONE-LINE DIAGRAM - NEW CONSTRUCTION	ISSUED FOR BID	2024-05-31
E-403	ELECTRICAL CONNECTION SCHEDULES	ISSUED FOR BID	2024-05-31
E-411	POWER DETAILS	ISSUED FOR BID	2024-05-31
E-421	LIGHTING SCHEDULES AND DETAILS	ISSUED FOR BID	2024-05-31
E-501	ELECTRICAL PANEL LOAD SHEETS	ISSUED FOR BID	2024-05-31
E-502	ELECTRICAL PANEL LOAD SHEETS	ISSUED FOR BID	2024-05-31
E-503	ELECTRICAL PANEL LOAD SHEETS	ISSUED FOR BID	2024-05-31
E-504	ELECTRICAL PANEL LOAD SHEETS	ISSUED FOR BID	2024-05-31
E-505	EXISTING ELECTRICAL PANEL LOAD SHEETS	ISSUED FOR BID	2024-05-31
TECHNOLOGY - GENERAL			
TG-001	TECHNOLOGY SYMBOLS AND GENERAL NOTES	ISSUED FOR BID	2024-05-31
TECHNOLOGY SITE			
TS-101	TECHNOLOGY SITE PLAN	ISSUED FOR BID	2024-05-31
TECHNOLOGY			
T-101	OVERALL FIRST FLOOR TECHNOLOGY PLAN	ISSUED FOR BID	2024-05-31
T-101A	FIRST FLOOR TECHNOLOGY PLAN - UNIT A	ISSUED FOR BID	2024-05-31
T-101B	FIRST FLOOR TECHNOLOGY PLAN - UNIT B	ISSUED FOR BID	2024-05-31
T-101C	FIRST FLOOR TECHNOLOGY PLAN - UNIT C	ISSUED FOR BID	2024-05-31
T-102	OVERALL SECOND FLOOR TECHNOLOGY PLAN	ISSUED FOR BID	2024-05-31
T-102A	SECOND FLOOR TECHNOLOGY PLAN - UNIT A	ISSUED FOR BID	2024-05-31
T-401	TELECOM ROOMS DETAILS	ISSUED FOR BID	2024-05-31
T-421	AV ROUGH-IN DETAILS	ISSUED FOR BID	2024-05-31
T-422	SOUND-MASKING DETAILS	ISSUED FOR BID	2024-05-31
T-441	ACCESS CONTROL DETAILS	ISSUED FOR BID	2024-05-31
T-442	ACCESS CONTROLLED DOOR ELEVATIONS	ISSUED FOR BID	2024-05-31
T-443	ACCESS CONTROLLED DOOR ELEVATIONS	ISSUED FOR BID	2024-05-31

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD/JB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KD/JB	KH	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KD/JB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD/JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE

NAME
SCOTT D. THOMPSON

MICHIGAN P.E. No.
6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
DRAWING INDEX

SCALE:
JOB: FM-00155-Tow

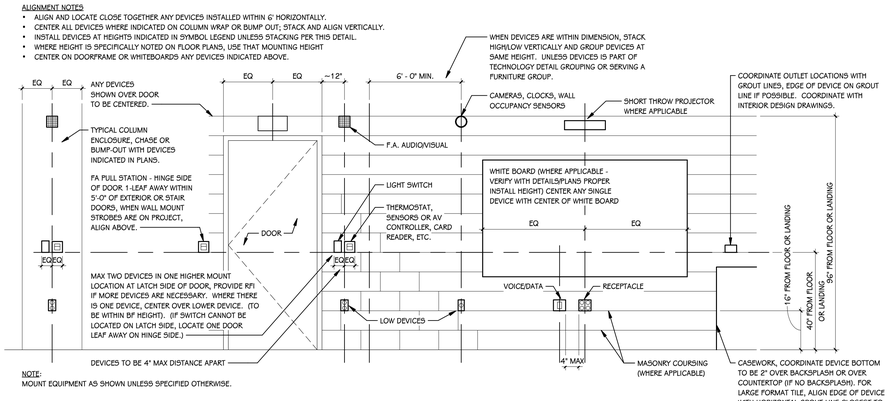
DRAWING NUMBER
3084-KAL-SC01

SHEET
G-002

REV
D

22-133.010

ALIGNMENT NOTES
- ALIGN AND LOCATE CLOSE TOGETHER ANY DEVICES INSTALLED WITHIN 6' HORIZONTALLY.
- CENTER ALL DEVICES WHERE INDICATED ON COLUMN WRAP OR BUMP OUT; STACK AND ALIGN VERTICALLY.
- INSTALL DEVICES AT HEIGHTS INDICATED IN SYMBOL LEGEND UNLESS STACKING PER THIS DETAIL.
- WHERE HEIGHT IS SPECIFICALLY NOTED ON FLOOR PLANS, USE THAT MOUNTING HEIGHT
- CENTER ON DOORFRAME OR WHITEBOARDS ANY DEVICES INDICATED ABOVE.



NOTE:
MOUNT EQUIPMENT AS SHOWN UNLESS SPECIFIED OTHERWISE.

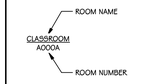
DEVICE ALIGNMENT GUIDELINES
SCALE: NONE

LIST OF ABBREVIATIONS

ACP	ACOUSTICAL CEILING PANEL
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
ANOD	ANODIZED
CFMF	COLD FORMED METAL FRAMING
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
DCMU	DECOTATIVE CONCRETE MASONRY UNIT
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FRT	FIRE RESISTANT TREATED
FV	FIELD VERIFY
GYP BD	GYPSUM BOARD
HM	HOLLOW METAL
LVL	LAMINATED VENEER LUMBER
MCM	METAL COMPOSITE MATERIAL WALL PANEL
OC	ON CENTER
PT	PRESERVATIVE TREATED
PNT	PAINT
SS	STAINLESS STEEL
SSM	SOLID SURFACE MATERIAL
TYP	TYPICAL
VIF	VERIFY IN FEILD
WD	WOOD

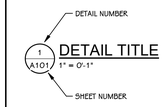
TYPICAL SYMBOLS & REFERENCES

ROOM IDENTIFICATION TAG

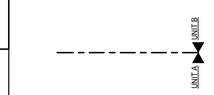


NOTE:
ROOM NAMES AND NUMBERS ON PLANS ARE FOR CONSTRUCTION PURPOSES ONLY. COORDINATE WITH OWNER REGARDING PROPOSED NUMBERS FOR ALL SIGNAGE, SCHEDULE AND PANEL DESIGNATIONS.

DETAIL TITLE

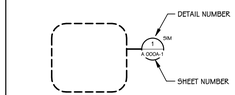


UNIT MATCHLINES

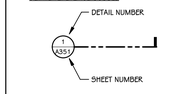


TYPICAL NOTATION SYMBOLS

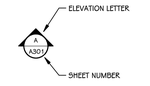
CALLOUT REFERENCE BUBBLE



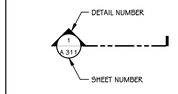
DETAIL REFERENCE BUBBLE



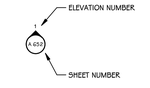
EXTERIOR ELEVATION REFERENCE BUBBLE



BUILDING SECTION REFERENCE BUBBLE



INTERIOR ELEVATION REFERENCE BUBBLE



ELEVATION AND SECTION REFERENCE TOOLS

ELEVATION TAG - EXISTING

ELEVATION TAG FOR EXTERIOR ELEVATIONS AND BUILDING SECTIONS

ELEVATION TAG FOR FLOOR PLANS AND REFLECTED CEILING PLANS

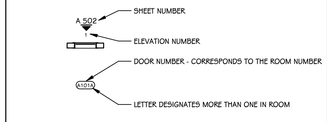
ELEVATION TAG - NEW

ELEVATION TAG FOR EXTERIOR ELEVATIONS AND BUILDING SECTIONS

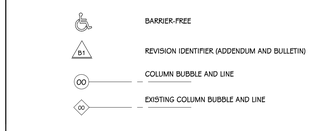
ELEVATION TAG FOR FLOOR PLANS AND REFLECTED CEILING PLANS

WORKING POINT LAYOUT TAG

BORROWED LIGHT AND DOOR IDENTIFICATION



SYMBOLS



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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-06-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KDJB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KDJB	KH	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KDJB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KDJB	KH	SDT	TP

SIGNATURE
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Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
ABBREVIATIONS, DEVICE ALIGNMENT

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	G-003	D

22-133.010

MICHIGAN BUILDING CODE

Chapter 3 Use and Occupancy Classificaton

Section 301 General

301.1 Scope
The provisions of this chapter shall control the classification of all buildings and structures as to use and occupancy.

302.1 General
Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed in this section. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code, such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved.

Section 304 Business Group B

304.1 Business Group B

Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory care facilities
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic, outpatient
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m2) in area.
- Laboratories: testing and research
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not in a school or academic program (this shall include, but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy).

Section 306 Factory Group F

306.1 Factory Industrial Group F

Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy.

306.2 Moderate-Hazard Factory Industrial, Group F-1
Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

- Automobiles and other motor vehicles
- Electronics
- Engines (including rebuilding)
- Machinery

Section 311 Storage Group S

Fire Station: Comm. Path of Egress Travel and Exit Acc. Travel Dist.

311.1 Storage Group S

Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.

311.2 Moderate-Hazard Storage, Group S-1
Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

- Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 307.1(1) (see Section 406.8)

311.3 Low-Hazard Storage, Group S-2

Storage Group S-2 occupancies include, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Group S-2 storage uses shall include, but not be limited to, storage of the following:

- Dry cell batteries
- Electrical coils
- Electrical motors
- Metal parts
- Metals

Chapter 6 Types of Construction

TABLE 1006.2.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A[f], E, M	49	75	75	75[a]
B	49	100	75	100[a]
F	49	75	75	100[a]
H-1, H-2, H-3	3	NP	NP	25[b]
H-4, H-5	10	NP	NP	75[b]
I-1, I-2[f], I-4	10	NP	NP	75[a]
I-3	10	NP	NP	100[a]
R-1	10	NP	NP	75[a]
R-2	10	NP	NP	125[a]
R-3[g]	10	NP	NP	125[a]
R-4[g]	10	75	75	125[a]
S[f]	29	100	75	100[a]
U	49	100	75	75[a]

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.

Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
Not less than the fire-resistance rating required by other sections of this code.
Not less than the fire-resistance rating based on fire separation distance (see Table 602).
Not less than the fire-resistance rating as referenced in Section 704.10.

602.2 Types I and II

Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

707.3.10 Fire Areas

The fire barriers or horizontal assemblies, or both, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 707.3.10. The fire barriers or horizontal assemblies, or both, separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 707.3.10 for the occupancies under consideration.

TABLE 707.3.10
FIRE-RESISTANCE RATING REQUIREMENTS FOR FIRE BARRIER ASSEMBLIES OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS

OCCUPANCY GROUP	FIRE-RESISTANCE RATING (hours)
H-1, H-2	4
F-1, H-3, S-1	3
A, B, E, F-2, H-4, H-5, I, M, R, S-2	2
U	1

1004.1 DESIGN OCCUPANT LOAD

In determining means of egress requirements, the number of occupants for whom means of egress facilities are provided shall be determined in accordance with this section.

1004.1.1 Cumulative Occupant Loads

Where the path of egress travel includes intervening rooms, areas or spaces, cumulative occupant loads shall be determined in accordance with this section.

1004.1.1.1 Intervening Spaces or Accessory Areas

Where occupants egress from one or more rooms, areas or spaces through others, the design occupant load shall be the combined occupant load of interconnected accessory or intervening spaces. Design of egress path capacity shall be based on the cumulative portion of occupant loads of all rooms, areas or spaces to that point along the path of egress travel.

1004.1.1.2 Adjacent Levels for Mezzanines

That portion of the occupant load of a mezzanine with required egress through a room, area or space on an adjacent level shall be added to the occupant load of that room, area or space.

1004.1.1.3 Adjacent Stories

Other than for the egress components designed for convergence in accordance with Section 1005.6, the occupant load from separate stories shall not be added.

1004.1.2 Areas Without Fixed Seating

The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table 1004.1.2. For areas without fixed seating, the occupant load shall be not less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.1.2. Where an intended function is not listed in Table 1004.1.2, the building official shall establish a function based on a listed function that most nearly resembles the intended function.

Exception: Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

TABLE 1004.1.2
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	FLOOR AREA IN SQ. FT. PER
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit Gallery and Museum	30 net
Assembly with fixed seats	See Section 1004.4
Assembly without fixed seats	
Concentrated (chairs only-not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	100 gross
Courtrooms-other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Locker rooms	15 gross
Exercise rooms	50 gross
H-5 Fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross
Mall buildings-covered and open	See Section 402.8.2
Locker rooms	50 gross
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Accessory storage areas, mechanical equipment room	300 gross
Warehouses	500 gross

For SI: 1 square foot = 0.0929 m².

1006.2 Egress From Spaces

Rooms, areas or spaces, including mezzannes, within a story or basement shall be provided with the number of exits or access to exits in accordance with this section.

1006.2.1 Egress Based on Occupant Load and Common Path of Egress Travel Distance
Two exits or exit access doorways from any space shall be provided where the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1.

Exceptions:

1. In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the common path of egress travel does not exceed 125 feet (38 100 mm).
2. Care suites in Group I-2 occupancies complying with Section 407.4.

TABLE 1006.2.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A[f], E, M	49	75	75	75[a]
B	49	100	75	100[a]
F	49	75	75	100[a]
H-1, H-2, H-3	3	NP	NP	25[b]
H-4, H-5	10	NP	NP	75[b]
I-1, I-2[f], I-4	10	NP	NP	75[a]
I-3	10	NP	NP	100[a]
R-1	10	NP	NP	75[a]
R-2	10	NP	NP	125[a]
R-3[g]	10	NP	NP	125[a]
R-4[g]	10	75	75	125[a]
S[f]	29	100	75	100[a]
U	49	100	75	75[a]

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
b. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.
c. For a room or space used for assembly purposes having fixed seating, see Section 1029.8.
d. For the travel distance limitations in Group I-2, see Section 407.4.
e. The length of common path of egress travel distance in a Group R-3 occupancy located in a mixed occupancy building or within a Group R-3 or R-4 congregate living facility.
f. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

Section 1007 Exit and Exit Access Doorway Configuration

1007.1 GENERAL

Exits, exit access doorways, and exit access stairways and ramps serving spaces, including individual building stories, shall be separated in accordance with the provisions of this section.

1007.1.1 TWO EXITS OR EXIT ACCESS DOORWAYS

Where two exits, exit access doorways, exit access stairways or ramps, or any combination thereof, are required from any portion of the exit access, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between them. Interlocking or scissor stairways shall be counted as one exit stairway.

Exceptions:
1. Where interior exit stairways or ramps are interconnected by a 1-hour fire-resistance-rated corridor conforming to the requirements of Section 1020, the required exit separation shall be measured along the shortest direct line of travel within the corridor.
2. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance shall be not less than one-third of the length of the maximum overall diagonal dimension of the area served.

1007.1.1.1 Measurement Point

The separation distance required in Section 1007.1.1 shall be measured in accordance with the following:
1. The separation distance to exit or exit access doorways shall be measured to any point along the width of the doorway.
2. The separation distance to exit access stairways shall be measured to the closest riser.
3. The separation distance to exit access ramps shall be measured to the start of the ramp run.

Section 1017 Exit Access Travel Distance

1017.1 GENERAL
Travel distance within the exit access portion of the means of egress system shall be in accordance with this section.

1017.2 Limitations

Exit access travel distance shall not exceed the values given in Table 1017.2.

TABLE 1017.2
EXIT ACCESS TRAVEL DISTANCE[a]

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250[b]
I-1	Not Permitted	250[b]
B	200	300[c]
F-2, S-2, U	300	400[c]
H-1	Not Permitted	75[d]
H-2	Not Permitted	100[d]
H-3	Not Permitted	150[d]
H-4	Not Permitted	175[d]
H-5	Not Permitted	200[c]
I-2, I-3, I-4	Not Permitted	200[c]

For SI: 1 foot = 304.8 mm.

a. See the following sections for modifications to exit access travel distance requirements: Section 1006.2.2.2: For the distance limitation in refrigeration machinery rooms. Section 1006.2.2.3: For the distance limitation in refrigerated rooms and spaces. Section 1006.3.2: For buildings with one exit. Section 1017.2.2: For increased distance limitation in Groups F-1 and S-1. Section 1029.7: For increased limitation in assembly seating.

b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1017.2.2 Group F-1 and S-1 Increase

The maximum exit access travel distance shall be 400 feet (122 m) in Group F-1 or S-1 occupancies where all of the following conditions are met:

1. The portion of the building classified as Group F-1 or S-1 is limited to one story in height.

2. The minimum height from the finished floor to the bottom of the ceiling or roof slab or deck is 24 feet (7315 mm).

3. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

MICHIGAN REHAB. CODE

Section 504 Alteration-Level 2

504.1 Scope
Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

504.2 Application
Level 2 alterations shall comply with the provisions of Chapter 7 for Level 1 alterations as well as the provisions of Chapter 8.

MICHIGAN PLUMBING CODE

Section 403 Minimum Plumbing Facilities

403.1 Minimum Number of Fixtures

Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 403.1. Types of occupancies not shown in Table 403.1 shall be considered individually by the code official. The number of occupants shall be determined in accordance with the Michigan building code. Occupancy classification shall be determined in accordance with the Michigan building code.

Exceptions:

1. The actual number of occupants determined by a supporting affidavit from the owner or agency.
2. NA
3. NA
4. NA
5. NA

Table 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES[a] (See Sections 403.1.1 and 403.2)

NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS[e] (SEE SECTION 410.1)	OTHER
				MALE	FEMALE	MALE	FEMALE			
2	Business	B	Buildings for the transaction of business, professional services, other services involving merchandise, offices, buildings, banks, light industrial, and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink[d]
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembling, or processing of products or materials	1 per 100		1 per 100		(see Section 411)	1 per 400	1 service sink
8	Storage	S	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and Moderate Hazard.	1 per 100	1 per 100		—	1 per 1,000	1 service sink	

a. The fixtures shown are based on 1 fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the International Building Code.
b. NA
c. NA
d. NA
e. The minimum number of required drinking fountains shall comply with Table 403.1 and Chapter 11 of the International Building Code.
f. NA
g. NA
h. NA
i. NA

PLUMBING FIXTURE COUNTS:

TOTAL BUILDING OCCUPANCY = 1,062

CLASSIFICATION:

	PROVIDED	REQUIRED
BUSINESS - GROUP B UNIT A		
OCCUPANCY = 794 / 2 = 397		
MALE		
• WATER CLOSETS	= 13	9
• URINALS	= 12	-
• LAVATORIES	= 9	5
FEMALE		
• WATER CLOSETS	= 16	9
• LAVATORIES	= 9	5
SINGLE TOILET ROOMS		
• WATER CLOSETS	= 2	-
• LAVATORIES	= 2	-
OTHER		
• DRINKING FOUNTAINS	= 7	7
• SERVICE SINKS	= 2	1
MODERATE-HAZARD FACTORY INDUSTRIAL - GROUP F-1 UNIT B		
OCCUPANCY = 167 / 2 = 83.5		
MALE		
• WATER CLOSETS	= 0	1
• URINALS	= 0	-
• LAVATORIES	= 0	1
FEMALE		
• WATER CLOSETS	= 0	1
• LAVATORIES	= 0	1
SINGLE TOILET ROOMS		
• WATER CLOSETS	= 0	-
• LAVATORIES	= 0	-
OTHER		
• DRINKING FOUNTAINS	= 0	1
• SERVICE SINK	= 0	1
MODERATE -HAZARD STORAGE - UNIT C ; GROUP S-1 & S-2 UNIT C		
OCCUPANCY = 101 / 2 = 50.5		
MALE		
• WATER CLOSETS	= 0	1
• URINALS	= 0	-
• LAVATORIES	= 0	1
FEMALE		
• WATER CLOSETS	= 0	1
• LAVATORIES	= 0	1
SINGLE TOILET ROOMS		
• WATER CLOSETS	= 4	-
• LAVATORIES	= 4	-
OTHER		
• DRINKING FOUNTAINS	= 1	1
• SERVICE SINK	= 1	1
TOTALS		
• MALE WATER CLOSETS	= 13	11
• MALE URINALS	= 12	-
• FEMALE WATER CLOSETS	= 16	11
• SINGLE T.R. WATER CLOSETS	= 6	-
• TOTAL WATER CLOSETS / URINALS	= 47	
• MALE WATER LAVATORIES	= 9	7
• FEMALE WATER LAVATORIES	= 9	7
• SINGLE T.R. LAVATORIES	= 6	-
• TOTAL LAVATORIES	= 24	
• TOTAL DRINKING FOUNTAINS	= 8	9
• TOTAL SERVICE SINKS	= 3	3

REFERENCED CODES

BUILDING:	2015 MICHIGAN BUILDING CODE, 2015 MICHIGAN REHAB CODE AND 2012 NFPA 101 LIFE SAFETY CODE
ENERGY:	2015 MICHIGAN ENERGY CODE
PLUMBING:	2021 MICHIGAN PLUMBING CODE
MECHANICAL:	2021 MICHIGAN MECHANICAL CODE
FUEL GAS:	(IFGC) 2021 INTERNATIONAL FUEL GAS CODE
ELECTRICAL:	2023 NATIONAL ELECTRICAL CODE WITH MICHIGAN AMENDMENTS
BARRIER-FREE:	2015 MICHIGAN BUILDING CODE AND 2009 ICC & C A117.1
USE GROUP:	B & S-1
CONSTRUCTION TYPE:	IIB
AUTOMATIC SPRINKLERS:	YES

PROJECT AREA

EXISTING FIRST FLOOR AREA:	117,245 SQ. FT.
EXISTING SECOND FLOOR AREA:	28,050 SQ. FT.
EXISTING MEZZANINE AREAS:	1,515 SQ. FT.
TOTAL FINISHED PROJECT: MICHIGAN REHAB CODE - LEVEL 2	146,810 SQ. FT.

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KDJB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KDJB	KH	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KDJB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KDJB	KH	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy

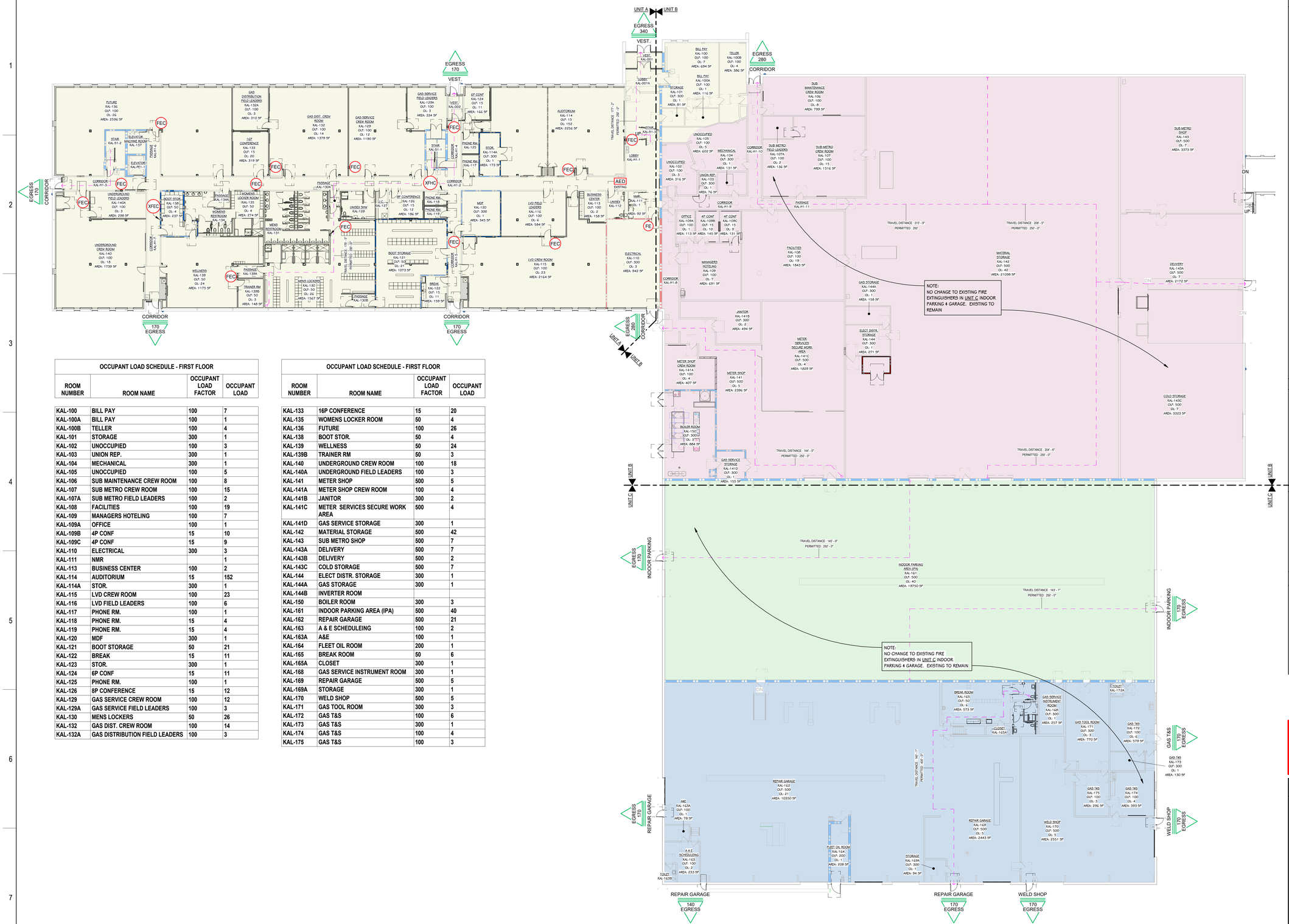
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
CODE REVIEW

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: G-004
REV: D

22-133.010


UNIT A
UNIT B
UNIT C
EGRESS 340
VEST.
EGRESS 170
EGRESS 280
CORRIDOR
LOBBY KAL-001A
BILL PAY KAL-100 OUT: 100 OL: 7 AREA: 694 SF
TELLER KAL-100B OUT: 100 OL: 4 AREA: 386 SF
BILL PAY KAL-100A OUT: 100 OL: 1 AREA: 116 SF
STORAGE KAL-101 OUT: 300 OL: 1 AREA: 81 SF
SUB MAINTENANCE CREW ROOM KAL-106 OUT: 100 OL: 8 AREA: 799 SF
UNOCCUPIED KAL-105 OUT: 100 OL: 5 AREA: 602 SF
UNOCCUPIED KAL-102 OUT: 100 OL: 4 AREA: 316 SF
MECHANICAL KAL-104 OUT: 300 OL: 1 AREA: 131 SF
SUB METRO FIELD LEADERS KAL-107A OUT: 100 OL: 2 AREA: 136 SF
SUB METRO CREW ROOM KAL-107 OUT: 100 OL: 15 AREA: 1516 SF
SUB METRO SHOP KAL-143 OUT: 500 OL: 7 AREA: 3373 SF
UNION REP. KAL-103 OUT: 300 OL: 1 AREA: 76 SF
OFFICE KAL-109A OUT: 100 OL: 1 AREA: 113 SF
4F CONF KAL-109B OUT: 13 OL: 10 AREA: 145 SF
4F CONF KAL-109C OUT: 15 OL: 9 AREA: 131 SF
FACILITIES KAL-108 OUT: 100 OL: 19 AREA: 1643 SF
MANAGERS HOTELING KAL-109 OUT: 100 OL: 7 AREA: 691 SF
MATERIAL STORAGE KAL-142 OUT: 500 OL: 42 AREA: 21098 SF
DELIVERY KAL-143A OUT: 500 OL: 7 AREA: 2172 SF
GAS STORAGE KAL-144A OUT: 300 OL: 1 AREA: 158 SF
JANITOR KAL-141B OUT: 300 OL: 2 AREA: 494 SF
METER SERVICES SECURE WORK AREA KAL-141C OUT: 500 OL: 4 AREA: 1823 SF
ELECT DISTR. STORAGE KAL-144 OUT: 300 OL: 1 AREA: 271 SF
METER SHOP CREW ROOM KAL-141A OUT: 100 OL: 4 AREA: 407 SF
METER SHOP KAL-141 OUT: 500 OL: 5 AREA: 2306 SF
COLD STORAGE KAL-143C OUT: 500 OL: 7 AREA: 3323 SF
BOILER ROOM KAL-150 OUT: 300 OL: 3 AREA: 884 SF
GAS SERVICE STORAGE KAL-141C OUT: 500 OL: 1 AREA: 155 SF
TRAVEL DISTANCE 210' -9" PERMITTED: 250'
TRAVEL DISTANCE 208' -5" PERMITTED: 250' -0"
TRAVEL DISTANCE 164' -5" PERMITTED: 250' -0"
TRAVEL DISTANCE 204' -6" PERMITTED: 250' -0"
TRAVEL DISTANCE 145' -9" PERMITTED: 250' -0"
TRAVEL DISTANCE 167' -1" PERMITTED: 250' -0"
NOTE: NO CHANGE TO EXISTING FIRE EXTINGUISHERS IN UNIT C INDOOR PARKING 4 GARAGE. EXISTING TO REMAIN
INDOOR PARKING AREA (IPA) KAL-161 OUT: 500 OL: 40 AREA: 19750 SF
INDOOR PARKING 170 EGRESS
NOTE: NO CHANGE TO EXISTING FIRE EXTINGUISHERS IN UNIT C INDOOR PARKING 4 GARAGE. EXISTING TO REMAIN
BREAK ROOM KAL-165 OUT: 50 OL: 6 AREA: 573 SF
GAS SERVICE INSTRUMENT ROOM KAL-168 OUT: 300 OL: 1 AREA: 257 SF
CLOSET KAL-165A
TOILET KAL-172A
GAS TOOL ROOM KAL-171 OUT: 300 OL: 3 AREA: 770 SF
GAS T&S KAL-172 OUT: 100 OL: 6 AREA: 579 SF
GAS T&S KAL-173 OUT: 300 OL: 1 AREA: 130 SF
GAS T&S 170 EGRESS
REPAIR GARAGE KAL-162 OUT: 500 OL: 21 AREA: 10350 SF
A/C KAL-163A OUT: 100 OL: 1 AREA: 78 SF
A & E SCHEDULING KAL-163 OUT: 100 OL: 2 AREA: 233 SF
TOILET KAL-163B
FLEET OIL ROOM KAL-164 OUT: 200 OL: 1 AREA: 208 SF
STORAGE KAL-163A OUT: 300 OL: 1 AREA: 84 SF
REPAIR GARAGE KAL-163 OUT: 500 OL: 5 AREA: 2443 SF
WELD SHOP KAL-170 OUT: 500 OL: 5 AREA: 2551 SF
GAS T&S KAL-175 OUT: 100 OL: 3 AREA: 296 SF
GAS T&S KAL-174 OUT: 100 OL: 4 AREA: 393 SF
WELD SHOP 170 EGRESS
REPAIR GARAGE 140 EGRESS
REPAIR GARAGE 170 EGRESS
WELD SHOP 170 EGRESS
FUTURE KAL-136 OUT: 100 OL: 26 AREA: 2596 SF
GAS DISTRIBUTION FIELD LEADERS KAL-132A OUT: 100 OL: 3 AREA: 310 SF
GAS DIST. CREW ROOM KAL-132 OUT: 100 OL: 14 AREA: 1379 SF
GAS SERVICE CREW ROOM KAL-129 OUT: 100 OL: 12 AREA: 1190 SF
GAS SERVICE FIELD LEADERS KAL-129A OUT: 100 OL: 3 AREA: 334 SF
AUDITORIUM KAL-114 OUT: 15 OL: 152 AREA: 2254 SF
6F CONF KAL-124 OUT: 13 OL: 11 AREA: 142 SF
STOR. KAL-144 OUT: 300 OL: 1 AREA: 173 SF
PHONE RM. KAL-117
PHONE RM. KAL-118
PHONE RM. KAL-119
MDF KAL-120 OUT: 300 OL: 1 AREA: 345 SF
LVD FIELD LEADERS KAL-116 OUT: 100 OL: 6 AREA: 584 SF
LVD CREW ROOM KAL-115 OUT: 100 OL: 23 AREA: 2164 SF
BUSINESS CENTER KAL-113 OUT: 100 OL: 2 AREA: 158 SF
NMR KAL-111 AREA: 92 SF
UNISEX KAL-112
ELECTRICAL KAL-110 OUT: 300 OL: 3 AREA: 942 SF
16P CONFERENCE KAL-126 OUT: 15 OL: 12 AREA: 182 SF
UNISEX SHW KAL-126
I.C. KAL-127
BOOT STORAGE KAL-121 OUT: 50 OL: 21 AREA: 1073 SF
BREAK KAL-122 OUT: 15 OL: 11 AREA: 158 SF
MENS LOCKERS KAL-130 OUT: 50 OL: 26 AREA: 1567 SF
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PASSAGE KAL-130ADW
PASSAGE KAL-130ADX
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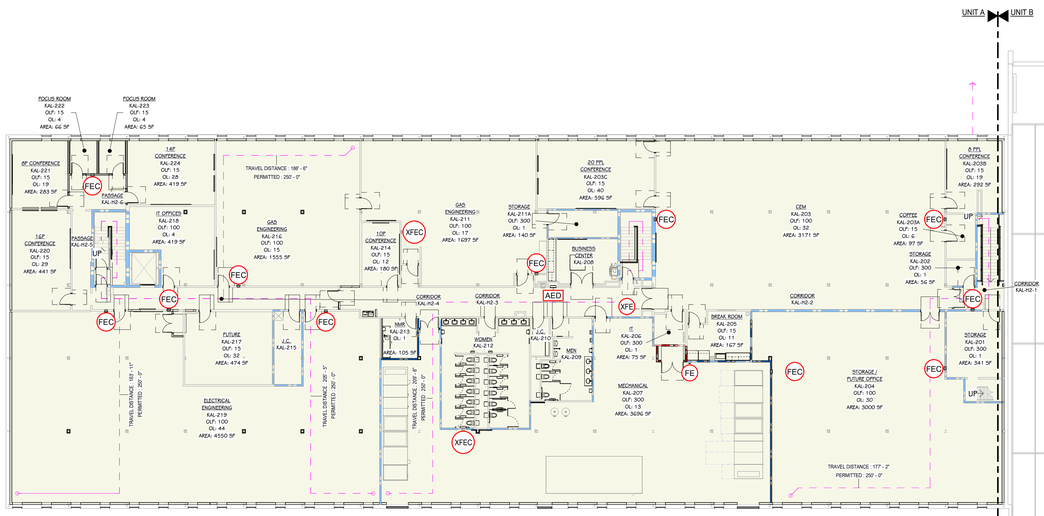
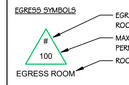
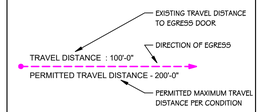


OCCUPANT LOAD SCHEDULE - SECOND FLOOR			
ROOM NUMBER	ROOM NAME	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
KAL-201	STORAGE	300	1
KAL-202	STORAGE	300	1
KAL-203	CEM	100	32
KAL-203A	COFFEE	15	6
KAL-203B	8 PPL CONFERENCE	15	19
KAL-203C	20 PPL CONFERENCE	15	40
KAL-204	STORAGE / FUTURE OFFICE	100	30
KAL-205	BREAK ROOM	15	11
KAL-206	IT	300	1
KAL-207	MECHANICAL	300	13
KAL-208	BUSINESS CENTER	100	2
KAL-211	GAS ENGINEERING	100	17
KAL-211A	STORAGE	300	1
KAL-213	NMR		1
KAL-214	10P CONFERENCE	15	12
KAL-216	GAS ENGINEERING	100	15
KAL-217	FUTURE	15	32
KAL-218	IT OFFICES	100	4
KAL-219	ELECTRICAL ENGINEERING	100	44
KAL-220	16P CONFERENCE	15	29
KAL-221	8P CONFERENCE	15	19
KAL-222	FOCUS ROOM	15	4
KAL-223	FOCUS ROOM	15	4
KAL-224	14P CONFERENCE	15	28

CODE COMPLIANCE KEY

EGRESS SYMBOLS





FIRE SAFETY SYMBOLS

XFE	EXISTING FIRE EXTINGUISHER
XFEC	EXISTING FIRE EXTINGUISHER CABINET
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
AED	AUTOMATED EXTERNAL DEFIBRILLATOR (AED) RECESSED CABINET. - AED BY PROVIDED BY OWNER

GENERAL

OLF	OCCUPANT LOAD FACTOR
OL	OCCUPANT LOAD
	BUSINESS GROUP B
	MODERATE-HAZARD FACTORY INDUSTRIAL, GROUP F-1
	MODERATE-HAZARD STORAGE, GROUP S-1
	MODERATE-HAZARD STORAGE, GROUP S-2

CODE REQUIRED INTERIOR SIGNAGE - INCLUDES MINIMUM REQUIRED SIGN TYPES REQUIRED FOR OCCUPANCY AS DICTATED BY IBC, IFC, AND NFPA. COORDINATE WITH ANY OWNER-PROVIDED SIGNAGE.

FIRE-RATING KEY

PRIORITY

COORDINATE ALL REQUIRED DAMPERS WITH MECHANICAL. 1

DESIGNATION	RATING	
		2
	3 HOUR	
		3
	2 HOUR	
		4
	1 HOUR	
	SMOKE RESISTANT	

1. ALL PENETRATIONS THROUGH A FIRE OR SMOKE RATED PARTITION SHOULD BE SEALED WITH AN APPROVED U.L. RATED PRODUCT.

2. THE TOPS OF ALL FIRE RATED PARTITIONS SHALL BE SEALED TO THE CONTINUOUS STRUCTURE ABOVE WITH A U.L. RATED SYSTEM OR ASSEMBLY.

3. WOOD BLOCKING IN FIRE-RATED PARTITIONS SHALL BE NON-COMBUSTIBLE TREATED WOOD.

4. REFER TO SPECIFICATION U.L. RATING INFORMATION.

OCCUPANT LOAD

TOTAL OCCUPANT LOAD = 1,034

BUSINESS : GROUP B

- OCCUPANCY = 766

MODERATE-HAZARD FACTORY INDUSTRIAL : GROUP F-1

- OCCUPANCY = 167

MODERATE -HAZARD STORAGE - UNIT C : GROUP S-1 & S-2

- OCCUPANCY = 101

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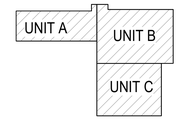
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

SECOND FLOOR CODE COMPLIANCE PLAN
1/16" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD/JB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KD/JB	KH	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD/JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
SECOND FLOOR CODE COMPLIANCE PLAN

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	G-102	D

22-133.010

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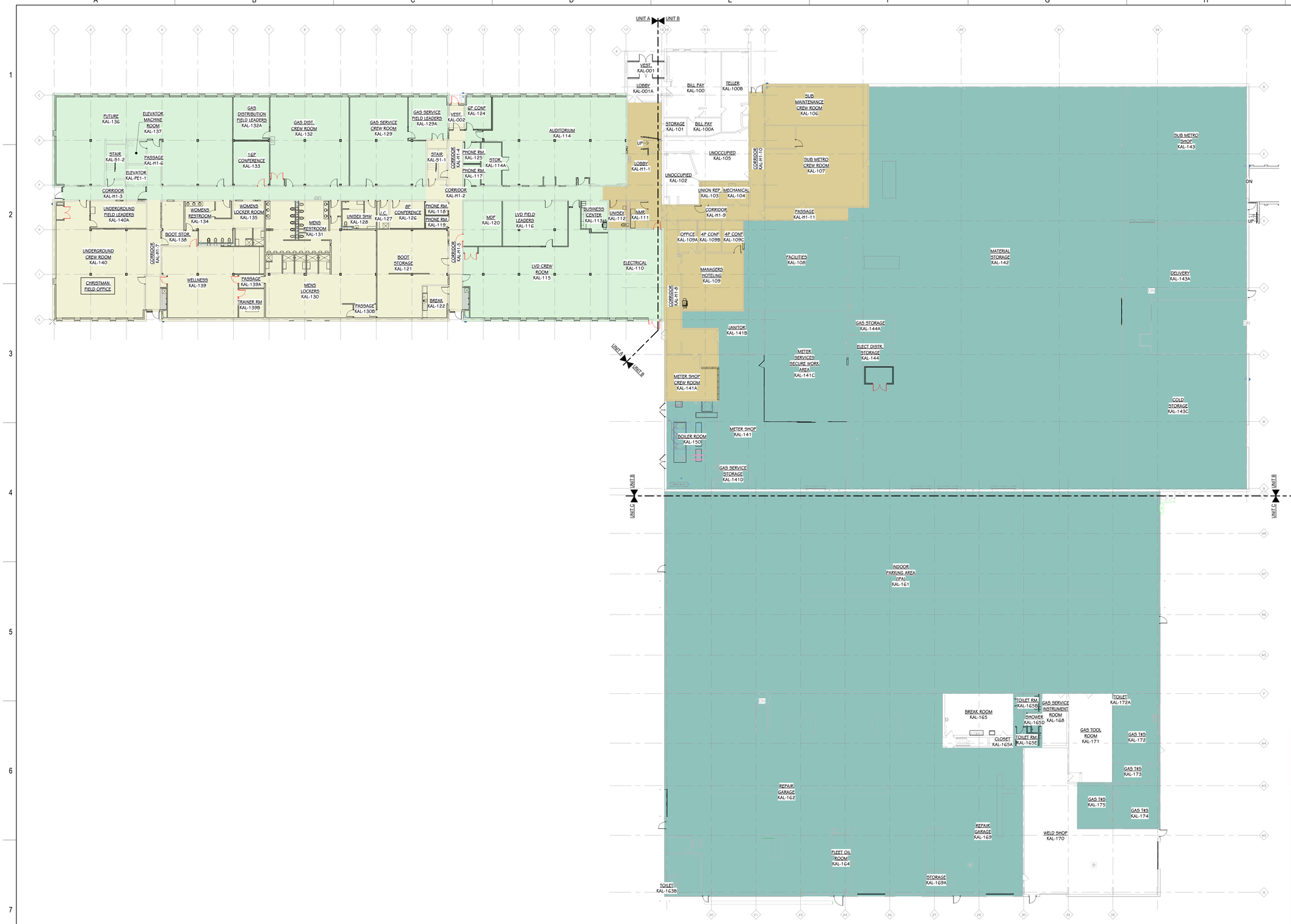
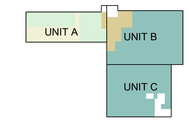


PHASING PLAN KEY

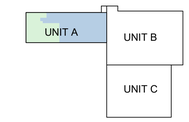
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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OVERALL FIRST FLOOR PHASING PLAN
1/16" = 1'-0"

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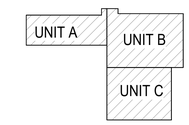
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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REFERENCE DRAWINGS

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MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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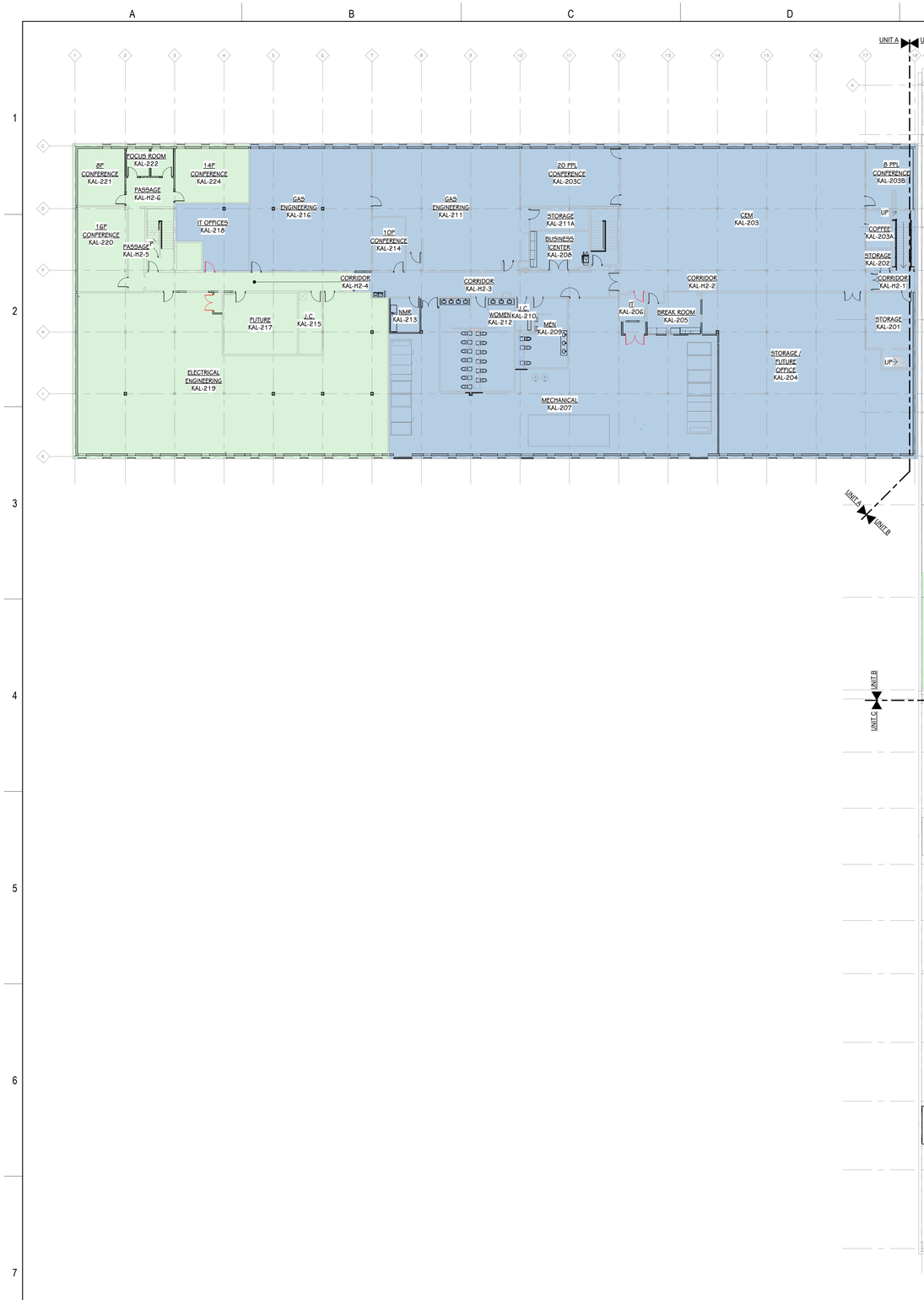
SHEET TITLE
FIRST FLOOR PHASING PLAN

SCALE:	1/16" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	G-111	D

22-133.010



PHASING PLAN KEY

REFER TO SHEETS: G-111, G-112 & G-113

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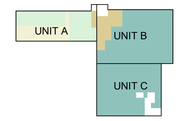
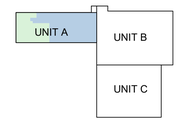
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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OVERALL SECOND FLOOR PHASING PLAN
1/16" = 1'-0"

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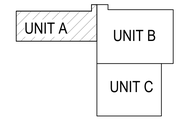
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
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MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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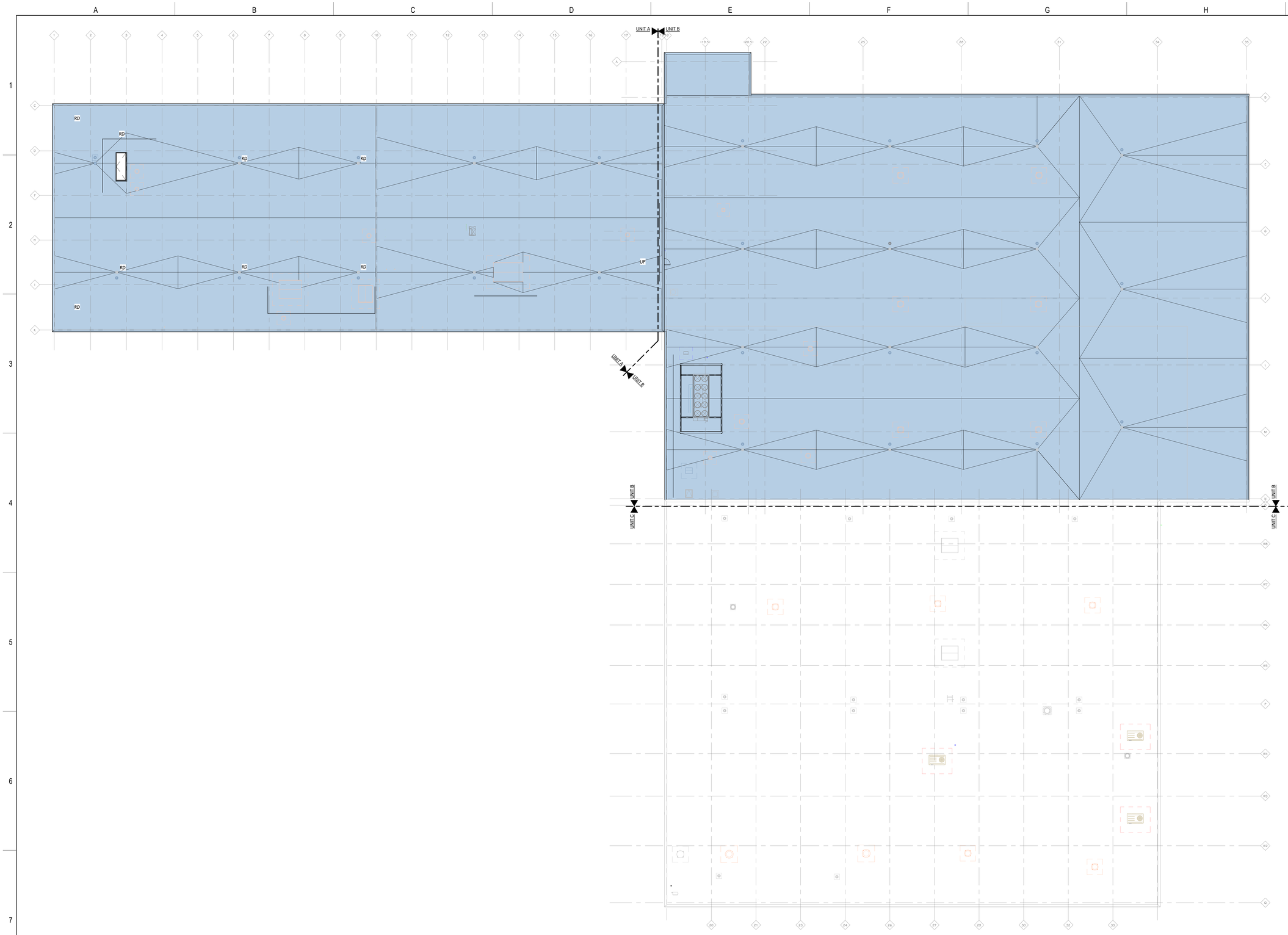
SHEET TITLE
SECOND FLOOR PHASING PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: G-112
REV: D

22-133.010



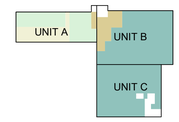
OVERALL ROOF PHASING PLAN
1/16" = 1'-0"

PHASING PLAN KEY

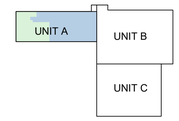
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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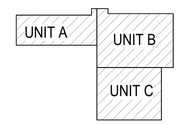
KALAMAZOO SERVICE CENTER



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KALAMAZOO, MICHIGAN

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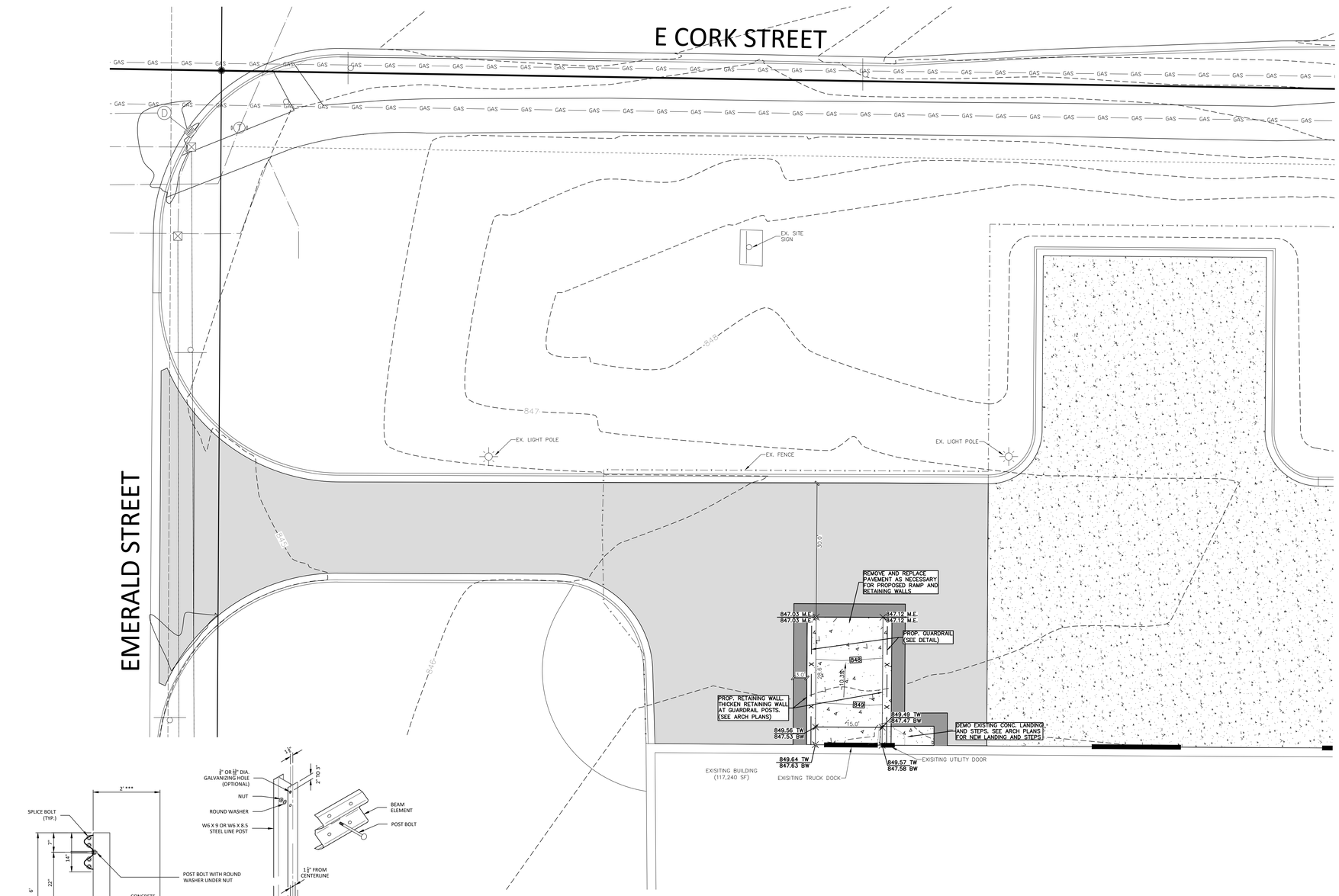
SHEET TITLE
OVERALL ROOF PHASING PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: G-113
REV: D

22-133.010



SYMBOL LEGEND

- EXISTING TREE
- BOLLARD
- LIGHT POLE
- POWER POLE
- CLEANOUT
- SANITARY SEWER MANHOLE
- STORM CATCH BASIN
- STORM MANHOLE
- SIGN
- HYDRANT
- VALVE
- MAILBOX
- FLOW DIRECTION ARROW

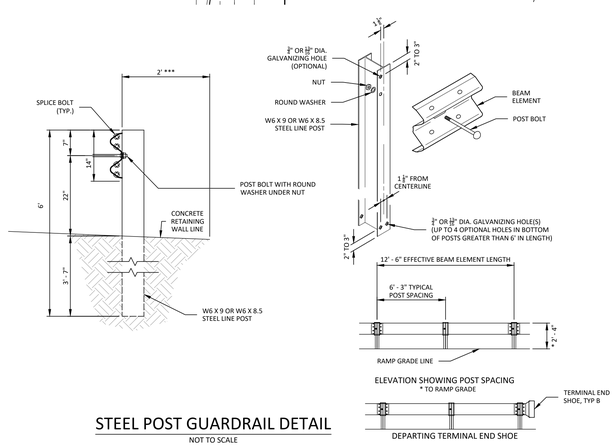
SCALE: 1" = 10'
0' 5' 10' 15' 20'

LINE AND HATCH LEGEND

- LANDSCAPING
- EXISTING OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- PROPOSED UNDERGROUND ELECTRIC
- EXISITNG GAS
- PROPOSED GAS
- EXISTING COMMUNICATIONS
- PROPOSED COMMUNICATIONS
- EXISTING FENCE
- PROPOSED FENCE
- RIGHT OF WAY
- EASEMENT
- SETBACK
- EXISTING GRAVEL
- PROPOSED GRAVEL
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING HOT MIXED ASPHALT
- PROPOSED HOT MIXED ASPHALT
- EXISTING CONCRETE
- PROPOSED HEAVY DUTY CONCRETE

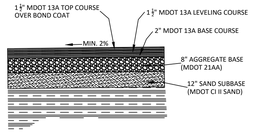
SITE LAYOUT NOTES:

1) ALL WORK SHALL BE DONE TO ALL FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS.
2) CONTRACTOR SHALL RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE, AND OTHER INFRASTRUCTURE DISTURBED OR DAMAGED DUE TO CONSTRUCTION ACTIVITIES TO MATCH EXISTING CONDITIONS.
3) ALL DEBRIS SHALL BE REMOVED FROM THE SITE, AND NO STOCKPILING ON SITE SHALL BE ALLOWED UNLESS APPROVED BY OWNER.
4) THE CONTRACTOR SHALL LIMIT SAWCUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE REQUIRED OR AS SHOWN. ALL PAVEMENTS TO BE REMOVED SHALL BE SAWCUT AND REMOVED TO FULL DEPTH AT ALL PAVEMENT LIMITS OR EXISTING JOINTS. IF ANY DAMAGE IS INCURRED TO ANY OF THE SURROUNDING PAVEMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR AT NO ADDITIONAL COST.
5) CONTRACTOR SHALL CONTACT MISS DIG THREE WORKING DAYS BEFORE YOU DIG. CALL MISS DIG AT 1-800-482-7171 OR 811.
6) ALL WORK SHALL BE DONE TO THE MICHIGAN HANDICAPPED ACCESSIBILITY CODE AND THE AMERICANS WITH DISABILITIES ACT.
7) CONTRACTOR SHALL ENSURE ALL ADA RAMPS AND ACCESS MEET CURRENT ADA STANDARDS. IF IT IS DISCOVERED THAT ANY ITEMS WILL NOT MEET ADA STANDARDS IT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.
8) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, DEMOLITION PERMITS, TAP FEES, ASSESSMENTS, UTILITY PERMITS, ROW PERMITS, BONDS, INSURANCE, OR OTHER FEES ASSOCIATED WITH CONSTRUCTION.
9) SITE CONCRETE TO HAVE A COMPRESSIVE STRENGTH OF A MINIMUM 4000 PSI AND SHALL HAVE LIMESTONE AGGREGATE AND SHALL HAVE A 5.5%-8% AIR ENTRAINMENT WITH A BROOM FINISH.
10) INSTALL EXPANSION JOINTS AT ALL LOCATIONS WHERE CONCRETE ABUTS HMA PAVEMENT.
11) THESE PLANS HAVE BEEN DEVELOPED FOR ELECTRONIC FIELD SURVEY LAYOUT. DIMENSIONS SHOWN ARE FOR GRAPHIC PRESENTATION ONLY AND SHOULD NOT BE USED FOR LAYOUT. CONTACT THE ENGINEER IF ANY DISCREPANCIES BETWEEN THE PLAN AND ELECTRONIC DATA ARE DISCOVERED.
12) THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LIGHTS, BARRICADES, FLAGMEN, ETC. AS REQUIRED TO PERFORM THE WORK. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.
13) THE CONTRACTOR SHALL PROTECT LOCATION OF ALL PROPERTY MARKERS AND BENCHMARKS.
14) THE CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS, BARRICADES, AND SAFETY FENCES TO DETER PEOPLE FROM ENTERING THE WORK AREA AND FOR MAINTAINING AND PROTECTING THE FLOW OF VEHICULAR AND PEDESTRIAN TRAFFIC AROUND THE JOB SITE. TRAFFIC CONTROLS SHALL BE COORDINATED WITH THE MUNICIPALITY.
15) NO BUILDING MATERIAL, EQUIPMENT, VEHICLES, OR CHEMICALS SHALL BE STORED OR PLACED OUTSIDE OF THE LIMITS OF DISTURBANCE.
16) CONSTRUCTION NOISE SHALL BE KEPT TO A MINIMUM DURING NIGHTTIME HOURS AND MUST COMPLY WITH LOCAL MUNICIPAL ORDINANCES.
17) ALL VERTICAL FACE OF CURBS SHALL BE PAINTED YELLOW WHEN BETWEEN 0 AND 6 INCHES TALL.
18) COORDINATE WITH OWNER TO SCHEDULE GPR PRIOR TO ANY EXCAVATION. MUST GIVE OWNER 7 BUSINESS DAYS NOTICE.
19) COORDINATE WITH OWNER TO COMPLETER OWNER REQUIRED SURFACE PENETRATION PERMIT AND UTILITY CHECK SHEET PRIOR TO ANY EXCAVATIONS.
20) REFER TO SOFT-EXCAVATION TECH SPECIFICATION FOR EXCAVATION REQUIREMENTS.



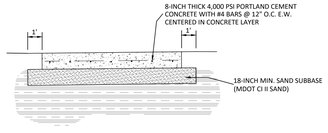
STEEL POST GUARDRAIL DETAIL

NOT TO SCALE



HEAVY DUTY PAVEMENT DETAIL

NOT TO SCALE



HEAVY DUTY CONCRETE PAVEMENT DETAIL

NOT TO SCALE

NOTES:
1. 1/4" WIDE SAWCUT CONTROL JOINTS TO 2.5" DEPTH AT 10' O.C. EACH DIRECTION WITHIN 12 HOURS OF FINISHING CONCRETE.
2. ISOLATION JOINTS WHERE PAVEMENT ABUTS PROPOSED STRUCTURES OR OTHER PAVEMENTS.

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TowerPinkster
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REV	DATE		DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM -00155	NF	CJW	CMF	SDT	VK
C	2024-04-16	ISSUED FOR 90% REVIEW	NF	CJW	CMF	SDT	VK

REFERENCE DRAWINGS

SIGNATURE
NAME: COLIN FINCH
MICHIGAN P.E. No.: 6201064514

Consumers Energy
JACKSON, MICHIGAN
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE: SITE PLAN

SCALE: 1" = 10'
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: C-100
REV: D

22-133.010

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GENERAL CONDITIONS

1. COORDINATE WITH ALL DRAWINGS FOR PERTINENT INFORMATION RELATED TO THE STRUCTURAL WORK. ANY CHANGES TO THE STRUCTURAL SYSTEMS SHALL BE RE-DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER AT NO COST TO THE OWNER OR A/E AND SUBMITTED TO THE A/E FOR REVIEW. SUBMITTAL SHALL BE ACKNOWLEDGED IN WRITING BEFORE BEGINNING CONSTRUCTION

2. EQUIPMENT FRAMING LOADS, OPENINGS, AND STRUCTURE, IN ANY WAY RELATED TO HVAC, PLUMBING, PROCESS, ELECTRICAL, ELEVATOR, OR ESCALATOR REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL OBTAIN APPROVAL OF THE PERTINENT TRADES BEFORE PROCEEDING WITH SUCH PORTION OF THE WORK. EXCESS COST RELATED TO VARIATION IN THESE REQUIREMENTS SHALL BE BORNE BY THE APPROPRIATE CONTRACTOR.

3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCES TO ENSURE THE SAFETY OF THE BUILDING AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHORING, GUYS, OR TIE-DOWNS THAT MAY BE NECESSARY.

4. THE STRUCTURE HAS BEEN DESIGNED FOR THE UNIFORM LOADS INDICATED IN ADDITION TO THE CONCENTRATED LOADS REQUIRED BY THE BUILDING CODE. THE STRUCTURAL DESIGN IS BASED SOLELY ON THE BUILDING IN ITS COMPLETED STATE. CONTRACTORS AND THEIR SUB-CONTRACTORS SHALL TAKE NECESSARY PRECAUTIONS TO WITHSTAND ALL HORIZONTAL AND VERTICAL LOADINGS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION PRIOR TO COMPLETION OF THE BUILDING. SUCH CONSTRUCTION LOADINGS INCLUDE, BUT ARE NOT LIMITED TO, LOADS FROM CRANES, LIFTS, DOLLIES, AND HOISTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE EVALUATION OF THE IMPACT OF SUCH LOADS ON THE STRUCTURE AND PROVIDING TEMPORARY SHORING, BRACING, OR REINFORCEMENT AS REQUIRED.

5. SEE THE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS. ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL CONFORM TO THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. REPORT ALL DISCREPANCIES TO THE A/E FOR RESOLUTION BEFORE PROCEEDING.

6. THE CONTRACTOR SHALL SUPPORT, BRACE, AND SECURE EXISTING STRUCTURES AS REQUIRED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF EXISTING STRUCTURES DURING CONSTRUCTION. FIELD VERIFY ALL EXISTING DIMENSIONS WHICH AFFECT THE NEW CONSTRUCTION PRIOR TO FINAL DETAILING AND FABRICATION OF NEW STRUCTURAL ELEMENTS.

EXISTING CONDITIONS

1. ALL EXISTING STRUCTURAL ELEMENTS (SLABS, BEAMS, WALLS, COLUMNS, FOUNDATIONS, ETC.) SHALL REMAIN INTACT UNLESS SPECIFICALLY NOTED TO BE REMOVED BY THE MOST RECENT DEMOLITION DOCUMENTS OR OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS.

2. INFORMATION PROVIDED ON THESE DRAWINGS RELATED TO EXISTING CONDITIONS IS BASED ON AVAILABLE DESIGN DOCUMENTS AND LIMITED FIELD OBSERVATION. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO AND AWAIT DIRECTION FROM THE A/E IF ANY DISCREPANCY BETWEEN THE CONTRACT DOCUMENTS AND THE EXISTING CONDITIONS IS DISCOVERED.

3. THIS PROJECT REQUIRES A SIGNIFICANT AMOUNT OF DRILLING INTO THE EXISTING REINFORCED CONCRETE STRUCTURE. THE CONTRACTOR WILL NOT RECEIVE ADDITIONAL PAYMENT FOR DIFFICULTIES ENCOUNTERED IN DRILLING DUE TO HARDNESS OF MATERIALS, HITTING OF EXISTING REINFORCING, ETC.. ALL COSTS ASSOCIATED WITH REDRILLING OF HOLES DUE TO HITTING EXISTING REINFORCING STEEL SHALL BE BORNE BY THE CONTRACTOR. THIS INCLUDES FILLING UNNECESSARY AND UNUSED HOLES WITH EPOXY GROUT. DO NOT CUT REINFORCING STEEL DURING CONCRETE DRILLING OR CORING OPERATIONS. LOCATE REINFORCING WITH A PACHOMETER OR OTHER NON-DESTRUCTIVE TESTING DEVICE PRIOR TO DRILLING OR CORING OPERATIONS.

4. CORE DRILLS REQUIRED BY MECHANICAL OR ELECTRICAL TRADES, BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE DOCUMENTED IN SKETCH FORM SHOWING EXACT DIMENSIONS AND LOCATIONS. THE SKETCH SHALL BE SUBMITTED TO THE A/E FOR COMMENT PRIOR TO PROCEEDING WITH THE DRILLING OPERATION.

5. EXISTING SURFACE PREPARATION:
   INTENTIONALLY ROUGHEN EXISTING CONCRETE SURFACES WHERE NEW CONCRETE IS BEING PLACED AGAINST THE EXISTING CONCRETE AND CONNECTED BY DRILLING AND EPOXY GROUTING. THE ENTIRE COMMON SURFACE WHERE THE EXISTING CONCRETE ABUTS THE NEW SHALL BE COATED WITH AN EPOXY BONDING AGENT. FOLLOW ALL ADDITIONAL REQUIREMENTS OF SURFACE PREPARATION AS REQUIRED BY THE BONDING AGENT MANUFACTURER.

CONCRETE MINIMUM LAP SPLICE AND ANCHORAGE DIMENSION TABLE

USE THIS TABLE FOR A615 GRADE 60 REINFORCING WHEN CONCRETE CLEAR COVER AND CLEAR SPACING IS AT LEAST d_b AND CODE MINIMUM STIRRUPS ARE PROVIDED OR IF MINIMUM STIRRUPS ARE NOT PROVIDED, CLEAR SPACING IS AT LEAST $2d_b$.

	(4000 PSI CONCRETE)			(3000 PSI CONCRETE)	
	DEVELOPMENT LENGTH			DEVELOPMENT LENGTH	
BAR SIZE	TOP BARS	OTHER BARS	BAR SIZE	TOP BARS	OTHER BARS
#3	15"	12"	#3	18"	14"
#4	20"	16"	#4	23"	18"
#5	25"	19"	#5	29"	22"
#6	30"	23"	#6	35"	27"
#7	44"	34"	#7	50"	39"
#8	50"	38"	#8	57"	44"
#9	56"	43"	#9	65"	50"
#10	63"	49"	#10	73"	56"
#11	70	54"	#11	81"	62"

NOTES:

- LAP LENGTHS SHALL BE 1.3 TIMES DEVELOPMENT LENGTH.
- FOR EPOXY COATED REINFORCING MULTIPLY THE TABLE VALUES ABOVE BY 1.5.
- (MC) DENOTES MECHANICAL COUPLER DEVELOPING 125% OF THE BAR YIELD STRENGTH. NO OTHER SPLICE WILL BE ACCEPTED.
- WHEN LAPPING TWO DIFFERENT SIZE BARS, USE THE LAP DIMENSION OF THE SMALLER BAR OR THE ANCHORAGE DIMENSION OF THE LARGER BARS. USE WHICHEVER DIMENSION IS LARGER.
- TOP BARS SHALL BE DEFINED AS BEAM AND SLAB HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE TOP REINFORCEMENT. HORIZONTAL REINFORCING IN WALLS SHALL BE CONSIDERED TOP BARS.

MASONRY MINIMUM LAP SPLICE SCHEDULE

BAR SIZE	LAP LENGTH FOR BARS CENTERED IN CMU THICKNESS	LAP LENGTH FOR BARS EACH FACE OF CMU WALL (2 1/2" CLEAR MASONRY COVER)
#3	12"	12"
#4	13"	18"
#5	20"	28"
#6	38"	52"
#7	52"	70"
#8	79"	105"

NOTES:
MECHANICAL COUPLERS DEVELOPING 125% OF THE BAR YIELD STRENGTH ARE PERMITTED AT ANY SPLICE LOCATION AT CONTRACTOR'S OPTION.

CONCRETE REINFORCING CLEAR COVER REQUIREMENTS

CONCRETE CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND	3"
CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
#5 BAR AND SMALLER	1-1/2"
#6 BAR AND LARGER	2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, JOISTS, AND WALLS (NOT LARGER THAN #11 BAR)	3/4"
BEAMS, COLUMNS, PIERS	1-1/2"

NOTE:
CLEAR COVER DIMENSIONS LISTED ARE CODE-REQUIRED MINIMUMS. PROVIDE GREATER COVER WHERE SPECIFICALLY REQUIRED BY DETAILS.

STRUCTURAL DESIGN CRITERIA

1. GOVERNING CODE — MICHIGAN BUILDING CODE (MBC), 2015 EDITION
2. BUILDING RISK CATEGORY — III
3. DESIGN SOIL BEARING PRESSURE (ASSUMED) — 2,500 PSF
4. MATERIAL STRENGTHS

   STRUCTURAL STEEL:

   ASTM A992 (F_y = 50 KSI) - ROLLED STEEL SHAPES UNLESS NOTED ON THE DRAWINGS.
   ASTM A36 (F_y = 36 KSI) - ROLLED STEEL PLATES, CHANNELS, ANGLES, BARS, AND RODS AS NOTED ON THE DRAWINGS.
   ASTM A53, GRADE B - STEEL PIPE
   ASTM A500, GRADE C - RECTANGULAR AND ROUND HSS

   REINFORCING STEEL:

   ASTM A615, GRADE 60

   CONCRETE:

   4000 PSI FOR ALL CONCRETE UNLESS SPECIFICALLY NOTED OTHERWISE.

   MASONRY:
   2000 PSI FOR CONCRETE MASONRY

5. DEAD LOADS

   ROOF - OFFICE (UNIT A)

ROOFING	1 PSF
INSULATION	8 PSF
METAL DECK	2 PSF
FRAMING	6 PSF
MECHANICAL	10 PSF
TOTAL ROOF DEAD LOAD	27 PSF

   FLOOR - OFFICE (UNIT A)

SLAB	60 PSF
FLOORING	1 PSF
FRAMING	6 PSF
FIREPROOFING	3 PSF
MECHANICAL	10 PSF
TOTAL FLOOR DEAD LOAD	80 PSF

   ROOF - STORES / GARAGE / IPA (UNITS B & C)

ROOFING	1 PSF
INSULATION	6 PSF
METAL DECK	2 PSF
FRAMING	4 PSF
MECHANICAL	5 PSF
TOTAL ROOF DEAD LOAD	18 PSF

6. LIVE LOADS

ROOF	20 PSF
OFFICE	55 PSF
STAIRS	100 PSF
MECHANICAL ROOMS	150 PSF

   LIVE LOAD REDUCTIONS SHALL BE COMPUTED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE. ROOF LIVE LOADS ARE NON-REDUCIBLE.

7. DESIGN SNOW LOAD AND SNOW DRIFTING PARAMETERS ARE AS FOLLOWS:

GROUND SNOW LOAD (P_g)	30 PSF
FLAT ROOF SNOW LOAD (P_f)	25 PSF + DRIFT
SNOW EXPOSURE FACTOR (C_e)	1.1
SNOW THERMAL FACTOR (C_t)	1.0
SNOW LOAD IMPORTANCE FACTOR	1.1

8. WIND LOAD DESIGN PARAMETERS ARE AS FOLLOWS:

BASIC WIND SPEED (V), (3 SECOND GUST)	120 MPH
WIND EXPOSURE CATEGORY	B
INTERNAL PRESSURE COEFFICIENT	±0.18

9. SEE TABLE FOR COMPONENTS AND CLADDING LOAD CRITERIA. ALL ARCHITECTURAL AND STRUCTURAL COMPONENTS SHALL CONFORM WITH THE MICHIGAN BUILDING CODE AND ASCE 7 FOR COMPONENTS AND CLADDING DESIGN.

ROOF PRESSURES (PSF)

AREA	ZONE 1	ZONE 2	ZONE 3
10	+10.5 / -25.9	+10.5 / -43.4	+10.5 / -65.4
25	+9.7 / -25.0	+9.7 / -37.3	+9.7 / -50.5
50	+9.0 / -24.3	+9.0 / -32.7	+9.0 / -39.3
100	+8.3 / -23.7	+8.3 / -28.1	+8.3 / -28.1
500	+8.3 / -23.7	+8.3 / -28.1	+8.3 / -28.1

WALL PRESSURES (PSF)

AREA	INTERIOR ZONE	EDGE ZONE
10	+23.7 / -25.7	+23.7 / -31.6
25	+22.3 / -24.3	+22.3 / -28.8
50	+21.3 / -23.2	+21.3 / -26.7
100	+20.2 / -22.2	+20.2 / -24.6
500	+17.8 / -19.7	+17.8 / -19.7

NOTES:

- END ZONE WIDTH IN FEET = 10% OF LEAST HORIZONTAL DIMENSION OR .4h WHICHEVER IS SMALLER BUT NOT LESS THAN EITHER, 4% OF LEAST HORIZONTAL DIMENSION OR 3'-0"
  h=MEAN ROOF HEIGHT, IN FEET, EXCEPT THAT EAVE HEIGHT SHALL BE USED FOR ROOF ANGLES < 10

SEISMIC LOAD DESIGN PARAMETERS ARE AS FOLLOWS:

SOIL SITE CLASS	D
MAPPED SPECTRAL RESPONSE ACCELERATION	
(S_s)	8.7%
(S_1)	5.0%
DESIGN SPECTRAL RESPONSE ACCELERATION	
(S_{MS})	9.3%
(S_{M1})	7.9%
SEISMIC DESIGN CATEGORY	B
SEISMIC IMPORTANCE FACTOR (I_e)	1.25

MASONRY CONSTRUCTION

1. MASONRY WORK SHALL CONFORM TO THE ACI 530 AND 530.1.

2. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT UNITS

   HOLLOW LOAD BEARING — ASTM C90, WITH MINIMUM NET AREA COMPRESSIVE OF 2000 PSI. ALL LOAD BEARING BLOCK UNITS SHALL BE MANUFACTURED SO THE CORES AND WEBS LINE UP WHEN LAID IN RUNNING BOND.
   SOLID LOAD BEARING — PROVIDE UNITS COMPLYING WITH ASTM C145, GRADE N-1, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI, EACH UNIT, NET CROSS-SECTIONAL AREA.

3. MORTAR FOR LOAD BEARING WALLS, EXTERIOR WALLS, SHEAR WALLS, AND VERTICALLY REINFORCED MASONRY WALLS SHALL BE ASTM C270, TYPE S, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.

4. WHERE VERTICAL BARS ARE TO BE GROUTED INTO CORES, THE FOLLOWING REQUIREMENTS APPLY:

   COARSE GROUT FOR REINFORCED MASONRY CONSTRUCTION SHALL CONFORM TO ASTM C476 WITH A MAXIMUM AGGREGATE SIZE OF 3/8" AND A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

   PROVIDE DOWELS FROM FOOTING, SAME SIZE AND SPACING AS WALL BARS. LAP WITH WALL BAR.

   WHEN A FOUNDATION DOWEL DOES NOT LINE UP WITH A VERTICAL CORE, IT SHALL NOT BE SLOPED MORE THAN ONE HORIZONTAL IN SIX VERTICAL. DOWELS SHALL BE GROUTED INTO A CORE IN VERTICAL ALIGNMENT, EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCEMENT.

   REINFORCING STEEL SHALL BE LAPPED IN ACCORDANCE WITH SCHEDULE WHERE SPLICED. PROVIDE REINFORCING ALIGNMENT DEVICES AT A MAXIMUM SPACING OF 192 BAR DIAMETERS.

5. HORIZONTAL REINFORCEMENT SHALL BE PLACED IN CONTINUOUS MASONRY COURSES CONSISTING OF BOND BEAM OR TROUGH BLOCK UNITS AND GROUTED IN PLACE. THE CONTRACTOR SHALL PLACE ANCHOR BOLTS OR EMBEDDED ITEMS IN COARSE GROUT, UNO ON DRAWINGS.

6. SPLICED WIRE REINFORCEMENT SHALL BE LAPPED AT LEAST 6" AND CONTAIN AT LEAST ONE CROSS WIRE OF EACH PIECE OF REINFORCEMENT WITHIN THE 6".

7. WALL CONSTRUCTION UNDER MASONRY BEARING STRUCTURAL MEMBERS SHALL BE AS FOLLOWS, UNO:

   PROVIDE BOND BEAM AS DETAILED ON THE DRAWINGS UNDER WALL BEARING STEEL JOISTS. BOND BEAM SHALL BE FILLED WITH 3000 PSI GROUT.

   PROVIDE SOLID MASONRY, 32" LONG x 24" HIGH, CENTERED UNDER EACH WALL BEARING STEEL BEAM.

   PROVIDE SOLID MASONRY, 32" LONG x 24" HIGH, CENTERED UNDER ALL WALL BEARING PRECAST OR CAST-IN-PLACE BEAMS.

   PROVIDE CONTINUOUS SOLID MASONRY, 8" HIGH, UNDER WALLS BEARING PRECAST OR CAST-IN-PLACE CONCRETE SLABS.

8. BOND PILASTERS TO ADJOINING MASONRY WALLS WITH INTERLOCKING UNITS.

9. DO NOT CONSTRUCT MASONRY WALLS ON SUPPORTED CONCRETE DECKS UNTIL CONCRETE HAS REACHED 28 DAY STRENGTH AND ALL SHORING HAS BEEN REMOVED.

10. ALL UNITS SHALL BE LAID WITH FULL MORTAR COVERAGE ON HEAD, BED (FACE SHELLS), WEBS AND COLLAR JOINTS, UNO.

11. PROVIDE LINTELS OVER ALL OPENINGS WIDER THAN 8" IN MASONRY WALLS. REFER TO THE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION, NUMBER, AND SIZES OF OPENINGS.

12. PROVIDE CONTROL JOINTS IN ALL MASONRY WALLS AS SHOWN ON THE STRUCTURAL DRAWINGS OR AS DEFINED IN THE SPECIFICATIONS. IF NO CONTROL JOINTS ARE SHOWN ON THE DRAWINGS, PROVIDE CONTROL JOINTS AT A SPACING OF 25' OR 1.5 TIMES THE WALL HEIGHT, WHICHEVER IS LESS. NO CONTROL JOINTS SHALL BE PROVIDED IN MASONRY SHEAR WALLS, WHERE SHEAR WALLS ARE LONGER THAN MAXIMUM CONTROL JOINT SPACING PROVIDE SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #6 BARS @ 6' - 0" OC MAX OVER THE FULL HEIGHT OF THE WALL.

13. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS AND AROUND CORNERS AND AT WALL INTERSECTIONS. AT CORNERS AND WALL INTERSECTIONS, PROVIDE BENT BARS OF SAME SIZE AND QUANTITY AS BOND BEAM REINFORCING AND LAP SPLICE WITH BOND BEAM REINFORCING WITH LENGTHS AS REQUIRED BY MASONRY LAP SPLICE SCHEDULE.

CAST-IN-PLACE CONCRETE

1. CAST-IN-PLACE CONCRETE WORK SHALL CONFORM TO THE PROJECT MANUAL AND AMERICAN CONCRETE INSTITUTE CODES AND STANDARDS, INCLUDING, BUT NOT LIMITED TO, ACI 301, ACI 315, AND ACI 318.

2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 1064/A 1064M DELIVERED IN FLAT SHEETS.

3. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF ALL EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS, OPENINGS, ETC. REQUIRED BY OTHER TRADES. RECONCILE THEIR EXACT SIZES AND LOCATIONS BEFORE PROCEEDING WITH THE WORK. ALL ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE. SECURE THE APPROVAL OF THE STRUCTURAL ENGINEER PRIOR TO PLACING OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS. DO NOT CORE DRILL THROUGH BEAMS, JOISTS, GIRDERS, OR WALLS. NO CONDUIT SHALL BE PLACED IN CONCRETE SLABS OR BEAMS UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.

4. BACKFILL AGAINST WALLS SHALL NOT BE PLACED UNTIL THE FLOOR CONSTRUCTION AT THE FIRST FLOOR HAS BEEN COMPLETED TO BRACE THE WALL. AT THE CONTRACTOR'S OPTION, WALLS MAY BE BRACED AND BACKFILL INSTALLED. ANY SUCH BRACING SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL REMAIN IN PLACE UNTIL THE FIRST FLOOR IS COMPLETED AND CONTINUOUSLY CONNECTED TO THE WALL.

5. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED. USE STANDARD 90° BAR HOOK UNO.

6. PROVIDE HORIZONTAL CONTROL/CONSTRUCTION JOINTS IN SLABS AND VERTICAL CONTROL/CONSTRUCTION IN WALLS AS SHOWN ON THE DRAWINGS. ALL BEAMS, SPANDRELS, AND SLABS SHALL BE CAST MONOLITHICALLY, EXCEPT FOR REQUIRED CONTROL/CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL SUBMIT ALTERNATE AND ADDITIONAL CONSTRUCTION JOINT LOCATIONS AND DETAILS TO THE A/E FOR APPROVAL PRIOR TO CONSTRUCTION. AT LEAST 48 HOURS SHALL ELAPSE BETWEEN CASTING OF ADJOINING UNITS. REINFORCEMENT SHALL BE CONTINOUS ACROSS CONSTRUCTION JOINTS UNLESS DETAILED OTHERWISE ON THE DRAWINGS. SUBMIT ALL CONSTRUCTION JOINT LOCATIONS WITH THE REINFORCING SHOP DRAWINGS.

7. WHERE CONSTRUCTION JOINTS ARE REQUIRED BUT ARE NOT INDICATED ON THE DRAWINGS, THEY SHALL BE LOCATED AT THE MID-SPAN OF BEAMS, SLABS AND WALLS, AND SHALL BE SUBJECT TO REVIEW BY THE A/E. UNO OR SHOWNG ON THE DRAWINGS, PROVIDE A CONTINUOUS SHEAR KEY IN SLABS AND WALLS, AND A MINIMUM OF (2) CONTINOUS HORIZONTAL KEYS IN BEAMS AND EACH JOIST. THE MINIMUM KEY SIZE SHALL BE 1-1/2" DEEP X 1/3 THE DEPTH OR WIDTH OF THE MEMBER.

8. THE CONTRACTOR SHALL PROVIDE 3/4" CHAMFERS ON ALL EXPOSED CORNERS OF COLUMNS, BEAMS, AND WALLS UNO INDICATED ON THE ARCHITECTURAL DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL CONFORM WITH THE TYPICAL REINFORCING BAR CLEARANCE TABLE.

9. THE HARDENED CONCRETE OF HORIZONTAL CONSTRUCTION JOINTS SHALL BE DAMPENED AND THEN THOROUGHLY COVERED WITH A COAT OF CEMENT GROUT OF SIMILAR PROPORTIONS TO THE MORTAR IN THE CONCRETE. THE FRESH CONCRETE SHALL BE PLACED BEFORE THE GROUT HAS ATTAINED ITS INITIAL SET.

10. THE HARDENED CONCRETE OF CONSTRUCTION JOINTS SHALL BE THOROUGHLY COATED WITH A BONDING AGENT (SIKA ARMATEC 110 OR EQUAL).

11. WELDING OF REINFORCING STEEL IS NOT PERMITTED.

12. COMPLY WITH THE ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF SPECIAL FINISHES OR TREATMENTS TO EXPOSED CONCRETE.

13. PROVIDE 6XG-W1.4XW1.4 WELDED WIRE FABRIC IN ALL TOPPING SLABS, UNO.

14. LAP WELDED WIRE FABRIC 1 SPACE (2 CROSS WIRES) + 2" AT ALL EDGES AND ENDS OF SHEETS.

15. REINFORCING BAR LAP SPLICES AND ANCHORAGE LENGTHS SHALL CONFORM WITH "MINIMUM LAP SPLICE AND ANCHORAGE DIMENSION TABLE"

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATION FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

2. THE STRUCTURE WAS DESIGNED USING THE AISC "STEEL CONSTRUCTION MANUAL"

3. WELDED CONNECTIONS SHALL CONFORM TO THE AWS D1.1.

4. ALL STRUCTURAL STEEL, BOLTS, ETC., SHALL BE DOMESTICALLY PRODUCED.

5. BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AS APPROVED BY THE COUNCIL ON RIVETED AND BOLTED JOINTS, UNO. USE BEARING-TYPE BOLTS WITH THREADS INCLUDED IN THE SHEAR PLANE. ANCHOR BOLTS SHALL CONFORM TO ASTM F-1554, GRADE 36, OR AS SPECIFIED ON THE DRAWINGS.

6. WELDING ELECTRODES SHALL BE E70XX (LOW HYDROGEN) OR BETTER, FOR WELDING SYMBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION. WELDS NOT OTHERWISE NOTED SHALL BE 1/4" IN SIZE.

7. IN GENERAL, IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS THAT ALL SHOP CONNECTIONS BE WELDED AND ALL FIELD CONNECTIONS BE BOLTED EXCEPT WHERE NOTED OTHERWISE.

8. ALL BOLTS SHALL BE TIGHTENED TO A "SNUG-TIGHT" CONDITION, UNO.

9. UNLESS NOTED OTHERWISE, TYPICAL BEAM SHEAR CONNECTIONS SHALL BE DETAILED WITH STANDARD DOUBLE ANGLE OR SHEAR PLATE CONNECTIONS, USING A325 BOLTS.

10. PROVIDE A NON-METALLIC, NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARINGS.

11. ALL STEEL EXPOSED TO WEATHER, EXPOSED TO EARTH, EXPOSED TO VIEW OUTSIDE THE BUILDING ENVELOPE, OR DENOTED ON THE DRAWINGS TO BE GALVANIZED, SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION. GALVANIZING SHALL BE REMOVED PER AWS D-19.0, "WELDING ZINC-COATED STEEL", PRIOR TO FIELD WELDING. WELDS SHALL BE TOUCHED-UP WITH TWO COATS OF ZINC-RICH PAINT BRUSH APPLIED USING ZRC GALVANIZING COMPOUND OR EQUAL. PROVIDE VENT/DRAINAGE HOLES IN HSS MEMBERS (MINIMUM 3/4 DIAMETER, BOTTOM SIDE OF HORIZONTAL MEMBERS, WITHIN 2" OF BASE FOR VERTICAL MEMBERS) PRIOR TO GALVANIZING.

12. ALL STEEL WITHIN UNCONDITIONED AREAS OUTSIDE THE BUILDING ENVELOPE (E.G. EXTERIOR SOFFITS, CANOPIES, ETC) BUT NOT EXPOSED TO VIEW SHALL BE PRIMED AND PAINTED UNLESS NOTED OTHERWISE.

13. THE FABRICATOR SHALL SUPPLY LOOSE LINTEL ANGLES OVER ALL MASONRY OPENINGS AND RECESSES UNLESS OTHERWISE NOTED. LINTELS NOT SCHEDULED ON THE DRAWINGS SHALL CONSIST OF A SINGLE ANGLE WITH A 3 1/2" HORIZONTAL LEG FOR EACH 4" OF WALL THICKNESS. LINTELS SHALL BE SIZED PER THE MASONRY LINTEL SCHEDULE, UNO.

STEEL DECK

1. STEEL DECK FABRICATION AND ERECTION SHALL CONFORM TO THE STEEL DECK INSTITUTE SPECIFICATIONS.

2. DECK SHALL INCLUDE ANY MISCELLANEOUS CLOSURE PIECES, METAL SCREEDS, ROOF CURBS, DRAIN SUMP PANS, REINFORCING AROUND OPENINGS, ETC. REQUIRED TO MAKE A COMPLETE JOB. MISCELLANEOUS ITEMS SHALL BE GALVANIZED AND SHALL BE NO THINNER THAN 18 GAGE.

3. FLOOR DECK SHALL BE GALVANIZED (G-60), UNO.

4. ROOF DECK SHALL BE PRIME PAINTED, UNO.

5. PROVIDE FORMS FOR ALL EDGES OF CONCRETE SLABS ON METAL DECK. VERIFY IF FORM IS TO BE TEMPORARY, OR SHALL BE PERMANENT.

6. NO LOAD SHALL BE HUNG FROM STEEL ROOF DECK.

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	RE	RE	KS	SDT	TP
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TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
STRUCTURAL GENERAL NOTES

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	SG-001	D

22-133.010

GENERAL NOTES REGARDING SPECIAL INSPECTIONS AND TESTS

1. SPECIAL INSPECTIONS ARE IN ADDITION TO INSPECTIONS BY THE BUILDING OFFICIAL THAT ARE IDENTIFIED IN SECTION 110 OF THE MICHIGAN BUILDING CODE. SPECIAL INSPECTIONS DO NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT DOCUMENTS.
2. CONTINUOUS SPECIAL INSPECTION IS DEFINED AS SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS PRESENT CONTINUOUSLY WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
3. PERIODIC SPECIAL INSPECTION IS DEFINED AS SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED. THE FREQUENCY OF THESE SPECIAL INSPECTION TASKS SHALL BE ADEQUATE TO DETERMINE THAT WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
4. WHERE A SPECIAL INSPECTION TASK IS NOTED AS "OBSERVE," THE SPECIAL INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS. THE FREQUENCY OF THESE SPECIAL INSPECTION TASKS SHALL BE ADEQUATE TO DETERMINE THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
5. WHERE A SPECIAL INSPECTION TASK IS NOTED AS "PERFORM," THE TASK SHALL BE PERFORMED FOR EACH MEMBER, JOINT, OR ELEMENT PRIOR TO FINAL ACCEPTANCE.
6. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON EMPLOYED OR RETAINED BY AN APPROVED AGENCY AND APPROVED BY THE BUILDING OFFICIAL AS HAVING THE COMPETENCE NECESSARY TO INSPECT A PARTICULAR TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION.
7. THE PERIOD OF TIME BETWEEN SPECIAL INSPECTIONS CAN VARY GREATLY DEPENDING ON THE TYPE OF INSPECTION DONE, THE PACE OF CONSTRUCTION, THE QUALITY OF WORKMANSHIP, AND OTHER FACTORS. IT IS THE RESPONSIBILITY OF THE SPECIAL INSPECTOR TO PROVIDE INSPECTIONS AT AN APPROPRIATE FREQUENCY AND AT APPROPRIATE TIMES DURING CONSTRUCTION. THE SPECIAL INSPECTOR MUST HAVE ADEQUATE EXPERIENCE AND EXHIBIT PROFESSIONAL JUDGEMENT IN DETERMINING THE TIMING AND FREQUENCY OF INSPECTIONS.
8. PRIOR TO THE START OF CONSTRUCTION, THE APPROVED SPECIAL INSPECTION AGENCY SHALL SUBMIT WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING THE COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION.
9. THE CONSTRUCTION OR WORK FOR WHICH SPECIAL INSPECTION OR TESTING IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION OR TESTING PURPOSES UNTIL COMPLETION OF REQUIRED SPECIAL INSPECTIONS OR TESTS. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS, INCLUDING CONTRACTOR'S RESPONSIBILITY TO PROVIDE ACCESS FOR SPECIAL INSPECTIONS AND CONTRACTOR'S RESPONSIBILITY TO PROVIDE DUE NOTICE TO SPECIAL INSPECTOR PRIOR TO THE TIME THAT SPECIAL INSPECTION IS REQUIRED.
10. SPECIAL INSPECTION AGENCY SHALL KEEP RECORDS OF SPECIAL INSPECTIONS AND TESTS AND SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL AND TO THE ENGINEER. REPORTS SHALL INDICATE THAT WORK INSPECTED OR TESTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE ENGINEER PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND TESTS, AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS AND TESTS, SHALL BE SUBMITTED TO THE BUILDING OFFICIAL.
11. WHERE SPECIAL INSPECTION OF STRUCTURAL MEMBERS OR ASSEMBLIES IS BEING CONDUCTED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE PERFORMED DURING FABRICATION.
12. SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. UPON THE COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE OWNER OR THE OWNER'S AUTHORIZED AGENT FOR SUBMITTAL TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
13. REFER TO THE CODE SECTIONS REFERENCED IN THE HEADER OF EACH TABLE ON THIS SHEET FOR TESTING AND INSPECTION CRITERIA.
14. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL TESTING AND INSPECTION CRITERIA.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS (MBC SECTION 1705.6)

SPECIAL INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO THE PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION (MBC SECTION 1705.3)

SPECIAL INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. INSPECT REINFORCEMENT AND VERIFY PLACEMENT.	-	X
2. REINFORCING BAR WELDING (PERMITTED ONLY WHEN SPECIFICALLY SHOWN IN THE DETAILS OR WITH PERMISSION IN WRITING BY THE ENGINEER):		
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	-	X
B. INSPECT SINGLE-PASS FILLET WELDS UP TO AND INCLUDING 5/16"	-	X
C. INSPECT ALL OTHER WELDS	X	-
3. INSPECT ANCHORS CAST IN CONCRETE	-	X
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE		
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS	X	-
B. ALL OTHER ANCHORS POST-INSTALLED IN HARDENED CONCRETE	-	X
5. VERIFY USE OF REQUIRED DESIGN MIX.	-	X
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-
7. INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X
9. INSPECT PRESTRESSED CONCRETE FOR APPLICATION OF PRESTRESSING FORCES.	X	-
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	-	X
11. VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED.	-	X

EXCEPTIONS - THE ABOVE SPECIAL INSPECTIONS AND TESTS SHALL NOT BE REQUIRED FOR THE FOLLOWING BUILDING ELEMENTS:
1. ISOLATED SPREAD FOOTINGS OF BUILDINGS THREE STORIES OR LESS ABOVE GRADE THAT ARE FULLY SUPPORTED ON EARTH OR ROCK.
2. NONSTRUCTURAL SLABS SUPPORTED DIRECTLY ON THE GROUND.

REQUIRED SPECIAL INSPECTIONS PRIOR TO WELDING OF STRUCTURAL STEEL (AISC 360 N5.4)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS	-	X
2. WPS AVAILABLE	X	-
3. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	-
4. MATERIAL IDENTIFICATION (TYPE/GRADE)	-	X
5. WELDER IDENTIFICATION SYSTEM	-	X
6. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)		
A. JOINT PREPARATIONS	-	X
B. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)		
C. CLEANLINESS (CONDITION OF STEEL SURFACES)		
D. TACKING (TACK WELD QUALITY AND LOCATION)		
E. BACKING TYPE AND FIT (IF APPLICABLE)		
7. CONFIGURATION AND FINISH OF ACCESS HOLES	-	X
8. FIT-UP OF FILLET WELDS		
A. DIMENSIONS (ALIGNMENT, GAPS AT ROOT)	-	X
B. CLEANLINESS (CONDITION OF STEEL SURFACES)		
C. TACKING (TACK WELD QUALITY AND LOCATION)		

REQUIRED SPECIAL INSPECTIONS DURING WELDING OF STRUCTURAL STEEL (AISC 360 N5.4)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. CONTROL AND HANDLING OF WELDING CONSUMABLES		
A. PACKAGING	-	X
B. EXPOSURE CONTROL		
2. NO WELDING OVER CRACKED TACK WELDS	-	X
3. ENVIRONMENTAL CONDITIONS		
A. WIND SPEED WITHIN LIMITS	-	X
B. PRECIPITATION AND TEMPERATURE		
4. WPS FOLLOWED		
A. SETTINGS ON WELDING EQUIPMENT		
B. TRAVEL SPEED		
C. SELECTED WELDING MATERIALS	-	X
D. SHIELDING GAS TYPE/FLOW RATE		
E. PREHEAT APPLIED		
F. INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.)		
G. PROPER POSITION (F, V, H, OH)		
5. WELDING TECHNIQUES		
A. INTERPASS AND FINAL CLEANING	-	X
B. EACH PASS WITHIN PROFILE LIMITATIONS		
C. EACH PASS MEETS QUALITY REQUIREMENTS		
6. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	X	-

REQUIRED SPECIAL INSPECTIONS AFTER WELDING OF STRUCTURAL STEEL (AISC 360 N5.4)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. WELDS CLEANED	-	X
2. SIZE, LENGTH, AND LOCATION OF WELDS	X	-
3. WELDS MEET VISUAL ACCEPTANCE CRITERIA		
A. CRACK PROHIBITION		
B. WELD/BASE-METAL FUSION		
C. CRATER CROSS SECTION	X	-
D. WELD PROFILES		
E. WELD SIZE		
F. UNDERCUT		
G. POROSITY		
4. ARC STRIKES	X	-
5. K-AREA	X	-
6. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES	X	-
7. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	-
8. REPAIR ACTIVITIES	X	-
9. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	X	-
10. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR	-	X

REQUIRED NONDESTRUCTIVE TESTING OF WELDED JOINTS IN STRUCTURAL STEEL (AISC 360 N5.5)

TESTING TASK
1. ULTRASONIC TESTING OF COMPLETE-JOINT-PENETRATION (CJP) GROOVE WELDS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN BUTT, T- AND CORNER JOINTS, IN MATERIAL 5/16" THICK OR GREATER
A. ULTRASONIC TESTING SHALL BE PERFORMED ON 10% OF SUCH WELDS IN STRUCTURES IN RISK CATEGORY II
B. ULTRASONIC TESTING SHALL BE PERFORMED ON 100% OF SUCH WELDS IN STRUCTURES IN RISK CATEGORY III OR IV
C. REFER TO AISC 360 SECTION N5.5 FOR CONDITIONS WHERE THE RATE OF ULTRASONIC TESTING IS PERMITTED TO BE REDUCED
D. REFER TO AISC 360 SECTION N5.5 FOR CONDITIONS WHERE THE RATE OF ULTRASONIC TESTING IS REQUIRED TO BE INCREASED

REQUIRED SPECIAL INSPECTIONS PRIOR TO BOLTING OF STRUCTURAL STEEL (AISC 360 N5.6)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	X	-
2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	-	X
3. CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	-	X
4. CORRECT BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	-	X
5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	-	X
6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED (REQUIRED ONLY FOR PRETENSIONED OR SLIP-CRITICAL JOINTS)	-	X
7. PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	-	X

REQUIRED SPECIAL INSPECTIONS DURING BOLTING OF STRUCTURAL STEEL (AISC 360 N5.6)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS AND NUTS ARE POSITIONED AS REQUIRED.	-	X
2. JOINT BROUGHT INTO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION.	-	X
3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING.	-	X
4. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES (REQUIRED ONLY FOR PRETENSIONED OR SLIP-CRITICAL JOINTS)	-	X

REQUIRED SPECIAL INSPECTIONS AFTER BOLTING OF STRUCTURAL STEEL (AISC 360 N5.6)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	X	-

OTHER REQUIRED SPECIAL INSPECTIONS OF STRUCTURAL STEEL (AISC 360 N5.7 AND N5.8)

SPECIAL INSPECTION TASK
1. VISUALLY INSPECT EXPOSED CUT SURFACES OF GALVANIZED STRUCTURAL STEEL MAIN MEMBERS AND EXPOSED CORNERS OF RECTANGULAR HSS FOR CRACKS SUBSEQUENT TO GALVANIZING.
2. DURING PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL, VERIFY AND DOCUMENT THE DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT INTO THE CONCRETE PRIOR TO PLACEMENT OF CONCRETE.
3. INSPECT THE FABRICATED STEEL OR ERECTED STEEL FRAME, AS APPLICABLE, TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN ON THE CONSTRUCTION DOCUMENTS. THIS INCLUDES SUCH ITEMS AS BRACES, STIFFENERS, MEMBER LOCATIONS, AND THE CORRECT APPLICATION OF JOINT DETAILS AT EACH CONNECTION.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF MASONRY CONSTRUCTION (MBC SECTION 1705.4 AND TMS 402-13 LEVEL B QUALITY ASSURANCE)

TESTING TASK
1. VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH TMS 602-13 ARTICLE 1.5 B.1.b.3 FOR SELF-CONSOLIDATING GROUT.
2. VERIFICATION OF f'm IN ACCORDANCE WITH TMS 602-13 ARTICLE 1.4 B PRIOR TO CONSTRUCTION.

SPECIAL INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	-	X
2. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		
A. PROPORTIONS OF SITE-PREPARED MORTAR	-	X
B. CONSTRUCTION OF MORTAR JOINTS	-	X
C. LOCATION OF REINFORCEMENT AND CONNECTORS	-	X
3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		
A. GROUT SPACE	-	X
B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS	-	X
C. PLACEMENT OF REINFORCEMENT AND CONNECTORS	-	X
D. PROPORTIONS OF SITE-PREPARED GROUT	-	X
E. CONSTRUCTION OF MORTAR JOINTS	-	X
4. VERIFY DURING CONSTRUCTION:		
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	-	X
B. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	-	X
C. WELDING OF REINFORCEMENT (PERMITTED ONLY WHEN SPECIFICALLY SHOWN IN THE DETAILS OR WITH PERMISSION IN WRITING BY THE ENGINEER)	X	-
D. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F)	-	X
E. PLACEMENT OF GROUT IS IN COMPLIANCE	X	-
5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	-	X

REQUIRED SPECIAL INSPECTIONS PRIOR TO STEEL DECK PLACEMENT (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSTRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS	X	-
2. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES	X	-

REQUIRED SPECIAL INSPECTIONS AFTER STEEL DECK PLACEMENT (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS	X	-
2. VERIFY DECK MATERIALS ARE REPRESENTED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMENTS	X	-
3. DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES	X	-

REQUIRED SPECIAL INSPECTIONS PRIOR TO WELDING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. WELDING PROCEDURE SPECIFICATIONS (WPS) AVAILABLE	-	X
2. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	-	X
3. MATERIAL IDENTIFICATION (TYPE/GRADE)	-	X
4. CHECK WELDING EQUIPMENT	-	X

REQUIRED SPECIAL INSPECTIONS DURING WELDING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. USE OF QUALIFIED WELDERS	-	X
2. CONTROL AND HANDLING OF WELDING CONSUMABLES	-	X
3. ENVIRONMENTAL CONDITIONS (WIND SPEED, MOISTURE, TEMPERATURE)	-	X
4. WPS FOLLOWED	-	X

REQUIRED SPECIAL INSPECTIONS AFTER WELDING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDELAP, AND PERIMETER WELDS	X	-
2. WELDS MEET VISUAL ACCEPTANCE CRITERIA	X	-
3. VERIFY REPAIR ACTIVITIES	X	-
4. DOCUMENT ACCEPTANCE OR REJECTION OF WELDS	X	-

REQUIRED SPECIAL INSPECTIONS PRIOR TO MECHANICAL FASTENING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. MANUFACTURER INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENERS	-	X
2. PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION	-	X
3. PROPER STORAGE FOR MECHANICAL FASTENERS	-	X

REQUIRED SPECIAL INSPECTIONS DURING MECHANICAL FASTENING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. FASTENERS ARE POSITIONED AS REQUIRED	-	X
2. FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS	-	X

REQUIRED SPECIAL INSPECTIONS AFTER MECHANICAL FASTENING OF STEEL DECK (SDI QA/QC)

SPECIAL INSPECTION TASK	PERFORM	OBSERVE
1. CHECK SPACING, TYPE, AND INSTALLATION OF SUPPORT FASTENERS	X	-
2. CHECK SPACING, TYPE, AND INSTALLATION OF SIDELAP FASTENERS	X	-
3. CHECK SPACING, TYPE, AND INSTALLATION OF PERIMETER FASTENERS	X	-
4. VERIFY REPAIR ACTIVITIES	X	-
5. DOCUMENT ACCEPTANCE OR REJECTION OF MECHANICAL FASTENERS	X	-

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
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REFERENCE DRAWINGS

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
STATEMENT OF SPECIAL INSPECTIONS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: SG-002
REV: D

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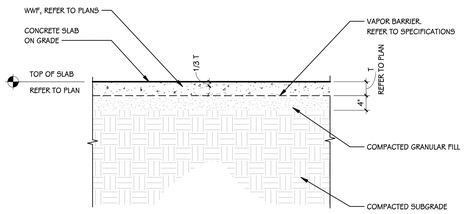
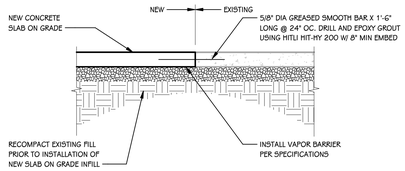
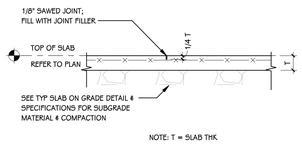


NOTES:
1. SUBGRADE SHALL BE PREPARED PER THE GEOTECHNICAL REPORT PRIOR TO SLAB PLACEMENT. UNSUITABLE SUBGRADE SHALL BE REMOVED AND REPLACED WITH AN ENGINEERED FILL OR ADEQUATE BORROW MATERIAL AND COMPACTED PER THE EARTHWORK SPECIFICATIONS AND GEOTECHNICAL REPORT RECOMMENDATIONS.
2. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR CONTROL JOINT REQUIREMENTS IN SLAB ON GRADE.

TYPICAL SLAB ON GRADE CONSTRUCTION
SCALE: NONE

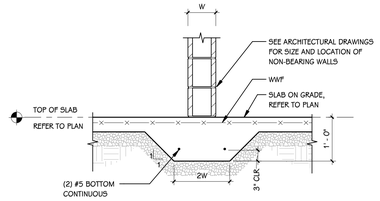


TYPICAL SLAB ON GRADE INFILL DETAIL
SCALE: NONE

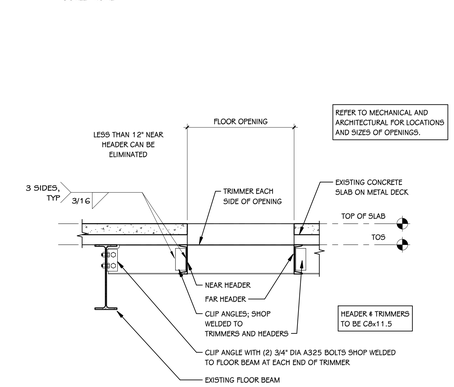


NOTE: T = SLAB THK

TYPICAL SOG CONTROL JOINT
SCALE: NONE

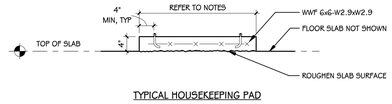


TYPICAL THICKENED SLAB
SCALE: NONE



1. TYPICAL OPENING GREATER THAN 18", INCLUDING ALL ROOF DRAINS; INDICATES OPENING ON PLAN.
2. COORDINATE LOCATION AND SIZE OF OPENINGS WITH MECHANICAL CONTRACTOR.

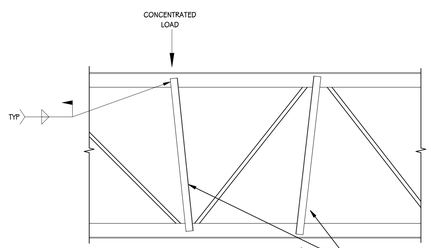
TYPICAL FLOOR OPENING
SCALE: NONE



TYPICAL HOUSEKEEPING PAD

NOTES:
1. REFER TO ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR PAD SIZES AND LOCATIONS. COORDINATE QUANTITY AND LOCATION OF EQUIPMENT ANCHOR BOLTS WITH APPROVED SHOP DRAWINGS.
2. PROVIDE EQUIPMENT PAD PLAN DIMENSIONS AS REQUIRED FOR UNIT, COORDINATE REQUIRED DIMENSIONS WITH APPROVED EQUIPMENT SHOP DRAWINGS.

TYPICAL EQUIPMENT PAD DETAILS
SCALE: NONE



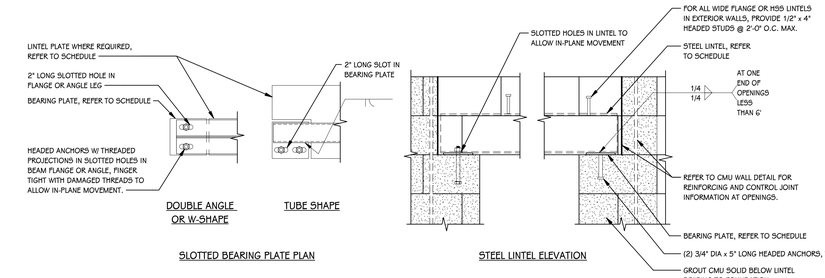
IN ADDITION TO CONCENTRATED LOADS NOTED ON FRAMING PLANS, VERIFY LOCATION AND QUANTITY OF OTHER CONCENTRATED LOADS WITH ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS.

FIELD INSTALLED ANGLES ARE NOT REQUIRED WHERE THE SUM OF THE CONCENTRATED LOADS WITHIN A CHORD PANEL DOES NOT EXCEED 100 LBS AND THE ATTACHMENTS ARE CONCENTRIC TO THE CHORD.

REQUIRED ANGLE SIZES ARE AS FOLLOWS:

JOIST DEPTH	ANGLE SIZE
8" TO 24"	L1 1/2x1 1/2x3/16
26" TO 48"	L2x2x3/16
52" TO 72"	L2 1/2x2 1/2x1/4

TYPICAL JOIST MODIFICATION AT CONCENTRATED LOADS
SCALE: NONE

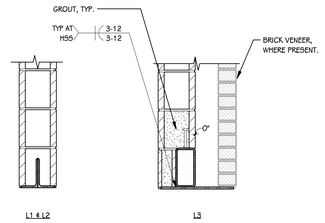


SLOTTED BEARING PLATE PLAN

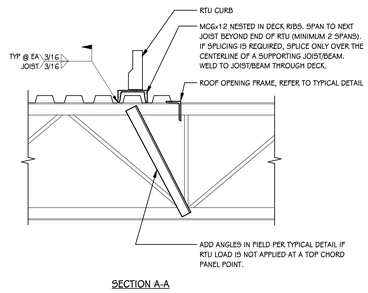
STEEL LINTEL ELEVATION

STEEL LINTEL SCHEDULE			
MARK	SHAPE	BEARING PLATE	REMARKS
L1	2L4-1/2x3-1/2x5/16	NA	
L2	2L6x3-1/2x5/16 LLV	NA	
L3	HSS6x4x5/16 W/ 5/16" BOT PLATE	3/8"x7"x7"	

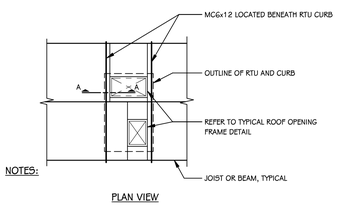
NOTES:
1. ALL OPENINGS WIDER THAN 8" IN MASONRY WALLS REQUIRE LINTELS. NOT ALL LINTELS ARE SHOWN ON PLANS. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS AND SIZES OF OPENINGS.
2. 8" LINTEL BEARING REQUIRED, EACH END
3. ALL LINTELS WITHIN EXTERIOR WALLS SHALL BE GALVANIZED.
4. GROUT CMU SOLID BELOW LINTEL BEARING DOWN TO FOUNDATION.
5. IF A STRUCTURAL COLUMN IS IN THE MASONRY WALL WITHIN 2'-0" FROM EDGE OF OPENING, FRAME LINTEL INTO COLUMN WITH STANDARD AISC CONNECTIONS.
6. WITHIN EXISTING MASONRY WALLS, WHERE NO LINTEL DESIGNATION IS NOTED ON FRAMING PLANS, PROVIDE LINTEL AS FOLLOWS:
   L1 FOR OPENINGS LESS THAN OR EQUAL TO 4' - 0" WIDE
   L2 FOR OPENINGS LESS THAN OR EQUAL TO 6' - 8" WIDE



STEEL LINTEL SCHEDULE
SCALE: NONE



SECTION A-A

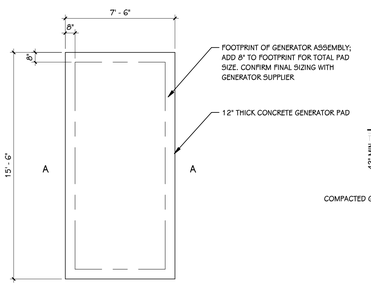


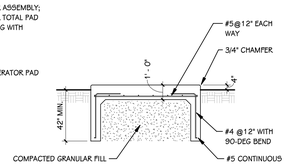
PLAN VIEW

1. REFER TO ARCHITECTURAL FOR BLOCKING AND FLASHING REQUIREMENTS AT RTU CURB.
2. COORDINATE MC6x12 LOCATIONS WITH MECHANICAL CONTRACTOR.
3. COORDINATE SIZE AND LOCATION OF ROOF OPENING FRAMES WITH MECHANICAL CONTRACTOR. OPENING QUANTITY, SIZES, AND LOCATIONS SHOWN IN THIS DETAIL ARE NOT REPRESENTATIVE OF ACTUAL OPENINGS REQUIRED.
4. IN THE CASE THAT THE RTU IS ORIENTED WITH THE LONG DIMENSION PARALLEL TO JOISTS/BEAMS, PROVIDE MC6x12 BENEATH EACH END OF THE RTU AND @4'-0" MAX SPACING BETWEEN ENDS (COORDINATE PLACEMENT WITH OPENING LOCATIONS). MC6x12 SHALL SPAN TO NEXT JOIST BEYOND SIDES OF RTU.
5. WHERE RTU CURB LOCATION RELATIVE TO ROOF DECK RIBS IS SUCH THAT A SINGLE MC6x12 NESTED IN THE DECK RIBS DOES NOT FULLY SUPPORT THE RTU CURB OR DOES NOT PROVIDE AN ADQUATE SURFACE FOR CONNECTION OF THE RTU CURB, PROVIDE DOUBLE MC6x12 AT NO ADDITIONAL COST. COORDINATE WITH MECHANICAL CONTRACTOR.
6. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTIONS OF ROOFTOP EQUIPMENT TO CURBS AND CURBS TO THE SUPPORTING STRUCTURE. DESIGN OF CONNECTIONS SHALL CONSIDER ALL APPLICABLE LOADS IN ACCORDANCE WITH THE BUILDING CODE, INCLUDING WIND AND SEISMIC LOADS.

NOTES:

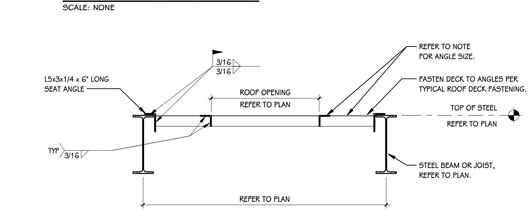
TYPICAL RTU SUPPORT
SCALE: NONE





SECTION A-A

EXTERIOR GENERATOR PAD DETAIL
SCALE: NONE



NOTES:
1. FOR OPENINGS UP TO 6'-0" WIDE PROVIDE L3x3x1/4
   FOR OPENINGS LARGER THAN 6'-0" WIDE AND LESS THAN 10'-0" WIDE PROVIDE L5x3x1/4
2. COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS.

TYPICAL ROOF OPENING FRAME
SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	RE	RE	KS	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	RE	RE	KS	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
TYPICAL STRUCTURAL DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: SG-003
REV: D

22-133.010

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FOUNDATION PLAN - UNIT A
1/8" = 1'-0"

GENERAL NOTES - STRUCTURAL - FOUNDATION

1 FLOOR CONSTRUCTION, UNO: 4" SLAB ON GRADE WITH 6x6-W2.9xW2.9 WWF. IN HIGH BAY AREAS, PROVIDE 6" CONCRETE SLAB REINFORCED WITH 6X6-W5xW5 WWF. REFER TO TYPICAL DETAILS ON FOR ADDITIONAL REQUIREMENTS

2 TOP OF SLAB-ON-GRADE ELEVATION = 100'-0", UNO

3 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

4 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

5 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

6 COORDINATE WITH ALL DRAWINGS FOR LOCATION OF OPENINGS, SLEEVES, AND UNDER FLOOR PIPES, CONDUITS, DRAINS, DEPRESSIONS, ETC.

7 SHORING, BRACING AND SHEETING MAY BE REQUIRED WHEN EXCAVATION ADJACENT TO THE EXISTING STRUCTURE. DESIGN AND INSTALLATION OF SUCH SHORING, BRACING AND SHEETING IS THE RESPONSIBILITY OF THE CONTRACTOR.

KEYED NOTES - STRUCTURAL - FOUNDATION

1 DOWEL NEW STAIR FOUNDATION WALLS TO FACE OF EXISTING CONCRETE FOUNDATION WALL. REFER TO SECTIONS FOR MORE INFORMATION.

2 INSPECT EXISTING CONCRETE AND EMBEDDED STEEL COMPONENTS AT DOCK LEVELERS AFTER REMOVAL OF EXISTING LEVELERS. NOTIFY ENGINEER PRIOR TO INSTALLATION OF NEW LEVELERS IF REMEDIATION IS REQUIRED.

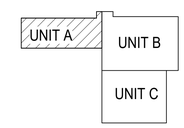
3 RECESSED SLAB FOR BOOT WASH. REFER TO SECTIONS FOR MORE INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

4 HOLD TOP OF SLAB DOWN 3/8" FOR RECESSED WALK-OFF MAT. REFER TO SECTIONS FOR ADDITIONAL INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

LEGEND - STRUCTURAL - FOUNDATION

	TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS
TOW	TOP OF WALL
TOF	TOP OF FOUNDATION

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

SIGNATURE
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MICHIGAN P.E. No.: 6201050501

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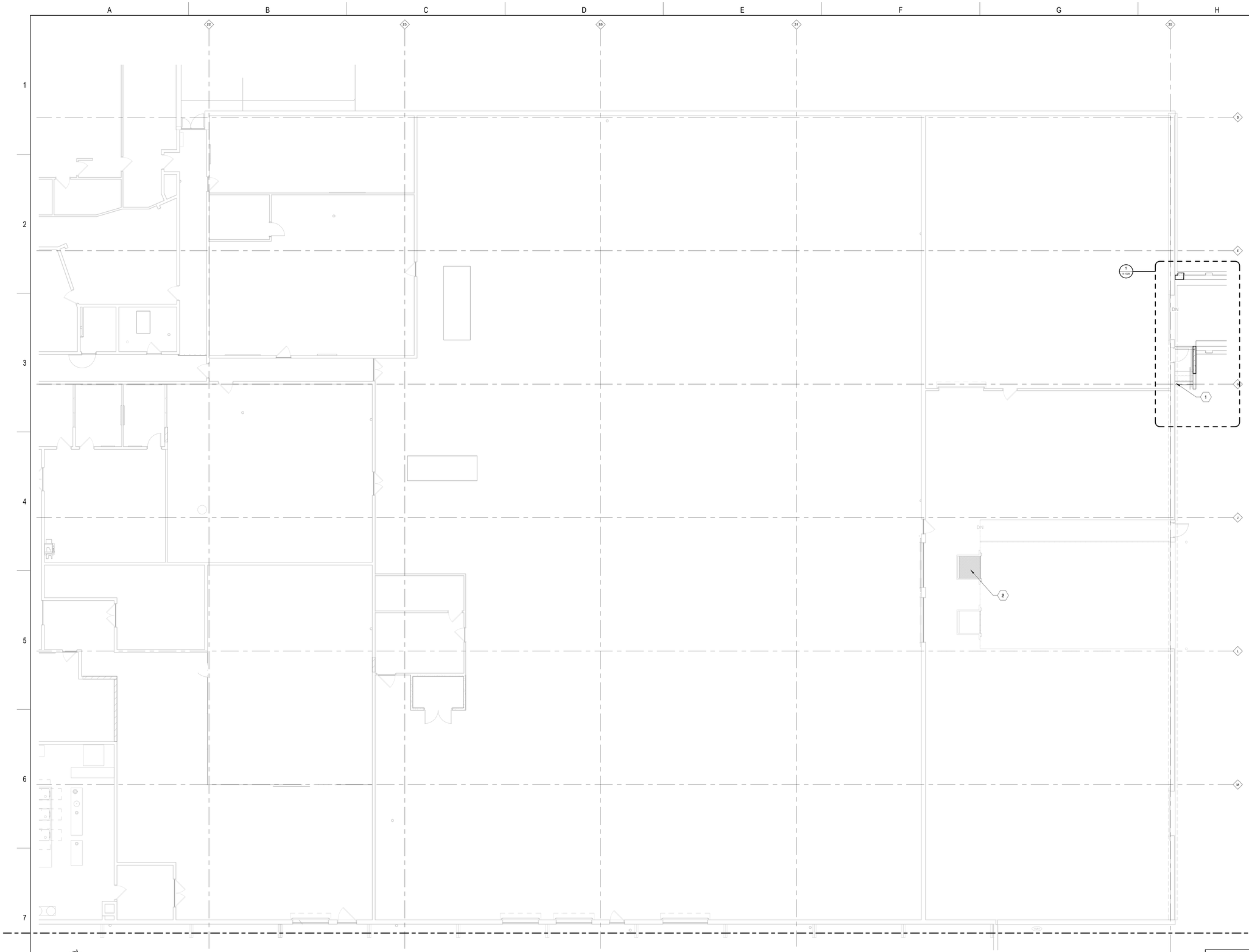
SHEET TITLE
FOUNDATION PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	S-101A	D

22-133.010



FOUNDATION PLAN - UNIT B
1/8" = 1'-0"

GENERAL NOTES - STRUCTURAL - FOUNDATION

1 FLOOR CONSTRUCTION, UNO: 4" SLAB ON GRADE WITH 6xG-W2.9xW2.9 WWF. IN HIGH BAY AREAS, PROVIDE 6" CONCRETE SLAB REINFORCED WITH 6XG-W5xW5 WWF. REFER TO TYPICAL DETAILS ON FOR ADDITIONAL REQUIREMENTS

2 TOP OF SLAB-ON-GRADE ELEVATION = 100'-0", UNO

3 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

4 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

5 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

6 COORDINATE WITH ALL DRAWINGS FOR LOCATION OF OPENINGS, SLEEVES, AND UNDER FLOOR PIPES, CONDUITS, DRAINS, DEPRESSIONS, ETC.

7 SHORING, BRACING AND SHEETING MAY BE REQUIRED WHEN EXCAVATION ADJACENT TO THE EXISTING STRUCTURE. DESIGN AND INSTALLATION OF SUCH SHORING, BRACING AND SHEETING IS THE RESPONSIBILITY OF THE CONTRACTOR.

KEYED NOTES - STRUCTURAL - FOUNDATION

1 DOWEL NEW STAIR FOUNDATION WALLS TO FACE OF EXISTING CONCRETE FOUNDATION WALL. REFER TO SECTIONS FOR MORE INFORMATION.

2 INSPECT EXISTING CONCRETE AND EMBEDDED STEEL COMPONENTS AT DOCK LEVELERS AFTER REMOVAL OF EXISTING LEVELERS. NOTIFY ENGINEER PRIOR TO INSTALLATION OF NEW LEVELERS IF REMEDIATION IS REQUIRED.

3 RECESSED SLAB FOR BOOT WASH. REFER TO SECTIONS FOR MORE INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

4 HOLD TOP OF SLAB DOWN 3/8" FOR RECESSED WALK-OFF MAT. REFER TO SECTIONS FOR ADDITIONAL INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

LEGEND - STRUCTURAL - FOUNDATION

	TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS
TOW	TOP OF WALL
TOF	TOP OF FOUNDATION

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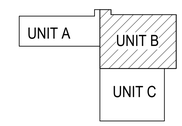

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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B	2024-01-31	ISSUED FOR 60% REVIEW	RE	RE	KS	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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SHEET TITLE
FOUNDATION PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: S-101B
REV: D

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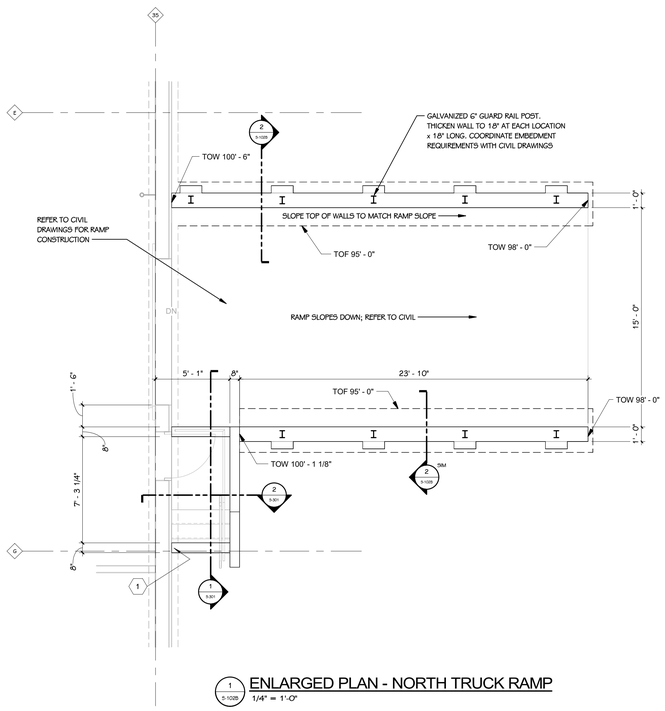
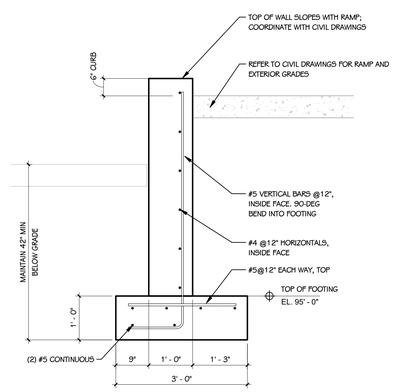


1 S-102B **ENLARGED PLAN - NORTH TRUCK RAMP**
1/4" = 1'-0"



2 S-102B **SECTION**
3/4" = 1'-0"

GENERAL NOTES - STRUCTURAL - FOUNDATION

1 FLOOR CONSTRUCTION, UNO: 4" SLAB ON GRADE WITH 6XG-W2.9XW2.9 WWF. IN HIGH BAY AREAS, PROVIDE 6" CONCRETE SLAB REINFORCED WITH 6XG-W5XW5 WWF. REFER TO TYPICAL DETAILS ON FOR ADDITIONAL REQUIREMENTS

2 TOP OF SLAB-ON-GRADE ELEVATION = 100'-0", UNO

3 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

4 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

5 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

6 COORDINATE WITH ALL DRAWINGS FOR LOCATION OF OPENINGS, SLEEVES, AND UNDER FLOOR PIPES, CONDUITS, DRAINS, DEPRESSIONS, ETC.

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KEYED NOTES - STRUCTURAL - FOUNDATION

1 DOWEL NEW STAIR FOUNDATION WALLS TO FACE OF EXISTING CONCRETE FOUNDATION WALL. REFER TO SECTIONS FOR MORE INFORMATION.

2 INSPECT EXISTING CONCRETE AND EMBEDDED STEEL COMPONENTS AT DOCK LEVELERS AFTER REMOVAL OF EXISTING LEVELERS. NOTIFY ENGINEER PRIOR TO INSTALLATION OF NEW LEVELERS IF REMEDIATION IS REQUIRED.

3 RECESSED SLAB FOR BOOT WASH. REFER TO SECTIONS FOR MORE INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

4 HOLD TOP OF SLAB DOWN 3/8" FOR RECESSED WALK-OFF MAT. REFER TO SECTIONS FOR ADDITIONAL INFORMATION. COORDINATE FINAL SIZE WITH ARCHITECTURAL DRAWINGS.

LEGEND - STRUCTURAL - FOUNDATION

	TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS
TOW	TOP OF WALL
TOF	TOP OF FOUNDATION

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

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KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED PLANS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: S-102B
REV: A

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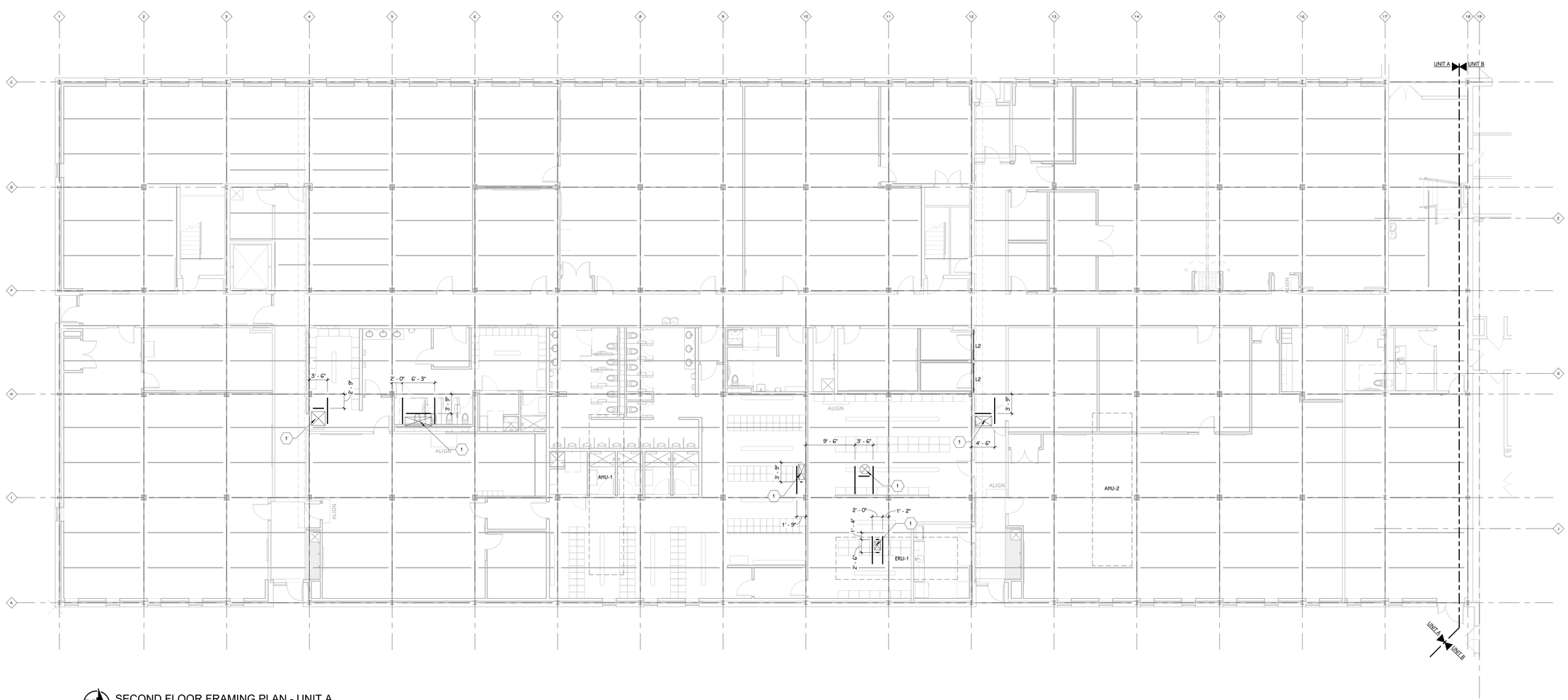


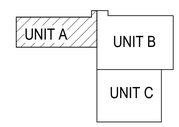
SECOND FLOOR FRAMING PLAN - UNIT A

1/8" = 1'-0"

NOTES - STRUCTURAL - FRAMING
1 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS
2 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS
3 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

KEYED NOTES - STRUCTURAL - FRAMING
1 OPENING THROUGH CONCRETE FLOOR. REFER TO 'TYPICAL FLOOR OPENING' DETAIL.
2 CUT EXISTING ROOF FRAMING MEMBER AND FRAME TO NEW W8X10 BEAM.
3 NEW ROOF OPENING. REFER TO 'TYPICAL ROOF OPENING' DETAIL FOR ADDITIONAL FRAMING REQUIRED.
4 NEW GALVANIZED STEEL FRAMING TO BE SUPPORTED OFF EXISTING PIPE COLUMNS AT FOUR CORNERS. REFER TO SECTIONS FOR ATTACHMENT OF NEW FRAMING TO COLUMNS.
5 HSS2x2 DIAGONAL BRACE IN EAST/WEST DIRECTION AT ALL FOUR CORNERS
7 ROOF DECK TO BE PATCHED WHERE EXISTING EQUIPMENT IS SCHEDULED TO BE REMOVED.

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	RE	RE	KS	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	RE	RE	KS	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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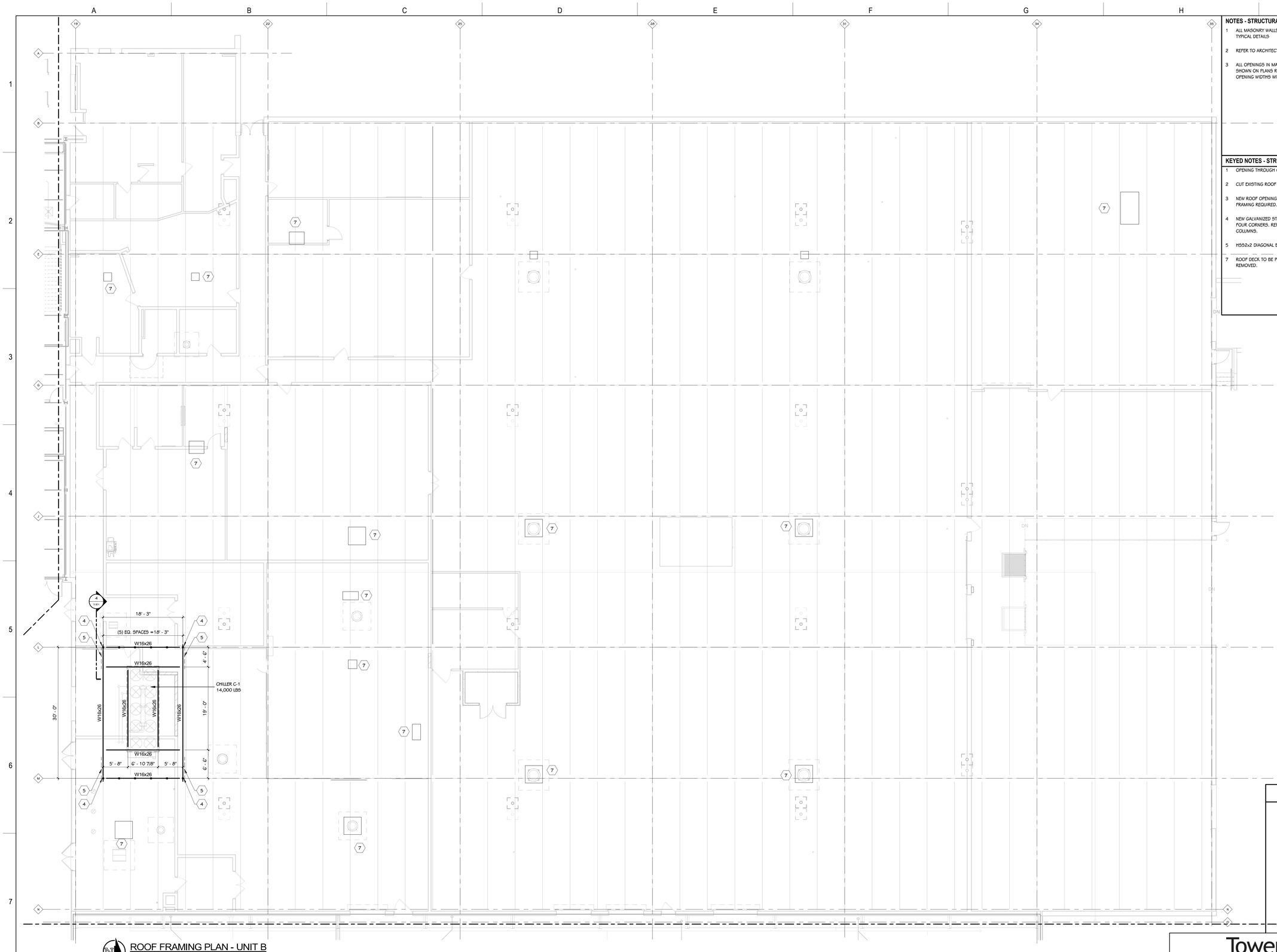
SHEET TITLE
SECOND FLOOR FRAMING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: S-201A
REV: D

22-133.010



ROOF FRAMING PLAN - UNIT B
1/8" = 1'-0"

NOTES - STRUCTURAL - FRAMING

1 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

2 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

3 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

KEYED NOTES - STRUCTURAL - FRAMING

1 OPENING THROUGH CONCRETE FLOOR. REFER TO 'TYPICAL FLOOR OPENING' DETAIL.

2 CUT EXISTING ROOF FRAMING MEMBER AND FRAME TO NEW W8X10 BEAM.

3 NEW ROOF OPENING. REFER TO 'TYPICAL ROOF OPENING' DETAIL FOR ADDITIONAL FRAMING REQUIRED.

4 NEW GALVANIZED STEEL FRAMING TO BE SUPPORTED OFF EXISTING PIPE COLUMNS AT FOUR CORNERS. REFER TO SECTIONS FOR ATTACHMENT OF NEW FRAMING TO COLUMNS.

5 HSS2x2 DIAGONAL BRACE IN EAST/WEST DIRECTION AT ALL FOUR CORNERS

7 ROOF DECK TO BE PATCHED WHERE EXISTING EQUIPMENT IS SCHEDULED TO BE REMOVED.

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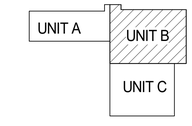
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	RE	RE	KS	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

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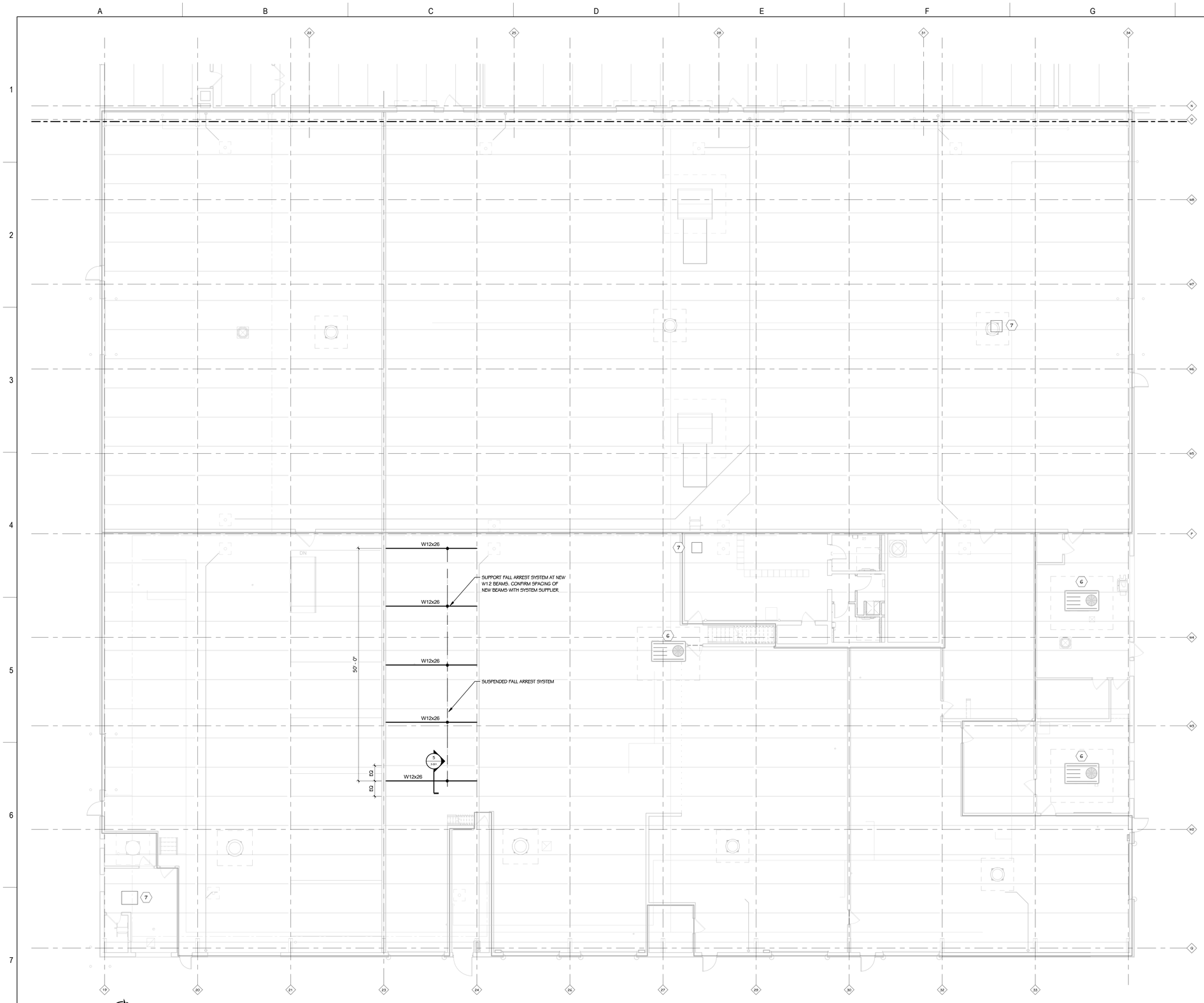
SHEET TITLE
ROOF FRAMING PLAN - UNIT B

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	S-201B	D

22-133.010



ROOF FRAMING PLAN - UNIT C
1/8" = 1'-0"

NOTES - STRUCTURAL - FRAMING

1 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

2 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

3 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

KEYED NOTES - STRUCTURAL - FRAMING

1 OPENING THROUGH CONCRETE FLOOR. REFER TO 'TYPICAL FLOOR OPENING' DETAIL.

2 CUT EXISTING ROOF FRAMING MEMBER AND FRAME TO NEW W8X10 BEAM.

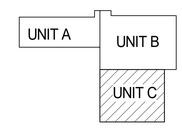
3 NEW ROOF OPENING. REFER TO 'TYPICAL ROOF OPENING' DETAIL FOR ADDITIONAL FRAMING REQUIRED.

4 NEW GALVANIZED STEEL FRAMING TO BE SUPPORTED OFF EXISTING PIPE COLUMNS AT FOUR CORNERS. REFER TO SECTIONS FOR ATTACHMENT OF NEW FRAMING TO COLUMNS.

5 HSS2x2 DIAGONAL BRACE IN EAST/WEST DIRECTION AT ALL FOUR CORNERS

7 ROOF DECK TO BE PATCHED WHERE EXISTING EQUIPMENT IS SCHEDULED TO BE REMOVED.

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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B	2024-01-31	ISSUED FOR 60% REVIEW	RE	RE	KS	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ROOF FRAMING PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: S-201C
REV: D

22-133.010

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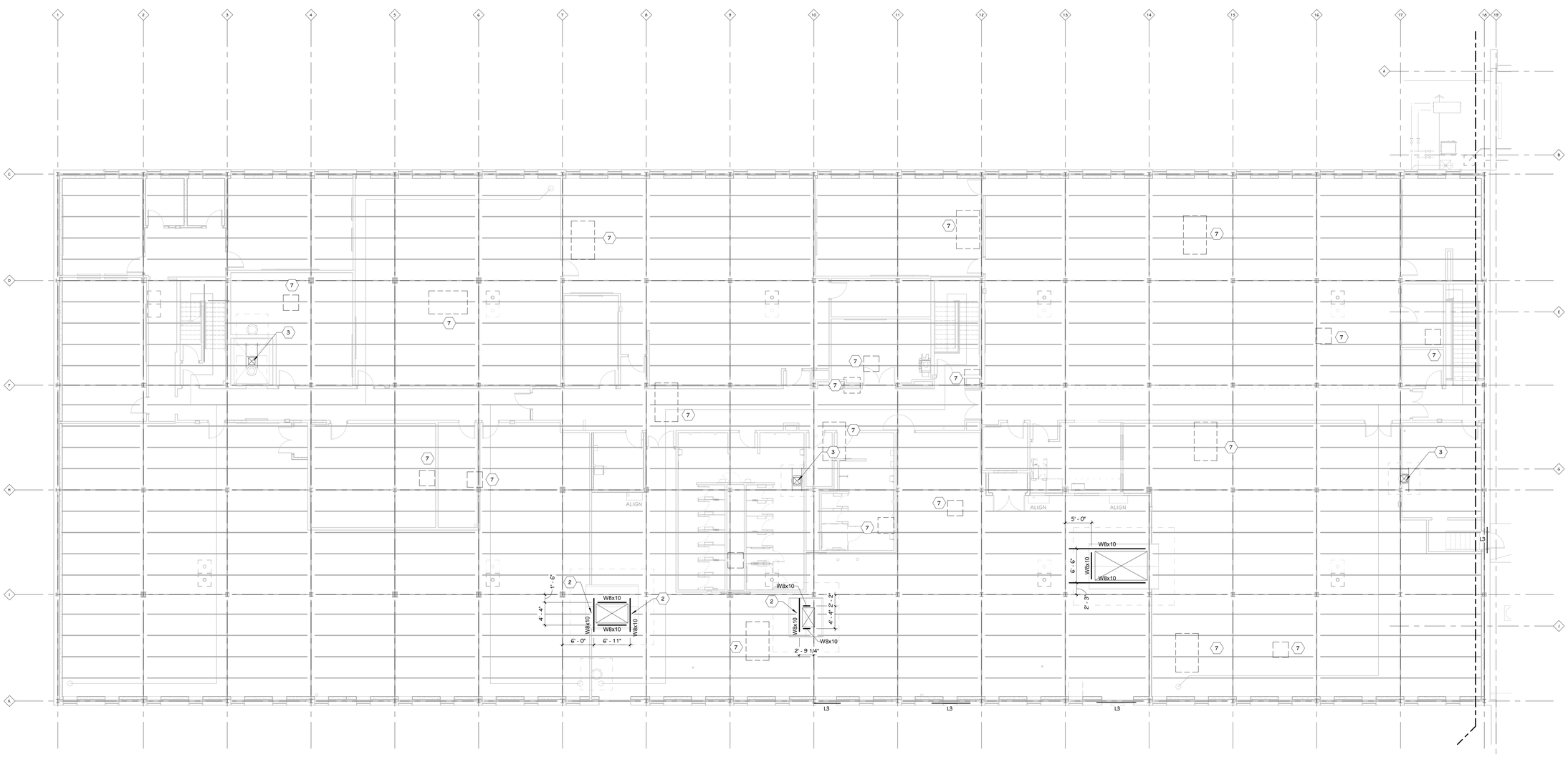

ROOF FRAMING PLAN - UNIT A

1/8" = 1'-0"

NOTES - STRUCTURAL - FRAMING

1 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

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7 ROOF DECK TO BE PATCHED WHERE EXISTING EQUIPMENT IS SCHEDULED TO BE REMOVED.

KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	RE	RE	KS	SDT	TP

REFERENCE DRAWINGS

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MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ROOF FRAMING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	S-202A	D

22-133.010

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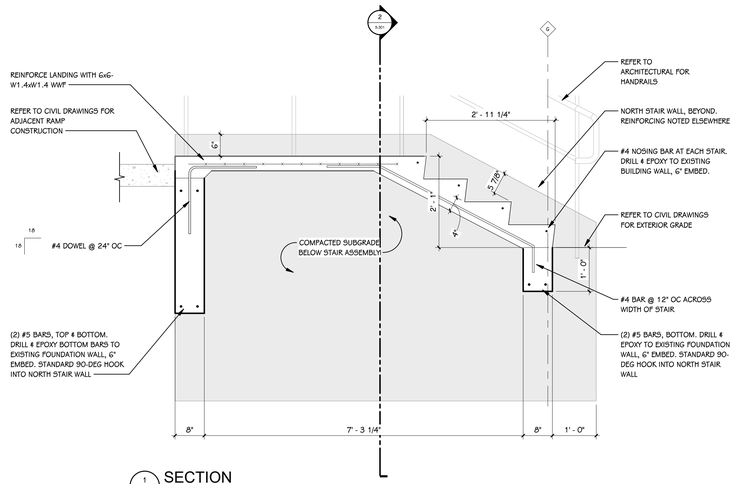
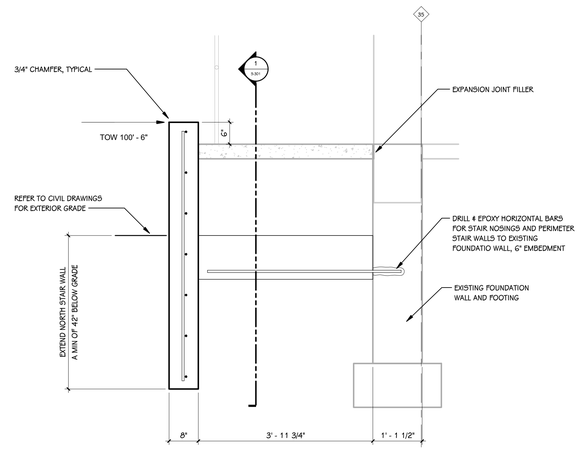
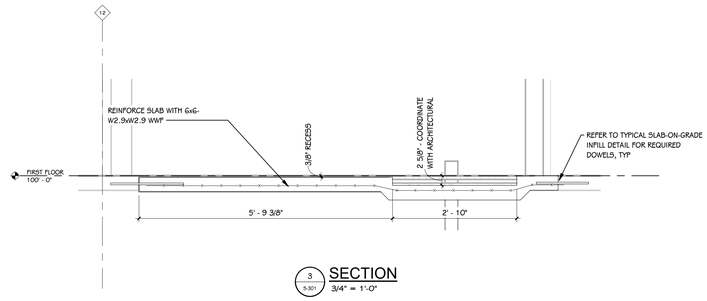


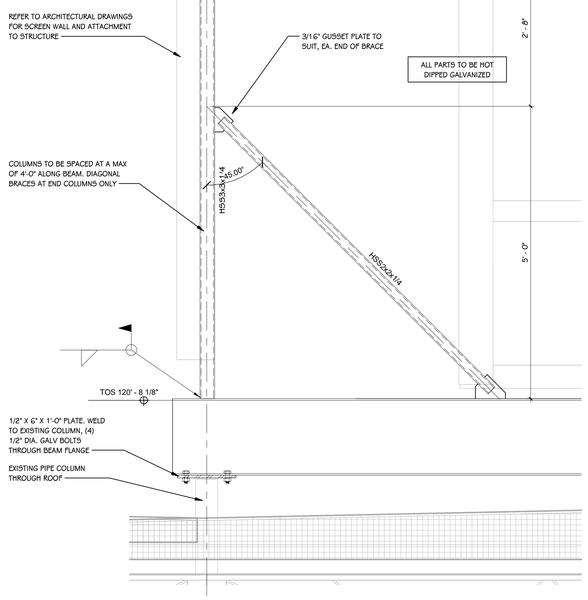
1 / S-301 SECTION
3/4" = 1'-0"



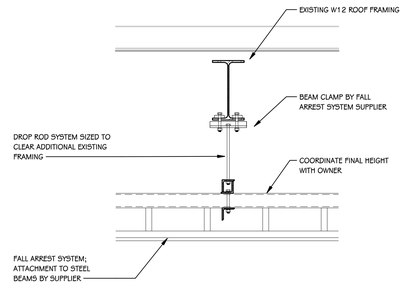
2 / S-301 SECTION
3/4" = 1'-0"



3 / S-301 SECTION
3/4" = 1'-0"



4 / S-301 SECTION
1" = 1'-0"



5 / S-301 SECTION
1" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	RE	RE	KS	SDT	TP
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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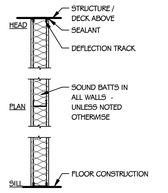
SHEET TITLE
FOUNDATION AND FRAMING DETAILS

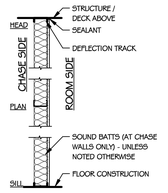
SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	S-301	D

22-133.010



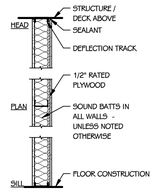
1X METAL STUDS @ 16" O.C. WITH 5/8" GYPSUM BOARD BOTH SIDES; (1 HOUR FIRE) U.L. ASSEMBLY U465 WHERE NOTED ON PLANS

METAL STUD WALL



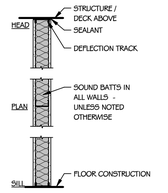
2X METAL STUDS @ 16" O.C. WITH 5/8" GYPSUM BOARD ON ROOM SIDE - BRACE WALL @ 4'-0" O.C. MAXIMUM.

METAL STUD CHASE WALL OR FURRING



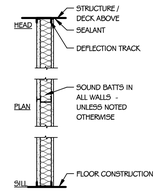
3X METAL STUDS @ 16" O.C. WITH 3/4" RATED PLYWOOD ONE SIDE AND 5/8" GYPSUM BOARD ON BOTH SIDES.

METAL STUD WALL WITH PLYWOOD BACKING



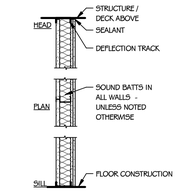
4X METAL STUDS @ 16" O.C. WITH 5/8" TYPE "X" GYPSUM BOARD BOTH SIDES TO DECK.

STRUCTURAL METAL STUD WALL



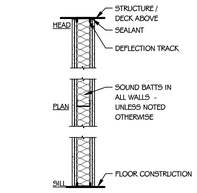
5X METAL CH STUDS @ 16" O.C. WITH 5/8" TYPE "X" GYPSUM BOARD ON ROOM SIDE AND 1" TYPE "X" GYPSUM BOARD PANEL ON CHASE SIDE

METAL STUD CHASE WALL (1 HOUR FIRE) U.L. ASSEMBLY U415



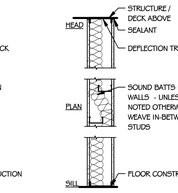
6X METAL CH STUDS @ 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON ROOM SIDE AND 1" TYPE "X" GYPSUM BOARD PANEL ON CHASE SIDE

METAL STUD CHASE WALL (2 HOUR FIRE) U.L. ASSEMBLY U438



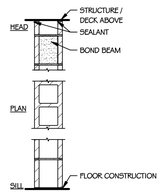
7X METAL STUDS @ 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD BOTH SIDES

METAL STUD WALL (2 HOUR FIRE) U.L. ASSEMBLY U425



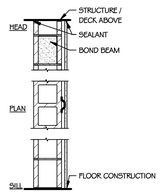
8" 6" TOP AND BOTTOM TRACK WITH 3 5/8" METAL STUD FRAMING @ 16" O.C. (OFFSET) WITH 5/8" GYPSUM BOARD BOTH SIDES

METAL STUD SOUND WALL



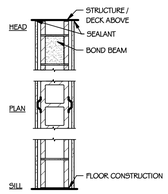
9" 4" CONCRETE MASONRY UNITS
10" 6" CONCRETE MASONRY UNITS
11" 8" CONCRETE MASONRY UNITS
12" 10" CONCRETE MASONRY UNITS
13" 12" CONCRETE MASONRY UNITS

CMU WALL (1 AND 2 HOUR FIRE) U.L. ASSEMBLY - U905



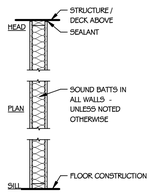
9X 4" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD
10X 6" CONCRETE MASONRY UNITS METAL FURRING AND 5/8" GYPSUM BOARD
11X 8" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD
12X 10" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD
13X 12" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD

CMU WALL WITH FURRING



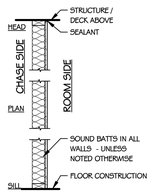
9XX 4" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES
10XX 6" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES
11XX 8" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES
12XX 10" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES
13XX 12" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES

CMU WALL WITH FURRING BOTH SIDES



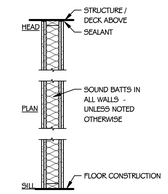
14X WOOD STUDS @ 16" O.C. WITH 5/8" GYPSUM BOARD BOTH SIDES; (1 HOUR FIRE) U.L. ASSEMBLY U305 WHERE NOTED ON PLANS

WOOD STUD WALL



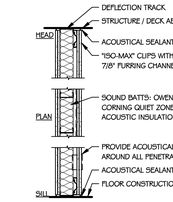
15X WOOD STUDS @ 16" O.C. WITH 5/8" GYPSUM BOARD ON ROOM SIDE - BRACE WALL @ 4'-0" O.C. MAXIMUM.

WOOD STUD CHASE WALL



16X WOOD STUDS @ 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD BOTH SIDES

WOOD STUD WALL (2 HOUR FIRE) U.L. ASSEMBLY U301

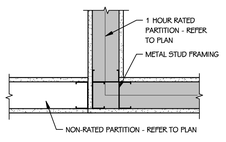


3 5/8" OR 6" METAL STUD (20 GA) FRAMING @ 16" O.C. WITH ONE (2) LAYER OF 5/8" GYPSUM BOARD ON ONE SIDE AND TWO (2) LAYERS OF 5/8" GYPSUM BOARD ON THE OTHER OVER 7/8" FURRING CHANNEL WITH "ISO-MAX" SOUND ISOLATIONS CLIPS. (STC-54)

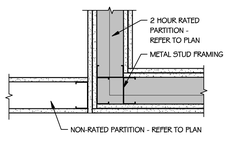
METAL STUD SOUND WALL - STC 54

INTERIOR PARTITION TYPES

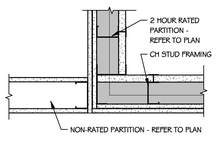
3/4" = 1'-0"



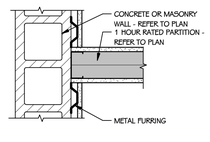
INTERSECTION OF NON-RATED AT 1 HOUR RATED PARTITION



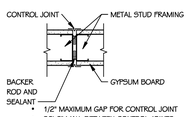
INTERSECTION OF NON-RATED AT 2 HOUR RATED PARTITION - U.L. ASSEMBLY U425



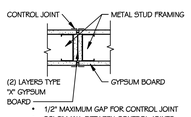
INTERSECTION OF NON-RATED AT 2 HOUR RATED PARTITION - U.L. ASSEMBLY U438



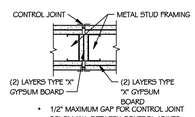
INTERSECTION OF CONCRETE/MASONRY AT 1 HOUR RATED PARTITION



GYPSUM BOARD CONTROL JOINT NON-RATED PARTITION



GYPSUM BOARD CONTROL JOINT 1 HOUR RATED PARTITION



GYPSUM BOARD CONTROL JOINT 2 HOUR RATED PARTITION

FIRE RATED WALL PLAN DETAILS

SCALE: NONE

GENERAL NOTES - ARCHITECTURAL - PARTITIONS

1 NOT ALL WALL TYPES MAY BE USED ON PROJECT.

2 REFER TO CODE COMPLIANCE PLANS FOR LOCATIONS OF SMOKE AND FIRE-RATED PARTITIONS.

3 ALL PARTITIONS EXTEND TO BOTTOM OF STRUCTURE, UNLESS NOTED OTHERWISE.

4 LINE OF STRUCTURE/DECK AS SHOWN AT THE HEAD CONDITION OF EACH PARTITION TYPE IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS. TERMINATE RATED PARTITIONS AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN RATING. PROVIDE APPROPRIATE FRAMING AND GYPSUM BOARD TO OFFSET AROUND STRUCTURE OR OTHER OBSTRUCTIONS, SUCH AS PIPING OR DUCTWORK.

5 PARTITIONS MAY TERMINATE AT STRUCTURAL MEMBERS WITH A RATING GREATER THAN OR EQUAL THE PARTITION, PROVIDED THAT RATING IS CONTINUOUS TO STRUCTURAL DECK ABOVE.

6 NON-RATED PARTITIONS THAT EXTEND TO STRUCTURE SHALL TERMINATE AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN A CONTINUOUS PLANE OF GYPSUM BOARD AS A NOISE, SMOKE OR OTHER TYPE OF BARRIER.

7 ALL PARTITIONS EXTENDING TO STRUCTURE ABOVE SHALL TERMINATE WITH DEFLECTION TRACK - REFER TO INTERIOR PARTITION TYPE DETAIL ON THIS SHEET.

8 ALL GYPSUM BOARD PARTITIONS NOT EXTENDING TO THE STRUCTURE MUST BE BRACED.

9 UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY; UNDERWRITERS LABORATORY, LATEST EDITION.

10 MISCELLANEOUS NON-RATED CHASES TO BE 5/8" GYPSUM BOARD ON 3 5/8" METAL STUD FRAMING AT 16" O.C., UNLESS NOTED OTHERWISE.

11 MISCELLANEOUS FURRING AROUND COLUMNS TO BE 5/8" GYPSUM BOARD ON 1 1/2" STUDS, UNLESS NOTED OTHERWISE.

12 FIRE-RATED PARTITIONS TO HAVE FIRE-STOPPING SEALANTS AT HEAD, SILL JUNCTURE WITH DISSIMILAR MATERIALS, ETC. AND AROUND ALL PENETRATIONS AND OPENINGS.

13 CONSTRUCT ALL PARTITIONS WITH SOUND ATTENUATION BATTS WITH THE FOLLOWING SOUND BATT THICKNESS: 2 1/2" OR LESS METAL STUD - 1 1/2" THICKNESS, 3 5/8" OR LARGER METAL STUD - 3" THICKNESS. UNLESS NOTED OTHERWISE.

PARTITION STUD KEY - METAL, CH, AND WOOD

METAL STUD/FURRING

DESIGNATION	SIZE
A	GYPSUM BOARD DIRECT APPLIED TO CMU
B	7/8"
C	1 1/2"
D	1 5/8"
E	2 1/2"
F	3 1/2"
G	3 5/8"
H	4
J	5 1/2"
K	6"
L	8"
M	10"
N	12"
P	OPEN
Q	OPEN

METAL STUD/FURRING

DESIGNATION	SIZE
R	2 1/2"
S	4"
T	6"

METAL STUD/FURRING

DESIGNATION	SIZE
U	2"x4"
V	2"x6"
W	2"x8"

PARTITION TYPE TAG (REFER TO FLOOR PLANS)

GENERAL NOTES - ARCHITECTURAL - DEMOLITION

1 CONTRACTORS ARE REQUIRED TO INSPECT/REVIEW THE EXISTING BUILDING PRIOR TO RELATED DEMOLITION WORK. UNLESS NOTED OTHERWISE, REMOVAL OF ANY WALL, FLOOR OR CEILING INCLUDES ALL GENERAL MECHANICAL AND ELECTRICAL ITEMS WHICH ARE A PART OF, OR ATTACHED TO IT.

2 CONTRACTOR SHALL VERIFY ALL EXISTING JOB SITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. ADVISE CONSTRUCTION MANAGER OF ANY AND ALL DISCREPANCIES.

3 PATCH FLOORS, WALLS AND CEILINGS DAMAGED DURING CONSTRUCTION AND DEMOLITION AS REQUIRED. FINISH TO MATCH EXISTING.

4 ACCOMMODATE NEW CONSTRUCTION IF NOT INDICATED.

5 PROTECT ALL EXISTING FINISHES THROUGHOUT PROJECT.

6 REFER TO DEMOLITION ELEVATIONS, SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.

7 REFER TO STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL PLANS FOR ADDITIONAL DEMOLITION NOTES.

8 SALVAGE ALL UNISTRUT AND PROTECT FOR RE-USE IN NEW CONSTRUCTION, IF REQUIRED.

9 AT LOCATIONS OF REMOVED WALLS, ALL ASSOCIATED ITEMS ATTACHED TO THE WALL ARE TO BE REMOVED. SUCH AS: DOORS, WINDOWS, FRAMES, MARKERBOARDS, TACKBOARDS, TACK STRIPS, ETC.

GENERAL NOTES - ARCHITECTURAL - NEW CONSTRUCTION

1 THE OWNER RESERVES THE RIGHT TO REMOVE ANY ITEM FROM THE PROJECT PRIOR TO COMMENCEMENT OF CONTRACTED DEMOLITION WORK.

2 ALL EXISTING CONDITIONS SHOULD BE FIELD VERIFIED BEFORE WORK BEGINS.

3 DIMENSIONS GIVEN ARE ACTUAL AND ARE TO THE FACE OF MASONRY UNITS OR TO THE FACE OF STUD FRAMING, UNLESS NOTED OTHERWISE.

4 DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

5 EXTEND ALL INTERIOR WALL PARTITIONS FROM FLOOR TO STRUCTURE/DECK ABOVE UNLESS NOTED OR DETAILED OTHERWISE.

6 WITHIN BUILDING INTERIOR PROVIDE BULLNOSE BLOCK IN CMU WALL ASSEMBLIES AT ALL EXPOSED OUTSIDE CORNERS, INCLUDING WINDOW AND DOOR JAMBS, UNLESS NOTES OR DETAILED OTHERWISE. PROVIDE SQUARE CORNERS AT ALL LOCATIONS FINISHED WITH WALL TILE, REFER TO FINISH PLANS (1100 SHEETS) FOR LOCATIONS.

7 TOOTH-IN MASONRY AT NEW OPENINGS IN EXISTING WALLS.

8 TOOTH-IN NEW MASONRY INFILL INTO EXISTING OPENINGS AT ALL BULLNOSE BLOCK LOCATIONS.

9 STUD WALLS SPANNING OVER 12'-0" IN HEIGHT SHALL BE A MINIMUM OF 20 GAGE.

10 STUD WALL SUPPORTING WALL CABINETS SHALL BE A MINIMUM OF 20 GAGE.

11 DOORS ARE TO BE 4" FROM CORNER OF ROOM, UNLESS NOTED OR DIMENSIONED OTHERWISE.

12 FIRESTOP ALL INTERCONNECTIONS BETWEEN VERTICAL AND HORIZONTAL SPACES AND CONCEALED WALL SPACES AT CEILING, FLOOR AND ROOF LEVELS.

13 FIRESEAL ALL PENETRATIONS, SUCH AS, PIPES, DUCTS, CONDUITS, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.

14 FOR CONTROL JOINT (C.J.) LOCATIONS REFER TO EXTERIOR ELEVATIONS AND/OR FLOOR PLANS.

15 PAINT ALL ELECTRICAL PANEL COVERS AND ACCESS PANELS TO MATCH ADJACENT FINISHES. USING OIL-BASED PAINT, NOT LATEX WALL PAINT.

16 PROVIDE WOOD BLOCKING IN WALLS THAT REQUIRE WALL MOUNTED EQUIPMENT OR ACCESSORIES. COORDINATE WITH EQUIPMENT OR ACCESSORY MANUFACTURER.

17 PROVIDE ALL ASSOCIATED CURBS FOR ROOF TOP EQUIPMENT AND MECHANICAL ROOF TOP UNITS. LARGE VOIDS BELOW THE AIR HANDLING UNITS SHALL BE FILLED WITH INSULATION AS SPECIFIED FOR NOISE CONTROL.

18 ALL EXISTING ROOF TOP PENETRATIONS BEING REMOVED REQUIRE ROOF PATCHING TO MATCH EXISTING ADJACENT.

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH		TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH		TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH		TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH		TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy

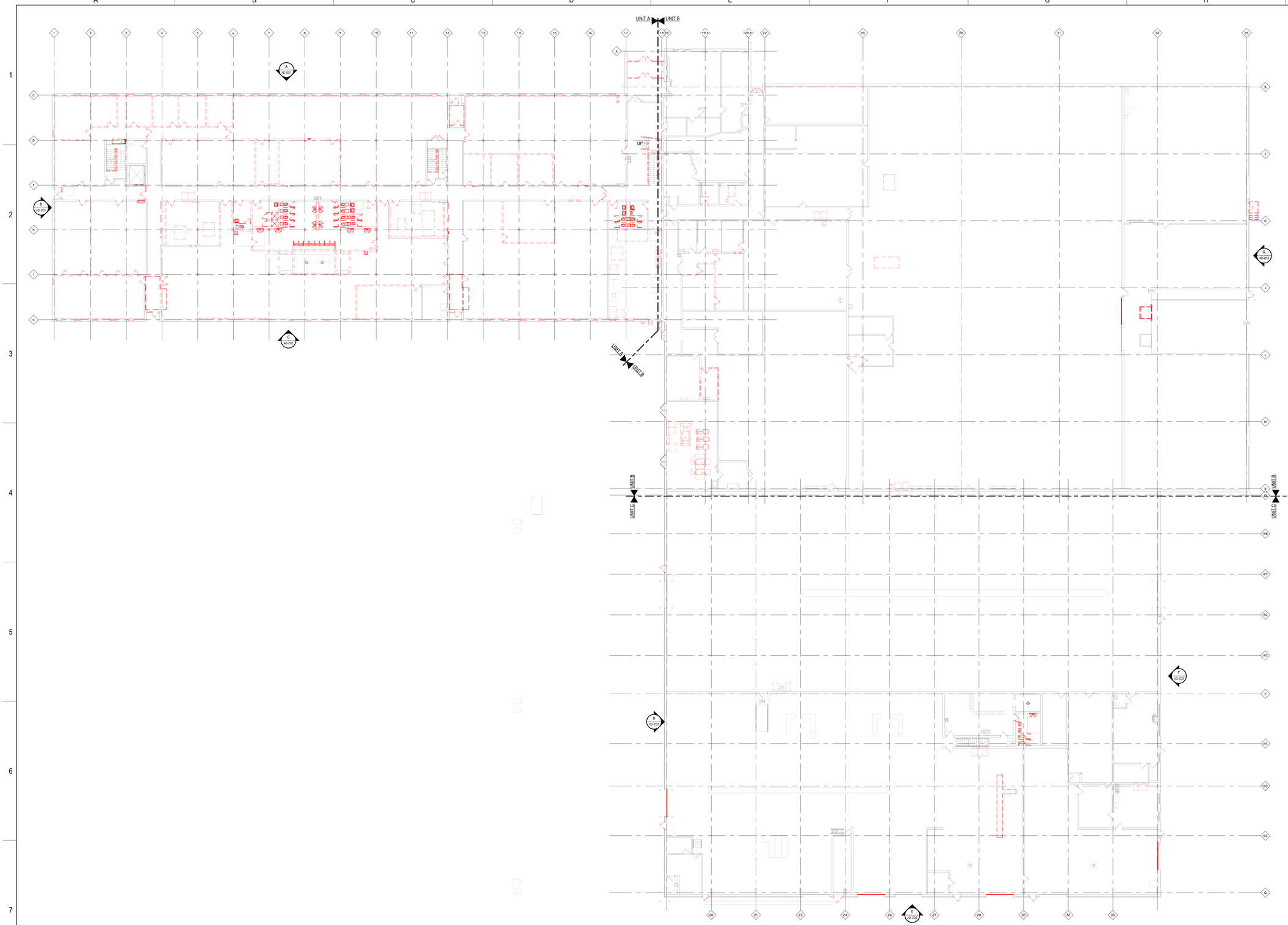
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
GENERAL ARCHITECTURAL NOTES AND INTERIOR PARTITION TYPES

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AG-001
REV: D

22-133.010



OVERALL FIRST FLOOR DEMOLITION PLAN
1/16" = 1'-0"

KEYED NOTES - ARCHITECTURAL - DEMOLITION

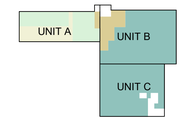
1 REMOVE WALL.
2 REMOVE PORTION OF WALL.
3 REMOVE COLUMN FURRING.
4 REMOVE DOOR AND FRAME IN ITS ENTIRETY.
5 REMOVE OVERHEAD DOOR PANELS.
6 REMOVE WINDOW SYSTEM IN ITS ENTIRETY.
7 REMOVE WINDOW STOOL.
8 REMOVE CEILING TILE & GRID.
9 REMOVE SECTION OF CEILING.
10 REMOVE GYP. BOARD CEILING.
11 REMOVE GYP. BOARD BULKHEAD.
12 REMOVE PLUMBING FIXTURES.
13 REMOVE TOILET PARTITIONS & URINAL SCREENS.
14 REMOVE TOILET ACCESSORIES, GRAB BARS, PAPER TOWEL DISPENSERS, SOAP DISPENSERS, MIRRIORS & HAND DRYERS.
15 REMOVE FLOOR TILE.
16 REMOVE WALL TILE.
17 REMOVE FLOOR FINISH.
17-B REMOVE FLOOR FINISH. SALVAGE CARPET & CONFIRM INTENT WITH OWNER.
18 REMOVE CASEWORK / COUNTER.
19 REMOVE BENCH.
20 REMOVE LOCKERS.
21 REMOVE SELECTIVE ELEVATOR COMPONENTS - COORDINATE WITH NEW WORK / SPECIFICATIONS.
22 REMOVE HANDRAIL AND GUARDRAIL.
23 MECHANICAL - REFER TO MECHANICAL DEMOLITION PLANS.
24 ELECTRICAL - REFER TO ELECTRICAL DEMOLITION PLANS.
25 REMOVE ROOF DRAIN.
26 REMOVE BUILT-UP ROOF SYSTEM & INSULATION DOWN TO ROOF DECK.
27 REMOVE NON-PENETRATING GUARDRAILS, SALVAGE FOR STORAGE & REINSTALLATION
28 REMOVE COPING / GRAVEL STOP & COUNTERFLASHING.
29 REMOVE COUNTERFLASHING &/OR EXPANSION JOINT SYSTEM.
30 REMOVE ROOF ACCESS HATCH.
31 REMOVE ROOF ACCESS LADDER.
32 SELECTIVE DEMOLITION: REMOVE DRYWALL UP TO 4'-0" & TO ACCESS CARRIERS. SALVAGE CARRIERS FOR REINSTALLATION. EXISTING METAL STUD FRAMING TO REMAIN.

PHASING PLAN KEY

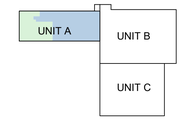
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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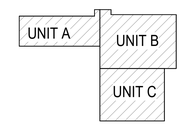
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
OVERALL FIRST FLOOR DEMOLITION PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-101
REV: D

22-133.010

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2. CONTRACTOR TO RECORD & REPORT THE RECYCLED CONTENT TO THE OWNER. ITEMS & QUANTITIES

KEYED NOTES - ARCHITECTURAL - DEMOLITION

1 REMOVE WALL.
2 REMOVE PORTION OF WALL.
3 REMOVE COLUMN FURRING.
4 REMOVE DOOR AND FRAME IN ITS ENTIRETY.
5 REMOVE OVERHEAD DOOR PANELS.
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30 REMOVE ROOF ACCESS HATCH.
31 REMOVE ROOF ACCESS LADDER.
32 SELECTIVE DEMOLITION: REMOVE DRYWALL UP TO 4'-0" & TO ACCESS CARRIERS. SALVAGE CARRIERS FOR REINSTALLATION. EXISTING METAL STUD FRAMING TO REMAIN.

SALVAGE DOOR NUMBER SIGN FOR REINSTALLATION
UNIT A
UNIT B
SAW-CUT & REMOVE EXISTING FLOOR SLAB, COORDINATE WITH NEW WORK.
REMOVE FOLDING METAL GATE
UP
REMOVE EXISTING FLOOR TRENCH
SAW-CUT & REMOVE EXISTING FLOOR SLAB, COORDINATE WITH NEW WORK.
REMOVE EXISTING FLOOR TRENCH
REMOVE EXISTING FIRE HOSE CABINET
SAW-CUT & REMOVE EXISTING FLOOR SLAB, COORDINATE WITH NEW WORK.
SAW-CUT & REMOVE EXISTING FLOOR SLAB, COORDINATE WITH NEW WORK.
SAW-CUT & REMOVE EXISTING FLOOR SLAB, COORDINATE WITH NEW WORK.
UNIT A
UNIT B

FIRST FLOOR DEMOLITION - UNIT A
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

UNIT A
UNIT B
UNIT C

TRUE NORTH
KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
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SHEET TITLE
FIRST FLOOR DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-101A
REV: D

22-133.010

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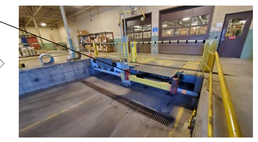
REMOVE EXISTING CONCRETE STAIR, LANDING & ASSOCIATED GUARDRAIL

REMOVE EXISTING DOCK LEVELER

REMOVE EXISTING OH DOOR CONTROLS

DELIVERY INTERIOR OH DOOR
- FOR REFERENCE ONLY



DELIVERY DOCK LEVELERS
- FOR REFERENCE ONLY

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KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

FIRST FLOOR DEMOLITION - UNIT B
1/8" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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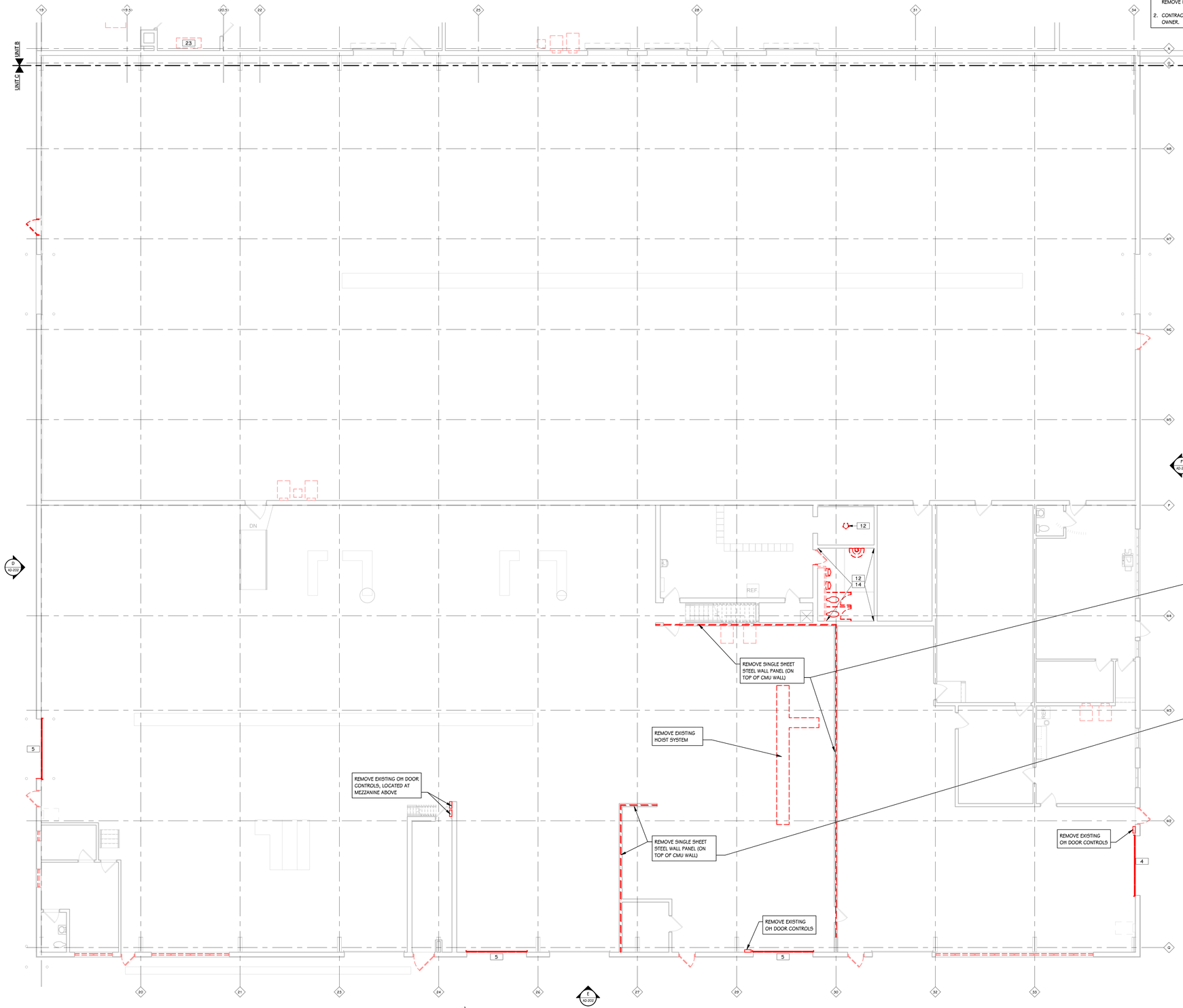
SHEET TITLE
FIRST FLOOR DEMOLITION PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-101B
REV: D

22-133.010



FIRST FLOOR DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

NOTE:

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2. CONTRACTOR TO RECORD & REPORT THE RECYCLED CONTENT TO THE OWNER. ITEMS & QUANTITIES

KEYED NOTES - ARCHITECTURAL - DEMOLITION

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2 REMOVE PORTION OF WALL.
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5 REMOVE OVERHEAD DOOR PANELS.
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7 REMOVE WINDOW STOOL.
8 REMOVE CEILING TILE & GRID.
9 REMOVE SECTION OF CEILING.
10 REMOVE GYP. BOARD CEILING.
11 REMOVE GYP. BOARD BULKHEAD.
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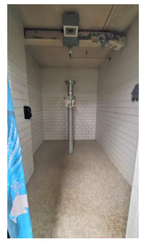
30 REMOVE ROOF ACCESS HATCH.
31 REMOVE ROOF ACCESS LADDER.
32 SELECTIVE DEMOLITION: REMOVE DRYWALL UP TO 4'-0" & TO ACCESS CARRIERS. SALVAGE CARRIERS FOR REINSTALLATION. EXISTING METAL STUD FRAMING TO REMAIN.



GARAGE SHOWERS
- FOR REFERENCE ONLY

GARAGE TOILET ROOM
- FOR REFERENCE ONLY

GARAGE TOILET ROOM
- FOR REFERENCE ONLY

REPAIR GARAGE - METAL PANEL REMOVAL
- FOR REFERENCE ONLY

REPAIR GARAGE - METAL PANEL REMOVAL
- FOR REFERENCE ONLY

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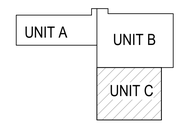
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR DEMOLITION PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-101C
REV: D

22-133.010

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NOTE:

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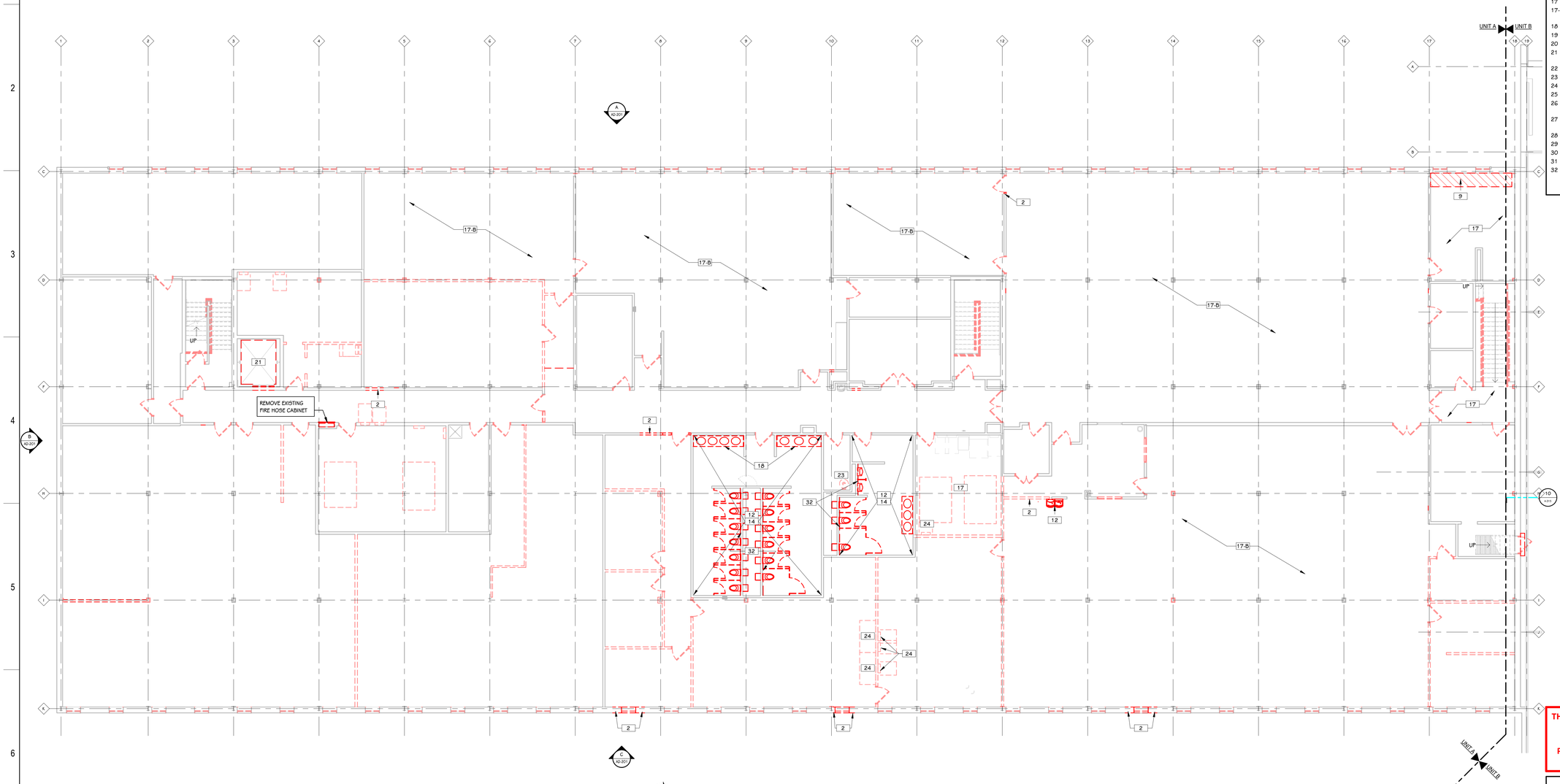

SECOND FLOOOR DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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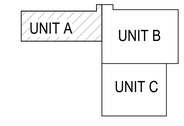
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-06-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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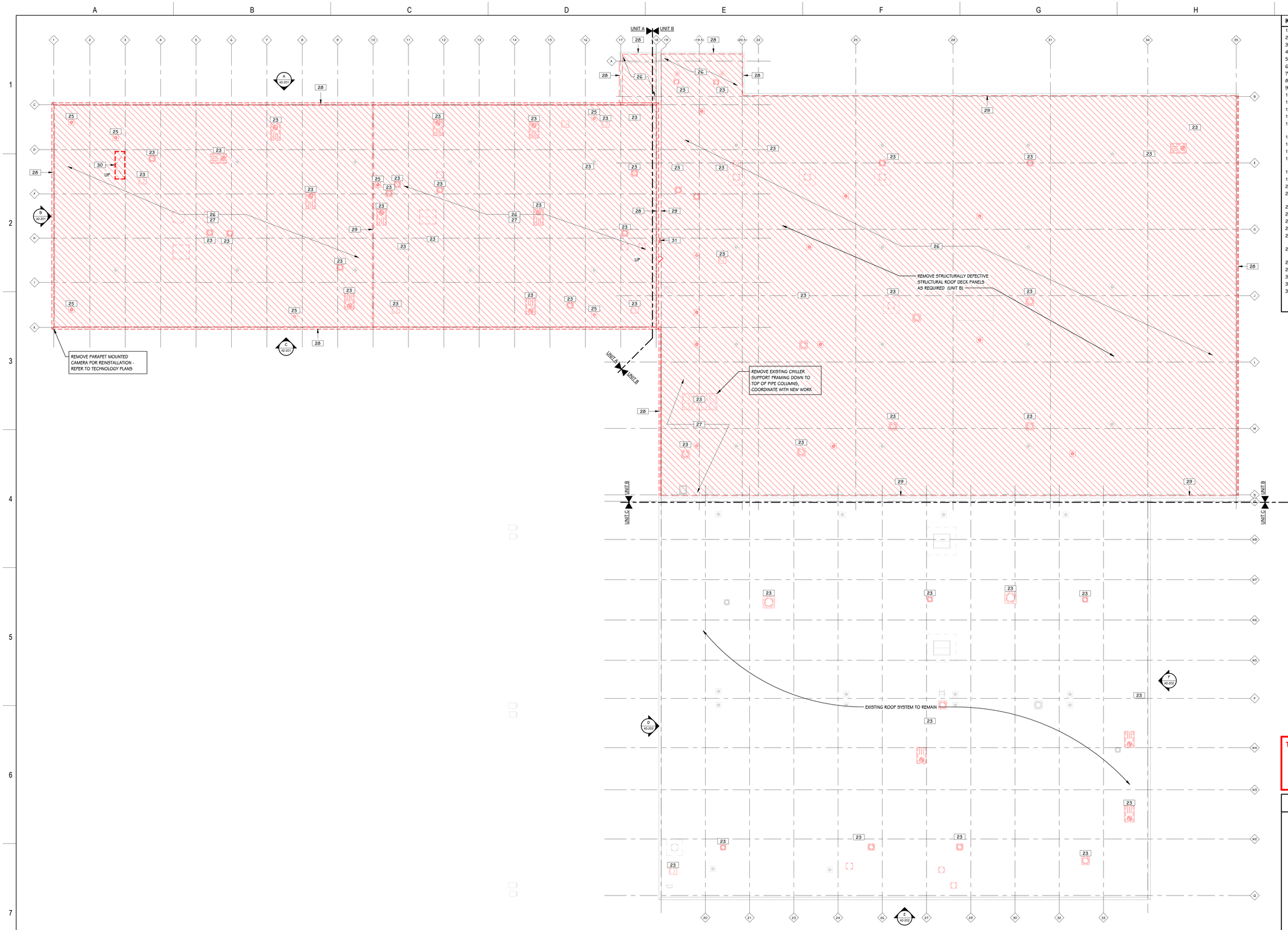
SHEET TITLE
SECOND FLOOR DEMOLITION PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	AD-102A	D

22-133.010



KEYED NOTES - ARCHITECTURAL - DEMOLITION

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KALAMAZOO SERVICE CENTER

UNIT A / UNIT B / UNIT C

KEY PLAN
SCALE: NO SCALE

ROOF DEMOLITION PLAN
1/16" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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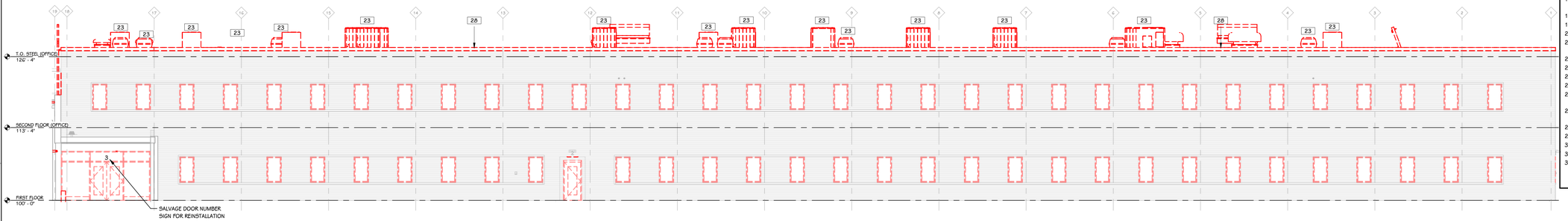
SHEET TITLE
OVERALL ROOF DEMOLITION PLAN

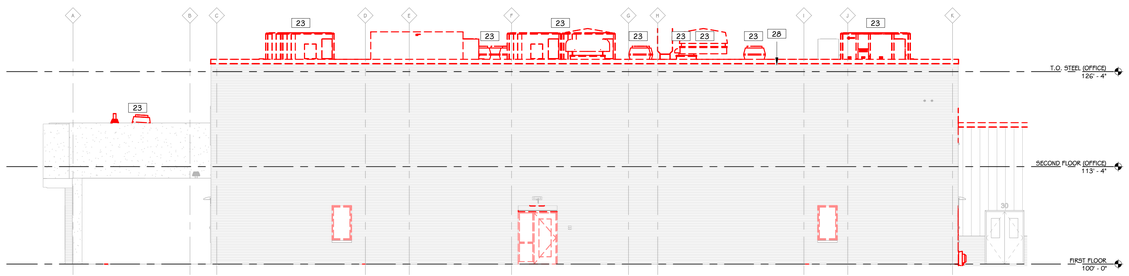
SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-103
REV: D

22-133.010

OFFICE WEST ELEVATION - FOR REFERENCE ONLY

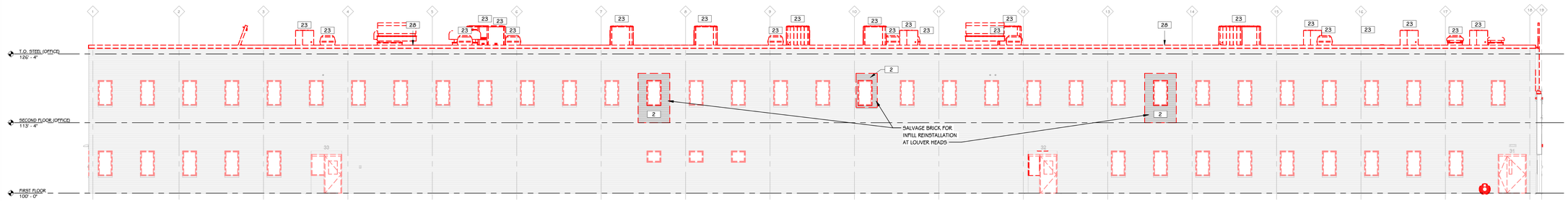


A AD-201 WEST ELEVATION - UNIT A
1/8" = 1'-0"



B AD-201 SOUTH ELEVATION - UNIT A
1/8" = 1'-0"

OFFICE WEST ELEVATION - FOR REFERENCE ONLY



C AD-201 EAST ELEVATION - UNIT A
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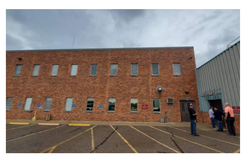

OFFICE WEST ELEVATION - FOR REFERENCE ONLY

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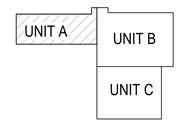
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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REFERENCE DRAWINGS

SIGNATURE
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MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
EXTERIOR DEMOLITION ELEVATIONS

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-201
REV: D

22-133.010

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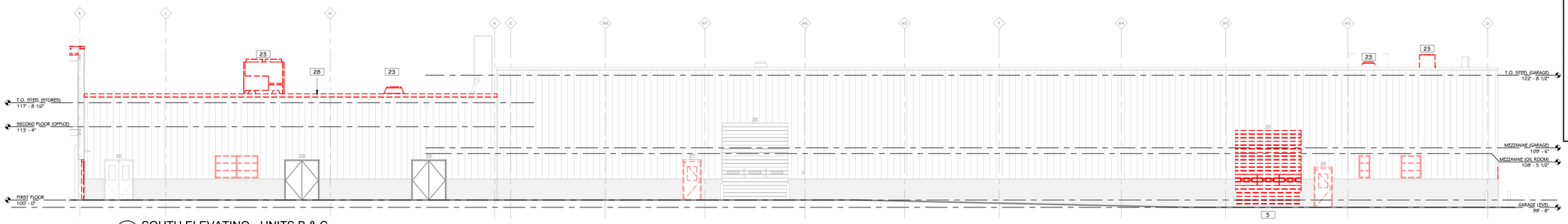
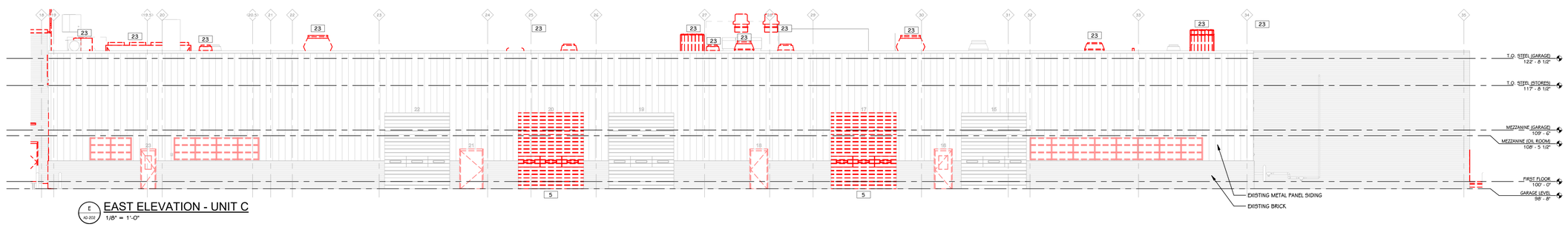
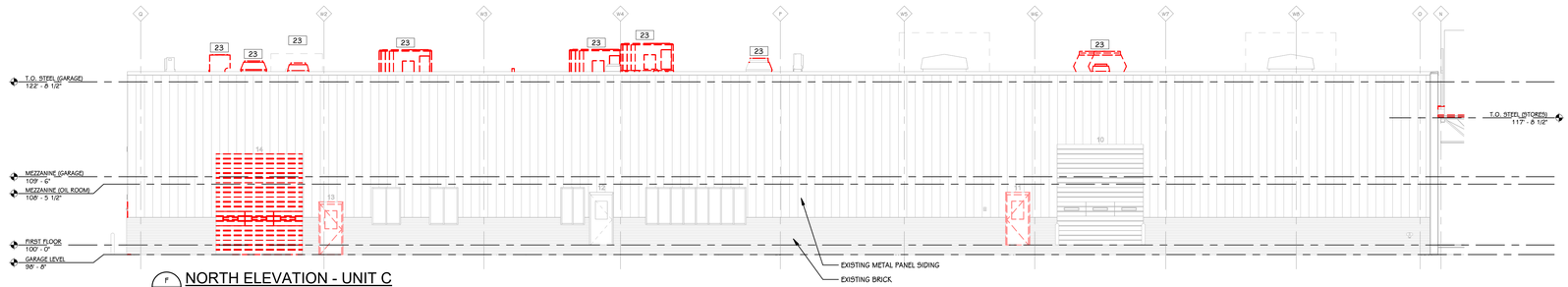


D AD-202 **SOUTH ELEVATINO - UNITS B & C**
1/8" = 1'-0"



E AD-202 **EAST ELEVATION - UNIT C**
1/8" = 1'-0"



F AD-202 **NORTH ELEVATION - UNIT C**
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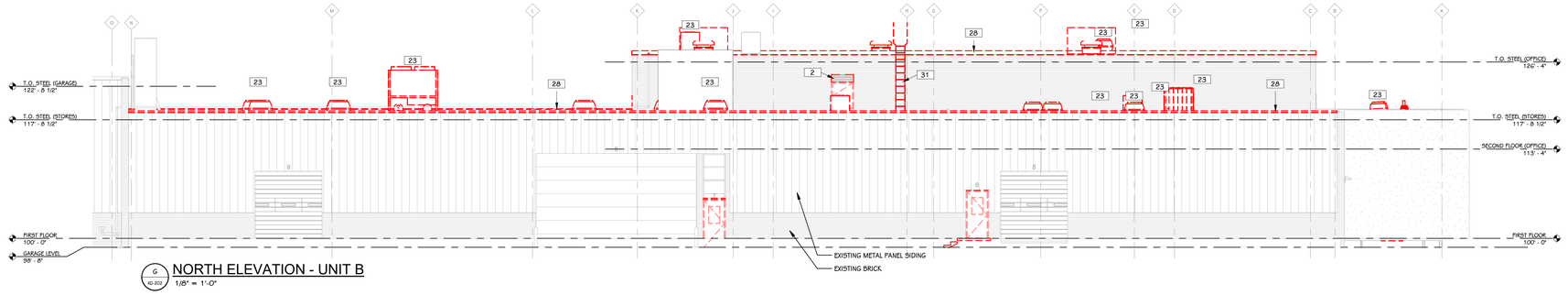

G AD-202 **NORTH ELEVATION - UNIT B**
1/8" = 1'-0"

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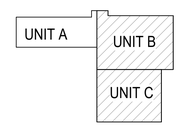
KALAMAZOO SERVICE CENTER



TRUE NORTH **KEY PLAN**
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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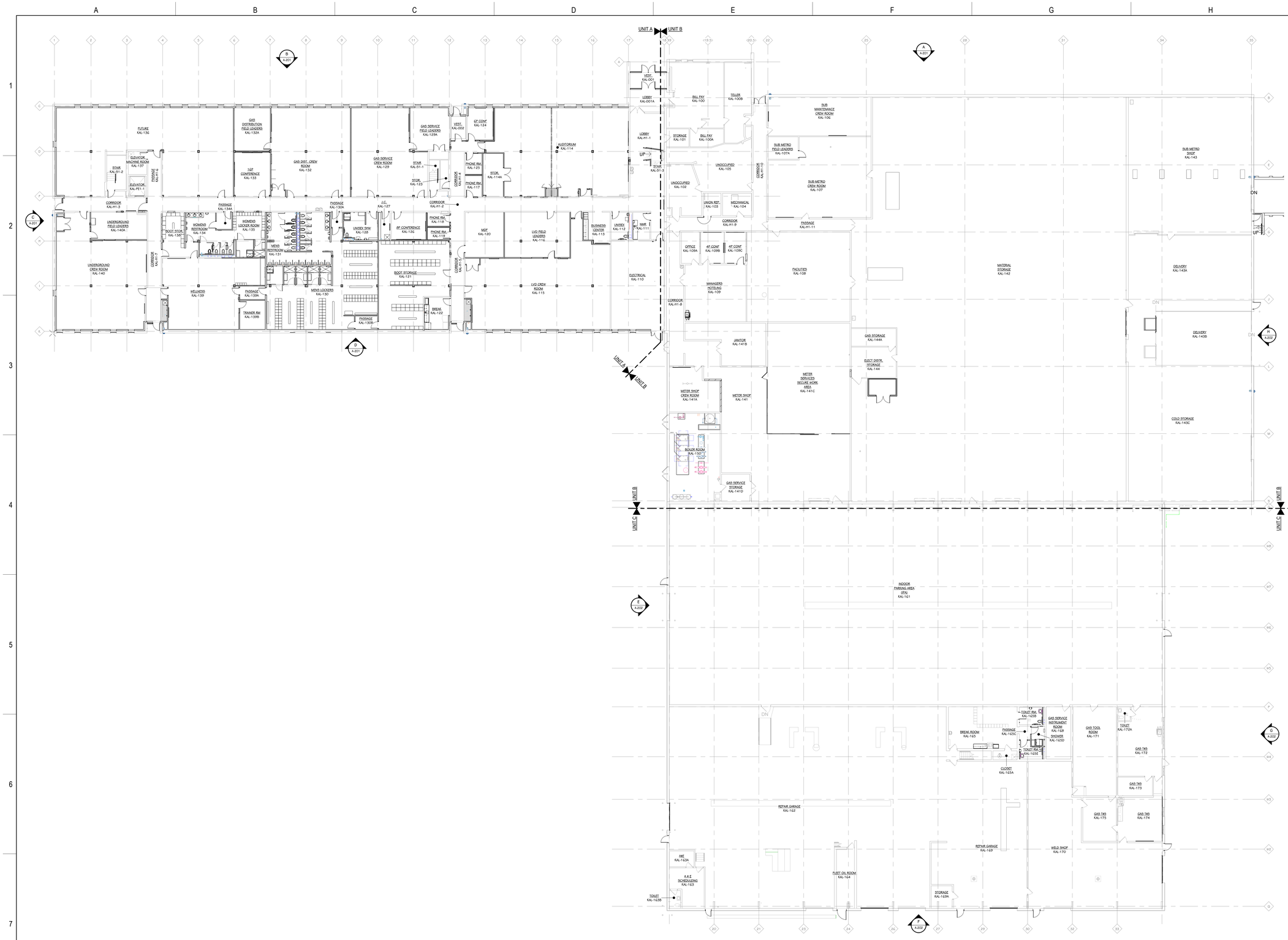
Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
EXTERIOR DEMOLITION ELEVATIONS

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: AD-202
REV: D

22-133.010



OVERALL FIRST FLOOR PLAN
1/16" = 1'-0"

NOTES - ARCHITECTURAL

1 REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
2 REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
3 REFER TO SHEET A 500's FOR WALL AND CEILING ACCESS PANEL INFORMATION.
4 REFER TO SHEETS G-111 AND G-112 FOR PHASING PLANS.
5 EXTEND INTERIOR PARTITIONS TO UNDERSIDE OF STRUCTURAL DECK ABOVE IN THE FOLLOWING LOCATIONS:
- CONFERENCE ROOMS
- PRIVACY ROOMS
- MDF ROOM
- IDF ROOM
- MECHANICAL ROOMS
- TOILET / LOCKER ROOMS

KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

1 NEW DOOR & FRAME SYSTEM IN EXISTING OPENING. FIELD VERIFY EXISTING OPENINGS.
2 TUCK POINTING EXISTING BRICK; 3-6 BRICK COURSES. COORDINATE WITH ELEVATIONS: A-201 & A-202.
3 BLOCKING - CONCEALED WITHIN WALLS FOR SUPPORT OF MARKER BOARDS & TACK BOARDS. 3/4" FIRE RATED PLYWOOD BLOCKING CONCEALED WITHING WALLS FOR WALL HUNG MONITORS & PROJECTORS SCREENS.
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5 HOSE BIBB - REFER TO PLUMBING
6 DEPRESSED SHOWER SLAB, OVER VAPOR BARRIER ON COMPACTED FILL, SLOPE TO DRAIN - REFER TO STRUCTURAL & PLUMBING. REFER TO DETAIL 3/A-402.

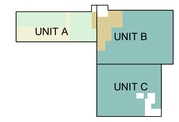
FA1 FIRST AID - LARGE KIT - CHOCTAW-KAUL: MODEL PAC-53-CPC
FA2 FIRST AID - SMALL KIT - CHOCTAW-KAUL: MODEL PAC-50-CPC

PHASING PLAN KEY

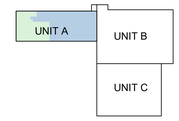
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



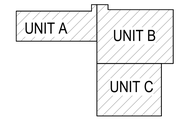
FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

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NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
OVERALL FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-101
REV: D

22-133.010

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NOTES - ARCHITECTURAL

1 REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
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3 REFER TO SHEET A 500's FOR WALL AND CEILING ACCESS PANEL INFORMATION.
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- PRIVACY ROOMS
- MDF ROOM
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- MECHANICAL ROOMS
- TOILET / LOCKER ROOMS

KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

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FA1 FIRST AID - LARGE KIT - CHOCTAW-KAUL: MODEL PAC-53-CPC

FA2 FIRST AID - SMALL KIT - CHOCTAW-KAUL: MODEL PAC-50-CPC

AC BARRIER FREE ACCESS CONTROL - COORDINATE WITH ELECTRICAL & TECHNOLOGY

VISUAL DISPLAY BOARD KEY

SINGLE MARKERBOARD UNIT: 8' WIDE X 3' HIGH

SINGLE MARKERBOARD UNIT: 6' WIDE X 3' HIGH

SINGLE TACKBOARD UNIT: 3' WIDE X 3' HIGH

T.V. MONITOR OR DIGITAL SIGN MONITOR - REFER TO TECHNOLOGY

POWER POLE - REFER TO ELECTRICAL

VISUAL DISPLAY BOARD GENERAL NOTES

1. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
2. VISUAL DISPLAY BOARD TAGS REPRESENT A SINGLE UNIT. COMBINATION BOARDS INCLUDE MORE THAN ONE MATERIAL TYPE IN THE OVERALL UNIT. (I.E., MARKERBOARDS WITH ATTACHED TACKBOARDS)
3. TYPICAL MOUNTING HEIGHT WILL BE X'-0" A.F.F., UNLESS NOTED OTHERWISE.
4. VISUAL DISPLAY BOARDS TO BE MOUNTED CENTERED ON WALL, UNLESS NOTED OTHERWISE
5. COORDINATE MOUNTING LOCATION AND REQUIREMENTS WITH ANY TECHNOLOGY EQUIPMENT (PROJECTOR, SMART BOARDS, ETC.)
6. ACCESSORIES TO INCLUDE FULL LENGTH MARKERBOARD TRAY

FIRST FLOOR PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD	KH/AL	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE: FIRST FLOOR PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-101A
REV: D

22-133.010

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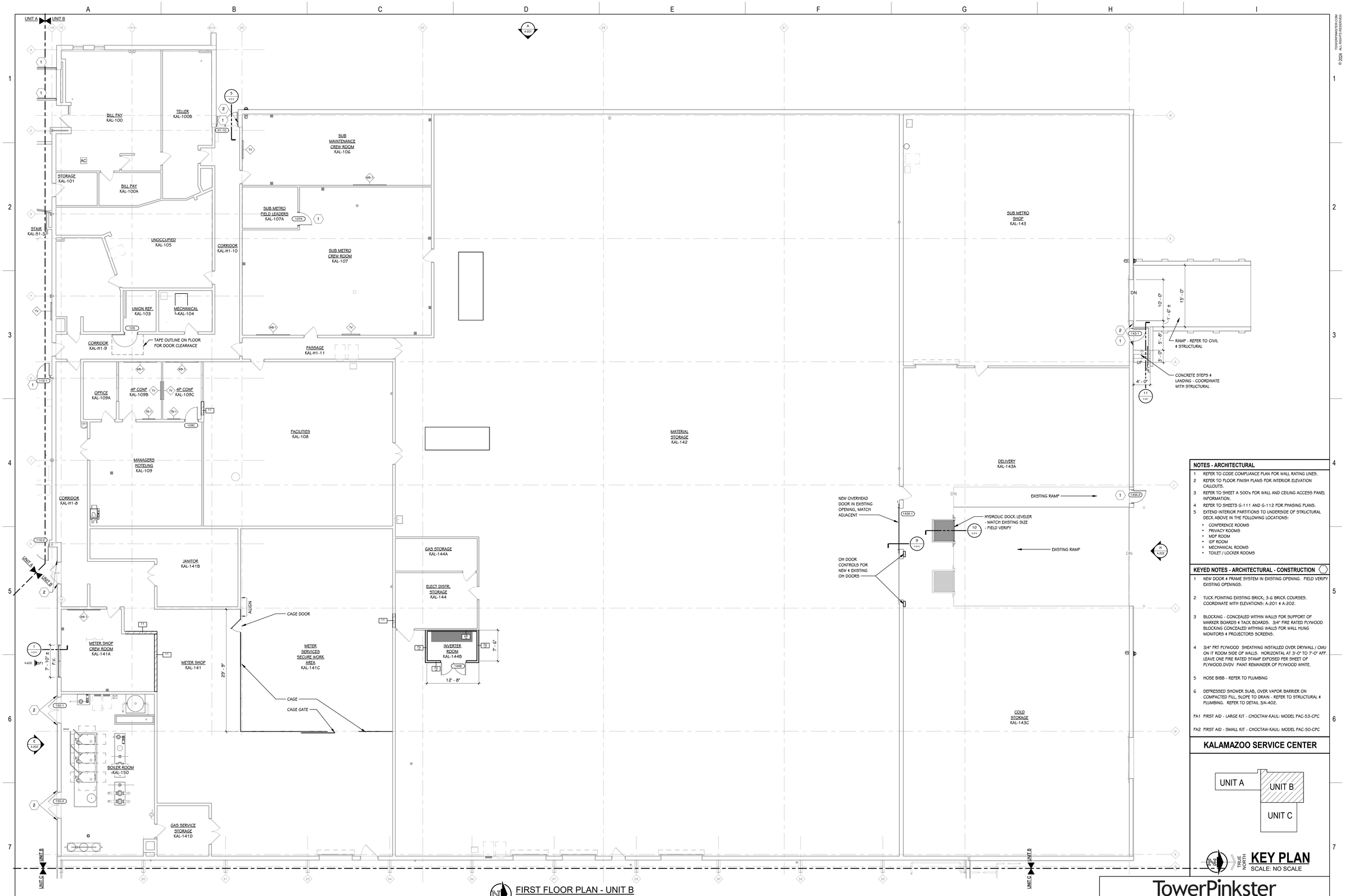

FIRST FLOOR PLAN - UNIT B
1/8" = 1'-0"

NOTES - ARCHITECTURAL

1. REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
2. REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
3. REFER TO SHEET A 500's FOR WALL AND CEILING ACCESS PANEL INFORMATION.
4. REFER TO SHEETS G-111 AND G-112 FOR PHASING PLANS.
5. EXTEND INTERIOR PARTITIONS TO UNDERSIDE OF STRUCTURAL DECK ABOVE IN THE FOLLOWING LOCATIONS:
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5. HOSE BIBB - REFER TO PLUMBING
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FA1 FIRST AID - LARGE KIT - CHOCTAW-KAUL- MODEL PAC-53-CPC

FA2 FIRST AID - SMALL KIT - CHOCTAW-KAUL- MODEL PAC-50-CPC

KALAMAZOO SERVICE CENTER

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
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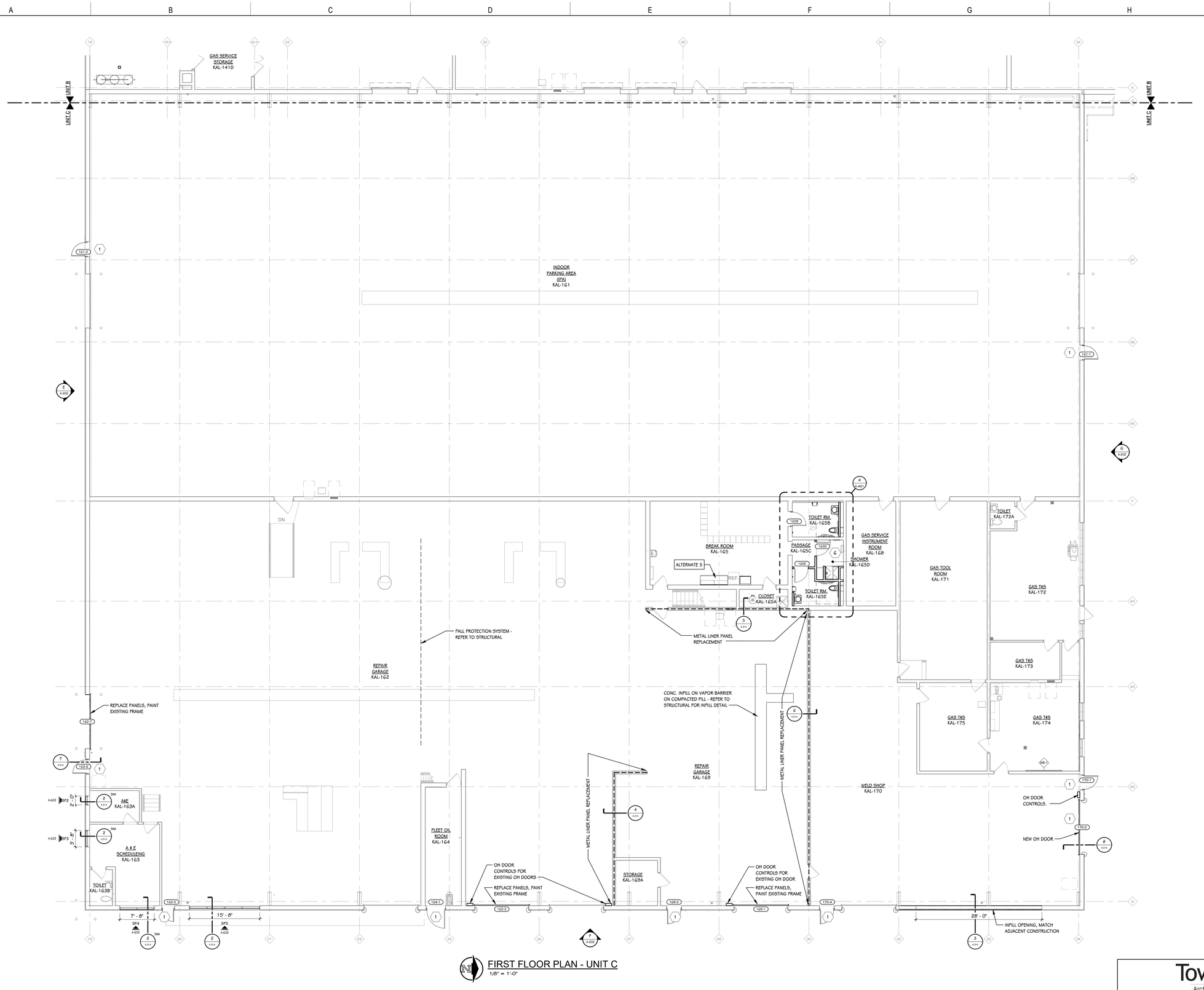
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR PLAN - UNIT B

SCALE	DRAWING NUMBER	SHEET	REV
1/8" = 1'-0"	3084-KAL-SC01	A-101B	D

JOB: FM-00155-Tow

22-133.010



FIRST FLOOR PLAN - UNIT C
1/8" = 1'-0"

NOTES - ARCHITECTURAL

1 REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
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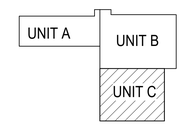
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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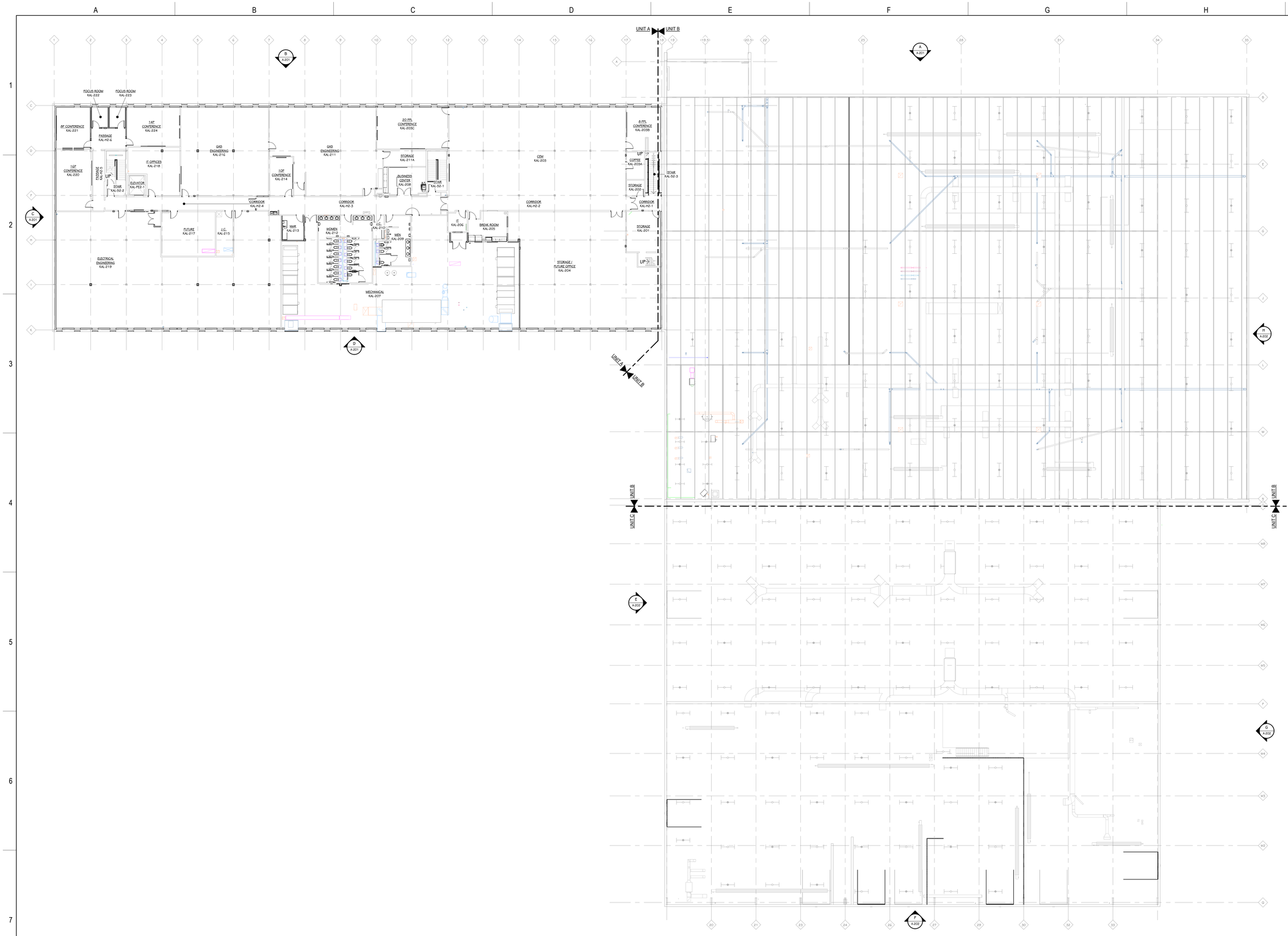
SHEET TITLE
FIRST FLOOR PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-101C
REV: D

22-133.010



OVERALL SECOND FLOOR PLAN
1/16" = 1'-0"

NOTES - ARCHITECTURAL

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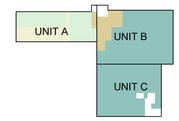
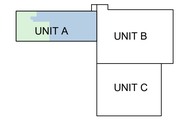
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
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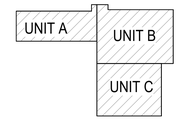
KALAMAZOO SERVICE CENTER



TRUE NORTH **KEY PLAN**
SCALE: NO SCALE

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SHEET TITLE
OVERALL SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-102
REV: D

22-133.010

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VISUAL DISPLAY BOARD KEY

- SINGLE MARKERBOARD UNIT: 8' WIDE X 3' HIGH
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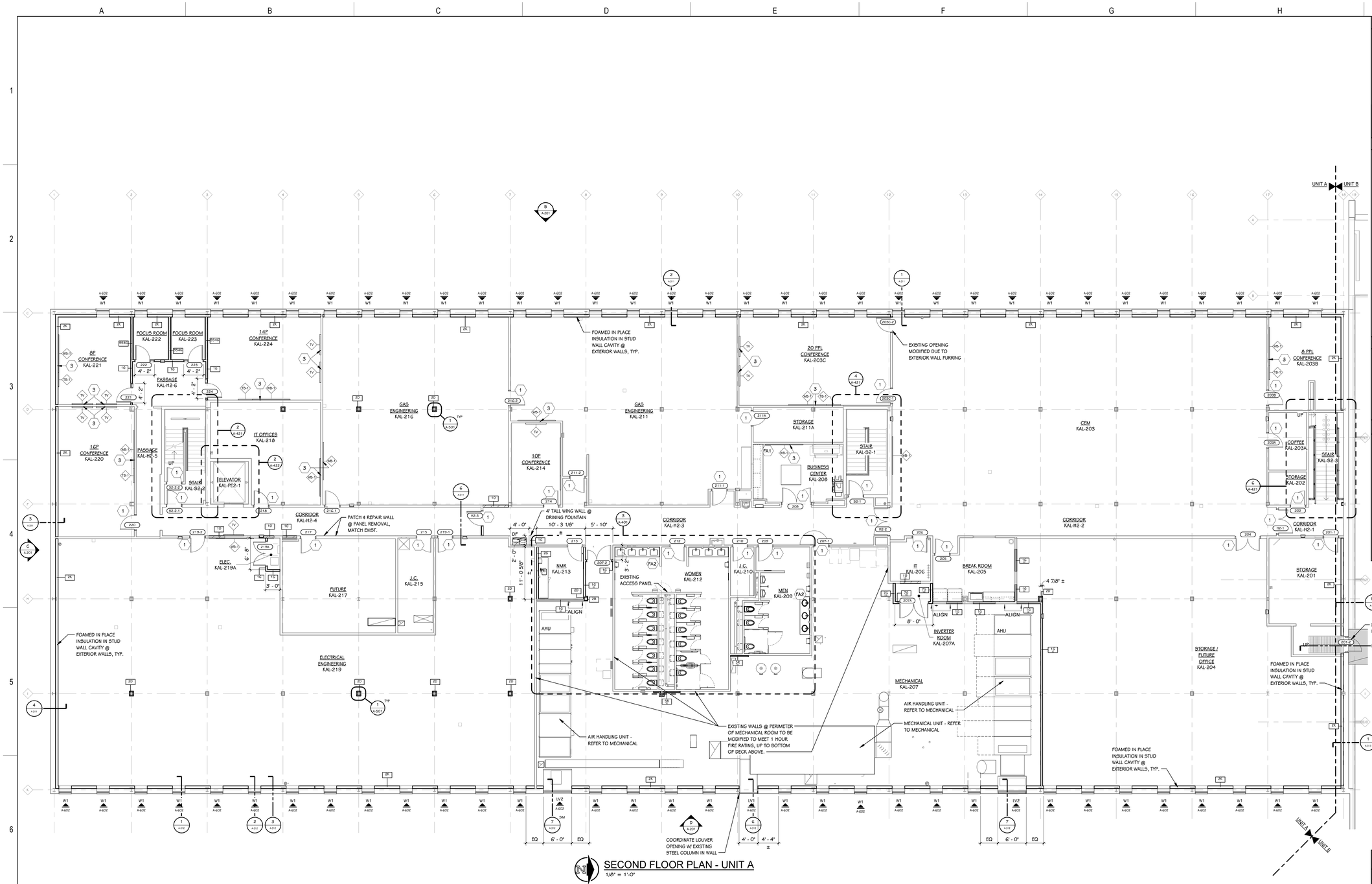
- T.V. MONITOR OR DIGITAL SIGN MONITOR - REFER TO TECHNOLOGY
- POWER POLE - REFER TO ELECTRICAL

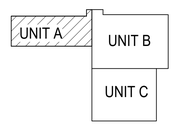
VISUAL DISPLAY BOARD GENERAL NOTES

1. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
2. VISUAL DISPLAY BOARD TAGS REPRESENT A SINGLE UNIT. COMBINATION BOARDS INCLUDE MORE THAN ONE MATERIAL TYPE IN THE OVERALL UNIT. (I.E., MARKERBOARDS WITH ATTACHED TACKBOARDS)
3. TYPICAL MOUNTING HEIGHT WILL BE X'-0" A.F.F., UNLESS NOTED OTHERWISE.
4. VISUAL DISPLAY BOARDS TO BE MOUNTED CENTERED ON WALL, UNLESS NOTED OTHERWISE
5. COORDINATE MOUNTING LOCATION AND REQUIREMENTS WITH ANY TECHNOLOGY EQUIPMENT (PROJECTOR, SMART BOARDS, ETC.)
6. ACCESSORIES TO INCLUDE FULL LENGTH MARKERBOARD TRAY



SECOND FLOOR PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KD	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KD	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE

NAME
SCOTT D. THOMPSON

MICHIGAN P.E. No.
6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
SECOND FLOOR PLAN - UNIT A

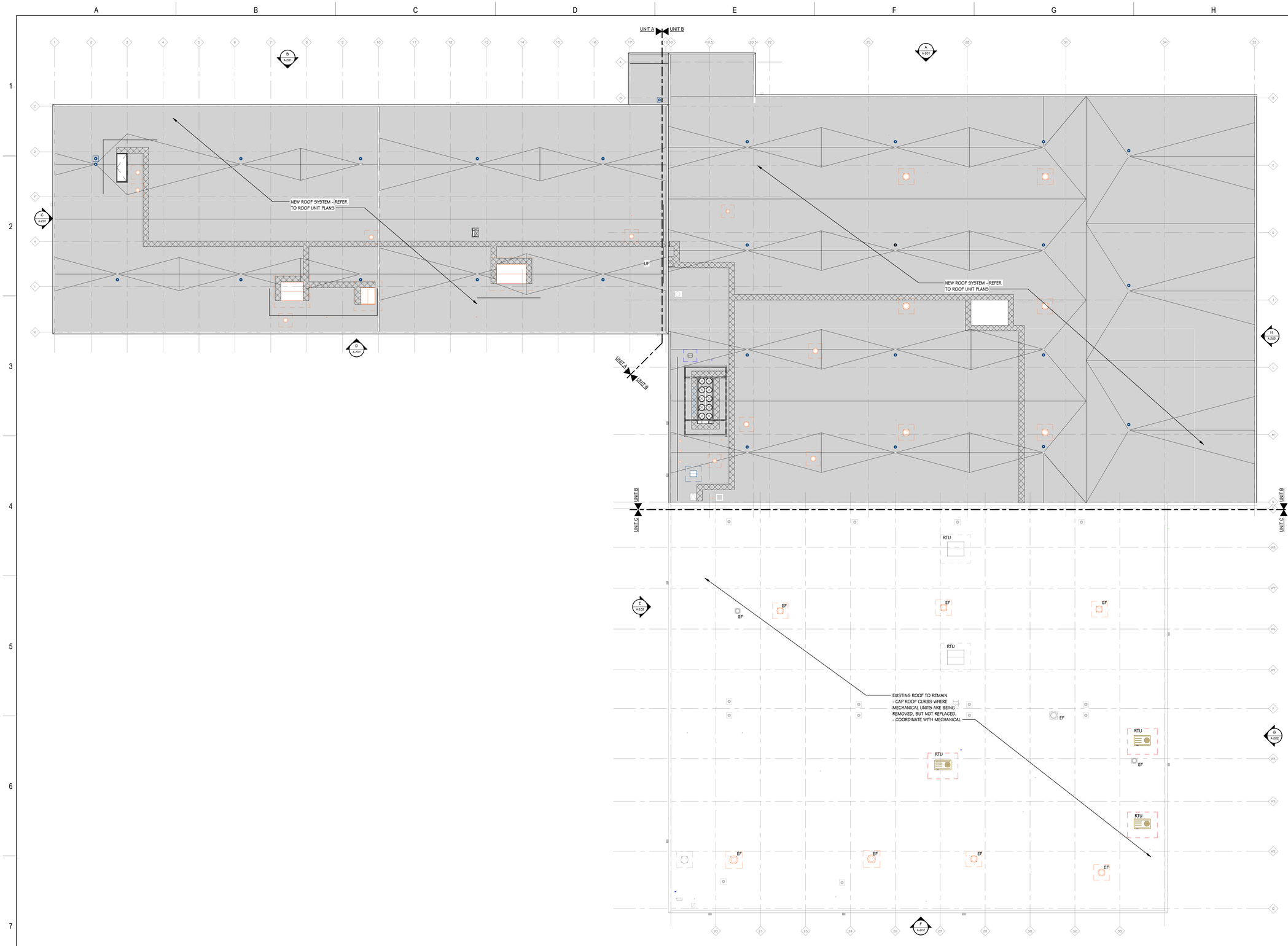
SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow

DRAWING NUMBER
3084-KAL-SC01

SHEET
A-102A

REV
D

22-133.010



OVERALL ROOF PLAN
1/16" = 1'-0"

ROOF PLAN KEY

- TAPERED INSULATION
- ROOF PROTECTION
- UNDER DECK PLASTIC PROTECTION - COORDINATE WITH REFLECTED CEILING PLAN: A-111B
- RD-E — EXISTING ROOF DRAIN - REFER TO PLUMBING DRAWINGS
- RRD — REDUNDANT ROOF DRAIN / OVERFLOW DRAIN - REFER TO PLUMBING DRAWINGS
- ← — ROOF SLOPE DUE TO TAPERED INSULATION
- AHU OR RTU — ROOF TOP UNIT - REFER TO MECHANICAL DRAWINGS
- ACCU — CONDENSING UNIT - REFER TO MECHANICAL DRAWINGS
- EF — EXHAUST FAN / HOOD - REFER TO MECHANICAL DRAWINGS

NOTES

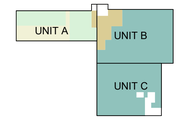
1. TYPICAL TAPERED INSULATION ROOF SLOPE = 1/8" / 12" MINIMUM, UNLESS OTHERWISE NOTED.
2. PROVIDE ROOFING MANUFACTURER'S STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS ETC.
3. PROVIDE CRICKETS AS REQUIRED AT ALL MECHANICAL UNITS, VENTS, ETC. TO MAINTAIN POSITIVE SLOPE OF 1/2" / 1'-0" MINIMUM.
4. REFER TO SHEETS: A-311 & 312 FOR ROOF EDGE DETAILS
5. TAPER INSULATION TO DRAIN AT ROOF DRAINS, UNLESS NOTED OTHERWISE.

PHASING PLAN KEY

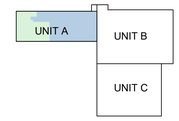
REFER TO SHEETS: G-110, G-111, G-112, G-113, G-114 & G-115 FOR PHASING DIAGRAMS

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



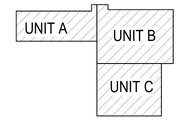
FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
OVERALL ROOF PLAN

SCALE:	1/16" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-103	D

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22-133.010

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ROOF PLAN KEY

- TAPERED INSULATION
- ROOF PROTECTION
- UNDER DECK PLASTIC PROTECTION - COORDINATE WITH REFLECTED CEILING PLAN: A-111B
- RD-E — EXISTING ROOF DRAIN - REFER TO PLUMBING DRAWINGS
- RRD — REDUNDANT ROOF DRAIN / OVERFLOW DRAIN - REFER TO PLUMBING DRAWINGS
- ROOF SLOPE DUE TO TAPERED INSULATION
- AHU OR RTU — ROOF TOP UNIT - REFER TO MECHANICAL DRAWINGS
- ACCU — CONDENSING UNIT - REFER TO MECHANICAL DRAWINGS
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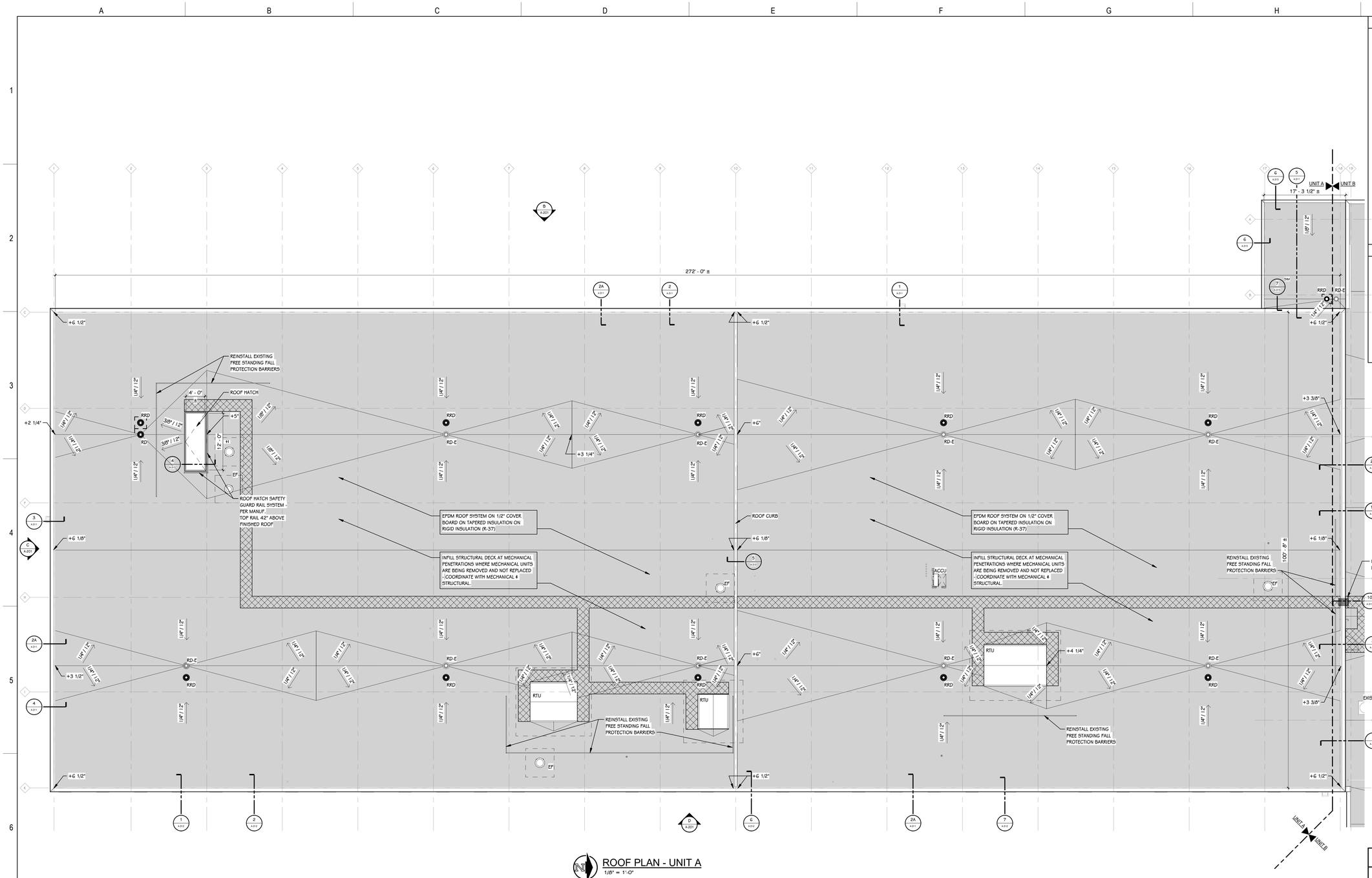
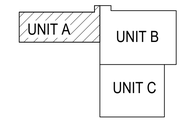
NOTES

1. TYPICAL TAPERED INSULATION ROOF SLOPE = 1/8" / 12" MINIMUM, UNLESS OTHERWISE NOTED.
2. PROVIDE ROOFING MANUFACTURER'S STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS ETC.
3. PROVIDE CRICKETS AS REQUIRED AT ALL MECHANICAL UNITS, VENTS, ETC. TO MAINTAIN POSITIVE SLOPE OF 1/2" / 1'-0" MINIMUM.
4. REFER TO SHEETS: A-311 & A-313 FOR ROOF EDGE DETAILS
5. TAPER INSULATION LAYOUT FOR REFERNCE ONLY; TAPER TO BE LAYED OUT BY ROOFING CONTRACTOR: MIN. 1/4" / 12" SLOPE, U.N.O.



ROOF PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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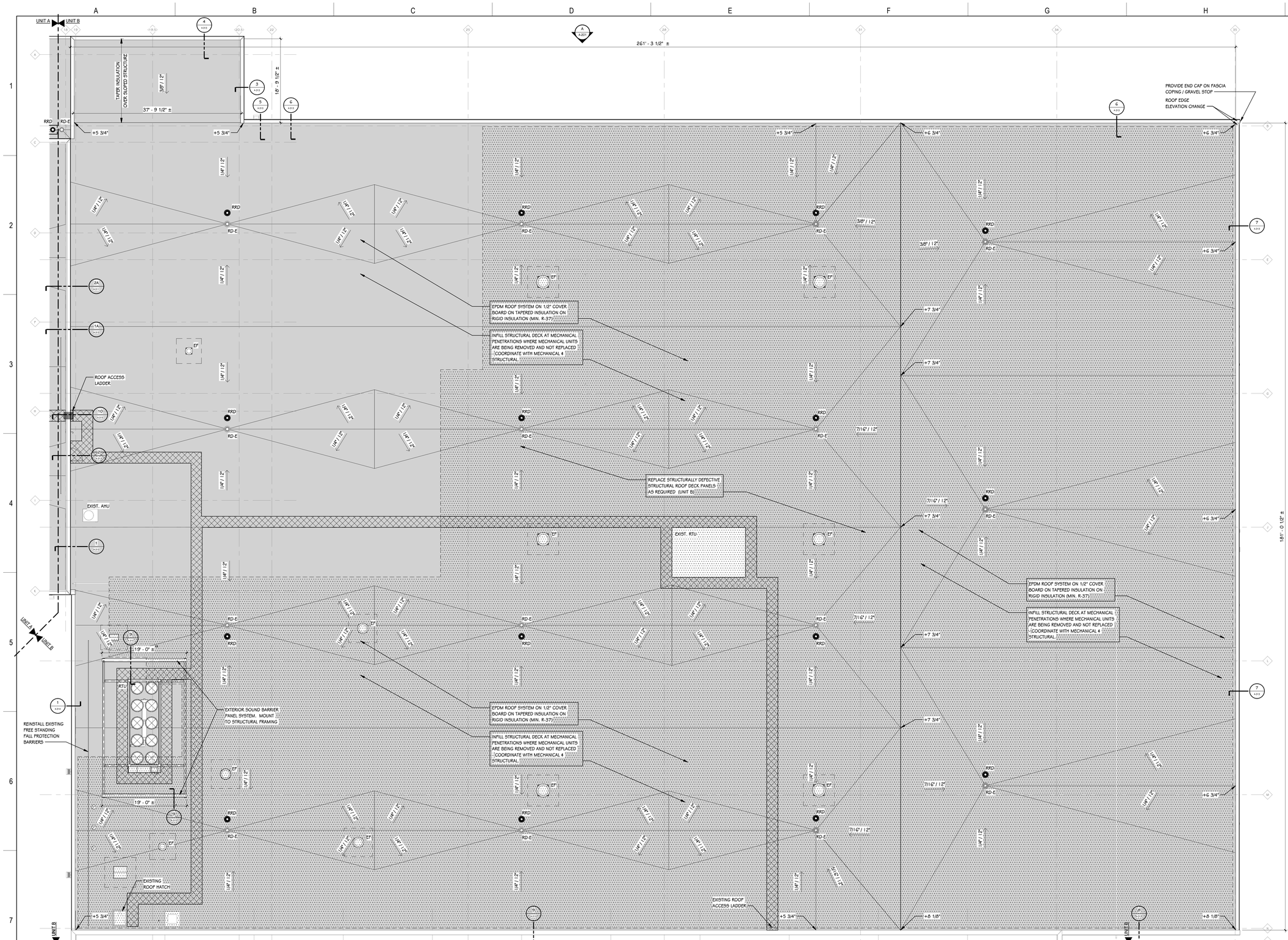
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
ROOF PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-103A	D

22-133.010



ROOF PLAN KEY

- TAPERED INSULATION
- ROOF PROTECTION
- UNDER DECK PLASTIC PROTECTION - COORDINATE WITH REFLECTED CEILING PLAN: A-111B

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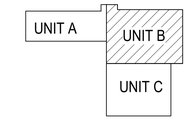
ROOF PLAN - UNIT B
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ROOF PLAN - UNIT B

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-103B	D

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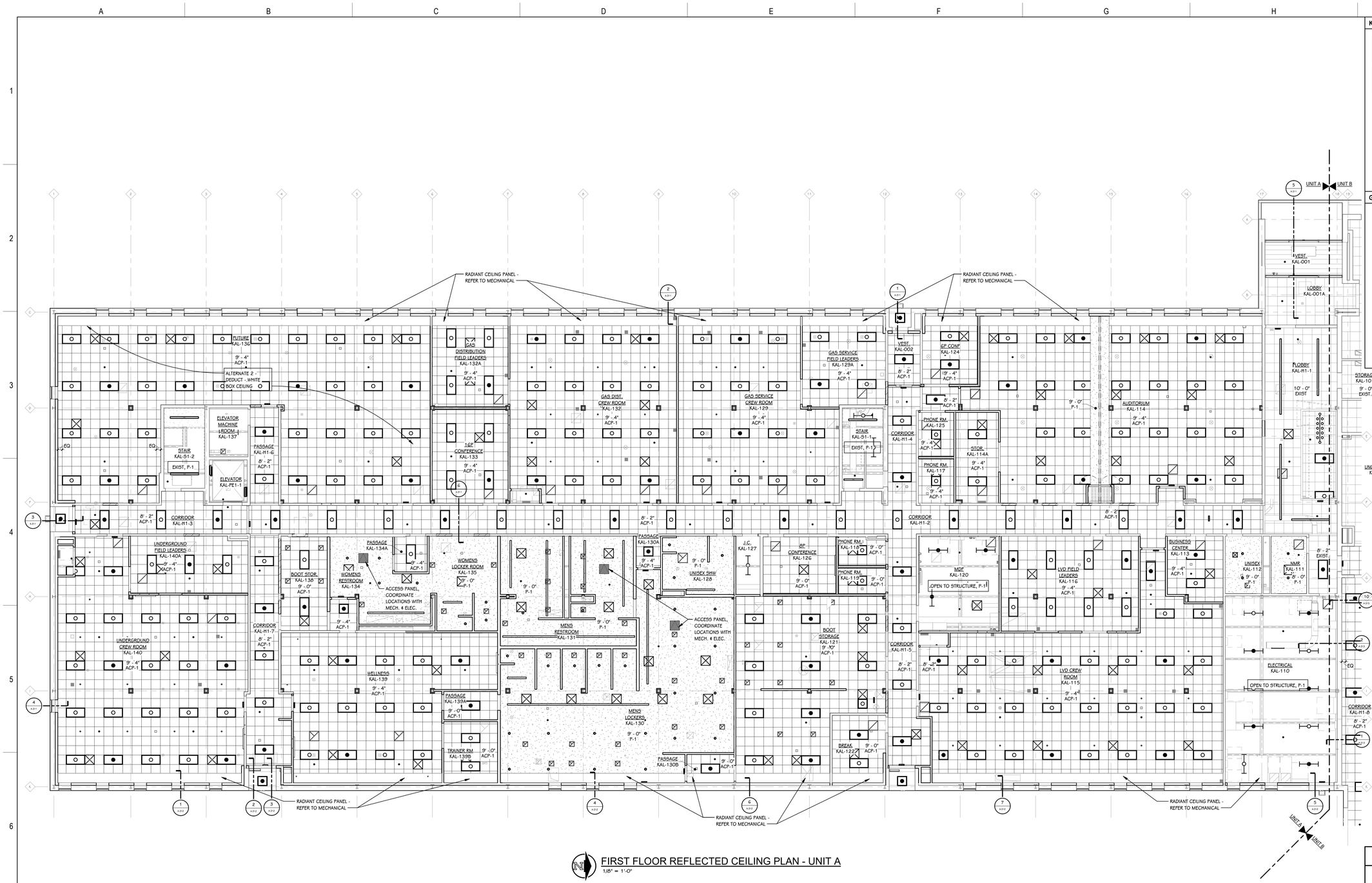


KEY - REFLECTED CEILING

- GYPSUM BOARD
- LAY-IN ACOUSTICAL TILE GRID
- UNDER DECK PLASTIC PROTECTION - TO BE INSTALLED FOR PROTECTION FROM DEBRIS DURING CONSTRUCTION.
- OR — LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN
- ETR OR EXIST. = EXISTING TO REMAIN

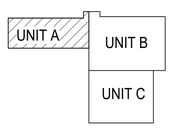
GENERAL NOTES - REFLECTED CEILINGS

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.
3. SOUND INSULATION: 3 1/2" SOUND ATTENUATION BLANKETS, EXTEND FULL HEIGHT OF WALL AND OVER SUSPENDED CEILING ON EACH SIDE OF WALL TO 4' - 0" FROM WALL. OWENS-CORNING 'QUIETZONE' OR OWNER APPROVED EQUIVALENT.
   - AIR COMPRESSOR ROOMS
   - CONFERENCE ROOMS
   - CREW ROOMS
   - NURSING MOTHER ROOMS
   - PRIVACY ROOMS
   - MDF ROOMS
   - TOILET ROOMS
   - LOCKER ROOMS
   - WELLNESS ROOMS

FIRST FLOOR REFLECTED CEILING PLAN - UNIT A

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN

SCALE: NO SCALE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR REFLECTED CEILING PLAN - UNIT A

SCALE:	1/8" = 1'-0"
JOB:	FM-00155-Tow

DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-111A
REV: D

22-133.010

FIRST FLOOR REFLECTED CEILING PLAN - UNIT B
1/8" = 1'-0"

KEY - REFLECTED CEILING

- GYPSUM BOARD
- LAY-IN ACOUSTICAL TILE GRID
- UNDER DECK PLASTIC PROTECTION - TO BE INSTALLED FOR PROTECTION FROM DEBRIS DURING CONSTRUCTION.
- ○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN
- ETR OR EXIST. = EXISTING TO REMAIN

GENERAL NOTES - REFLECTED CEILINGS

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.
3. SOUND INSULATION: 3 1/2" SOUND ATTENUATION BLANKETS. EXTEND FULL HEIGHT OF WALL AND OVER SUSPENDED CEILING ON EACH SIDE OF WALL TO 4' - 0" FROM WALL. OWENS-CORNING 'QUIETZONE' OR OWNER APPROVED EQUIVALENT.
   - AIR COMPRESSOR ROOMS
   - CONFERENCE ROOMS
   - CREW ROOMS
   - NURSING MOTHER ROOMS
   - PRIVACY ROOMS
   - MDF ROOMS
   - TOILET ROOMS
   - LOCKER ROOMS
   - WELLNESS ROOMS

KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD	KH/AL	SDT	TP
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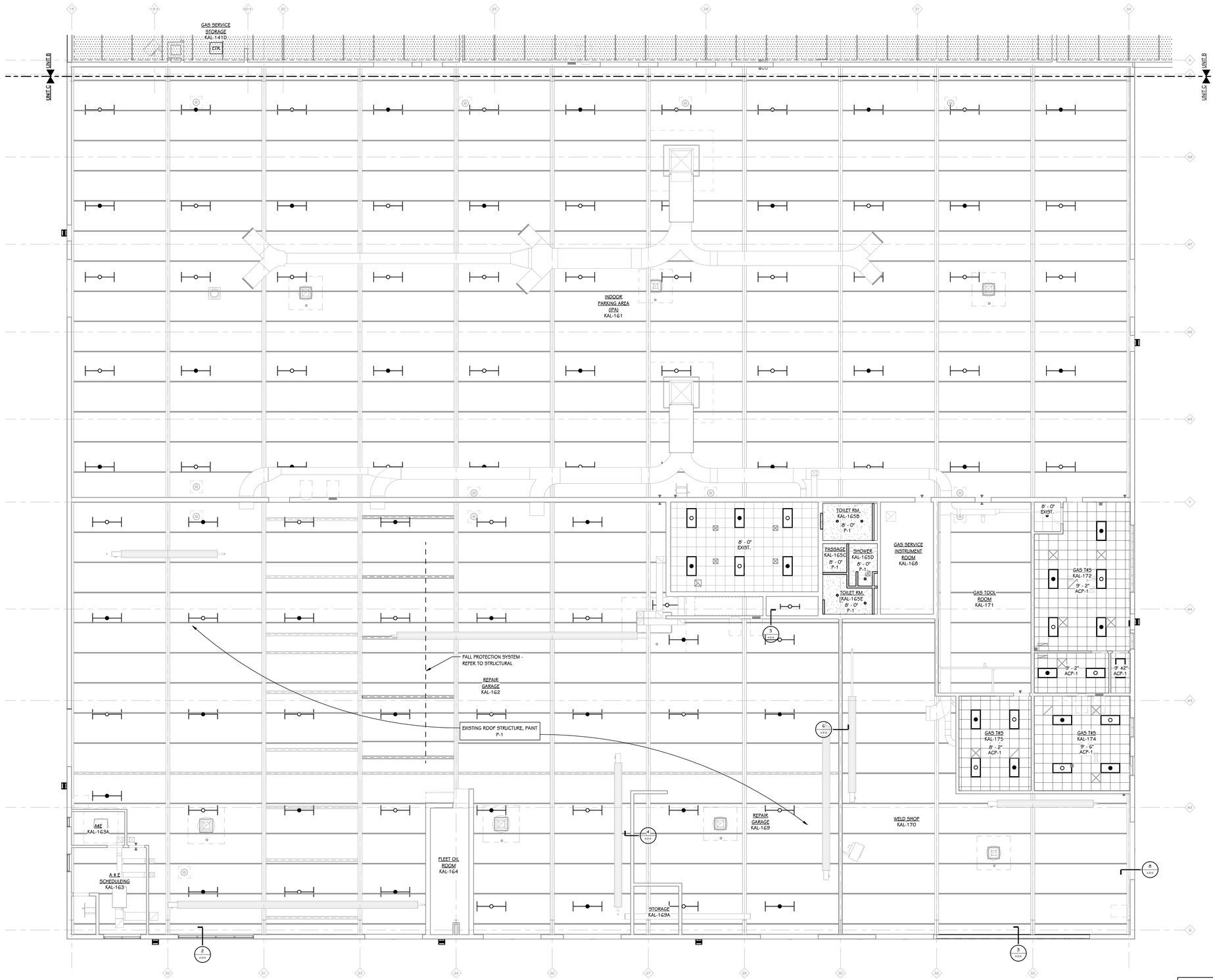
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR REFLECTED CEILING PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-111B
REV: D

22-133.010



FIRST FLOOR REFLECTED CEILING PLAN - UNIT C
1/8" = 1'-0"

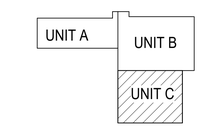
KEY - REFLECTED CEILING

- GYPSUM BOARD
- LAY-IN ACOUSTICAL TILE GRID
- UNDER DECK PLASTIC PROTECTION - TO BE INSTALLED FOR PROTECTION FROM DEBRIS DURING CONSTRUCTION.
- O OR O — LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN
- ETR OR EXIST. = EXISTING TO REMAIN

GENERAL NOTES - REFLECTED CEILINGS

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.
3. SOUND INSULATION: 3 1/2" SOUND ATTENUATION BLANKETS. EXTEND FULL HEIGHT OF WALL AND OVER SUSPENDED CEILING ON EACH SIDE OF WALL TO 4' - 0" FROM WALL. OWENS-CORNING 'QUIETZONE' OR OWNER APPROVED EQUIVALENT.
   - AIR COMPRESSOR ROOMS
   - CONFERENCE ROOMS
   - CREW ROOMS
   - NURSING MOTHER ROOMS
   - PRIVACY ROOMS
   - MDF ROOMS
   - TOILET ROOMS
   - LOCKER ROOMS
   - WELLNESS ROOMS

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

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KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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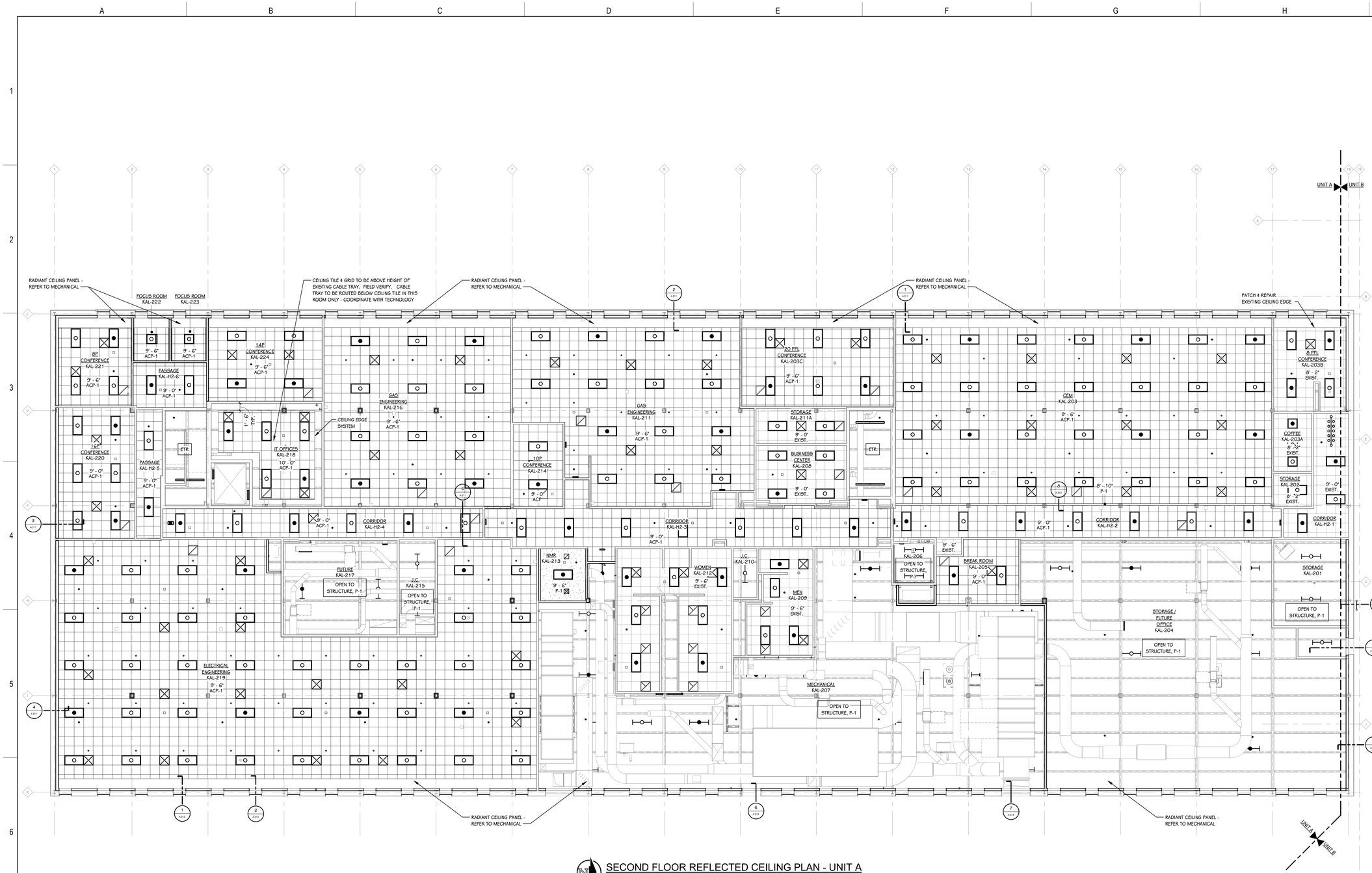
SHEET TITLE: FIRST FLOOR REFLECTED CEILING PLAN - UNIT C

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-111C	D

22-133.010



SECOND FLOOR REFLECTED CEILING PLAN - UNIT A

1/8" = 1'-0"

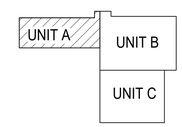
KEY - REFLECTED CEILING

- GYPSUM BOARD
- LAY-IN ACOUSTICAL TILE GRID
- UNDER DECK PLASTIC PROTECTION - TO BE INSTALLED FOR PROTECTION FROM DEBRIS DURING CONSTRUCTION.
- OR — LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN
- ETR OR EXIST. = EXISTING TO REMAIN

GENERAL NOTES - REFLECTED CEILINGS

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.
3. SOUND INSULATION: 3 1/2" SOUND ATTENUATION BLANKETS. EXTEND FULL HEIGHT OF WALL AND OVER SUSPENDED CEILING ON EACH SIDE OF WALL TO 4' - 0" FROM WALL. OWENS-CORNING 'QUIETZONE' OR OWNER APPROVED EQUIVALENT.
   - AIR COMPRESSOR ROOMS
   - CONFERENCE ROOMS
   - CREW ROOMS
   - NURSING MOTHER ROOMS
   - PRIVACY ROOMS
   - MDF ROOMS
   - TOILET ROOMS
   - LOCKER ROOMS
   - WELLNESS ROOMS

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN

SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	KD	KH/AL	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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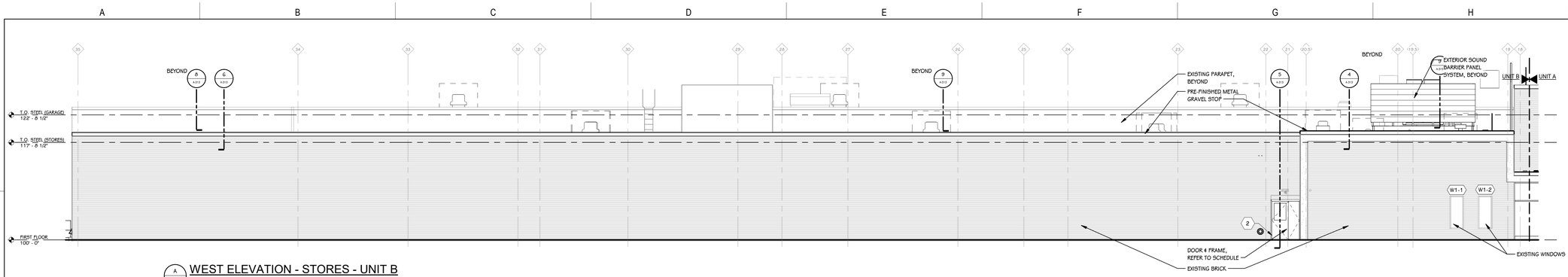
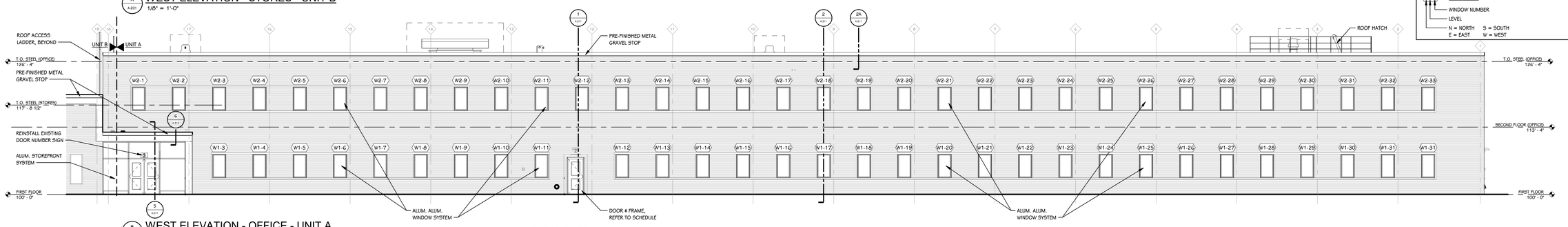
SHEET TITLE
SECOND FLOOR REFLECTED CEILING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-112A
REV: D

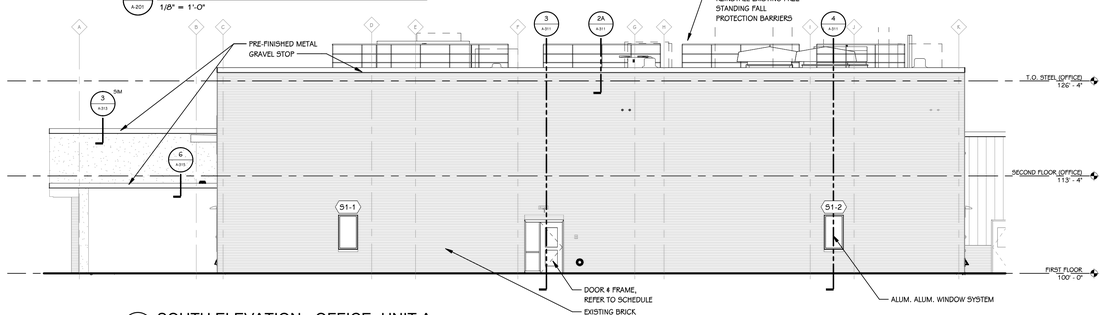
22-133.010



A WEST ELEVATION - STORES - UNIT B
A-201 — 1/8" = 1'-0"



B WEST ELEVATION - OFFICE - UNIT A
A-201 — 1/8" = 1'-0"



C SOUTH ELEVATION - OFFICE -UNIT A
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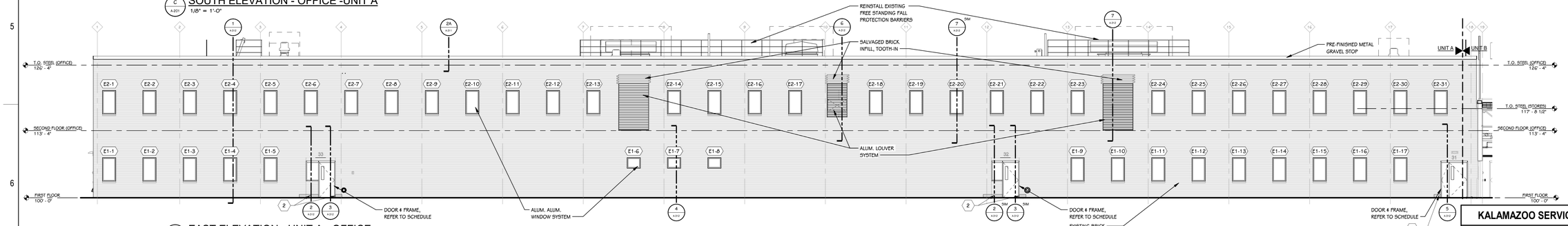

D EAST ELEVATION - UNIT A - OFFICE
A-201 — 1/8" = 1'-0"

KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

1 NEW DOOR & FRAME SYSTEM IN EXISTING OPENING. FIELD VERIFY EXISTING OPENINGS.

2 TUCK POINTING EXISTING BRICK; 3-6 BRICK COURSES. COORDINATE WITH ELEVATIONS: A-201 & A-202.

3 BLOCKING - CONCEALED WITHIN WALLS FOR SUPPORT OF MARKER BOARDS & TACK BOARDS. 3/4" FIRE RATED PLYWOOD BLOCKING CONCEALED WITHING WALLS FOR WALL HUNG MONITORS & PROJECTORS SCREENS.

4 3/4" FRT PLYWOOD SHEATHING INSTALLED OVER DRYWALL / CMU ON IT ROOM SIDE OF WALLS. HORIZONTAL AT 3'-0" TO 7'-0" AFF. LEAVE ONE FIRE RATED STAMP EXPOSED PER SHEET OF PLYWOOD.DVDV PAINT REMAINDER OF PLYWOOD WHITE.

5 HOSE BIBB - REFER TO PLUMBING

6 DEPRESSED SHOWER SLAB, OVER VAPOR BARRIER ON COMPACTED FILL, SLOPE TO DRAIN - REFER TO STRUCTURAL & PLUMBING. REFER TO DETAIL 3/A-402.

FA1 FIRST AID - LARGE KIT - CHOCTAW-KAUL: MODEL PAC-53-CPC

FA2 FIRST AID - SMALL KIT - CHOCTAW-KAUL: MODEL PAC-50-CPC

EXTERIOR ELEVATION KEY

W1-1 — WINDOW TAG
- WINDOW NUMBER
- LEVEL
- N = NORTH, S = SOUTH, E = EAST, W = WEST

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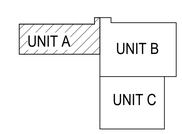
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
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KALAMAZOO, MICHIGAN

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SHEET TITLE
EXTERIOR ELEVATIONS

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-201	D

22-133.010

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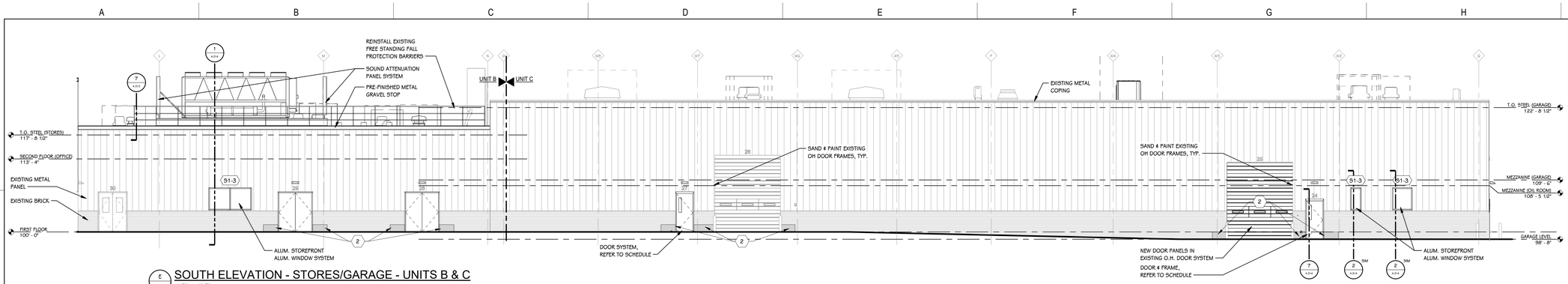

E A-202 SOUTH ELEVATION - STORES/GARAGE - UNITS B & C
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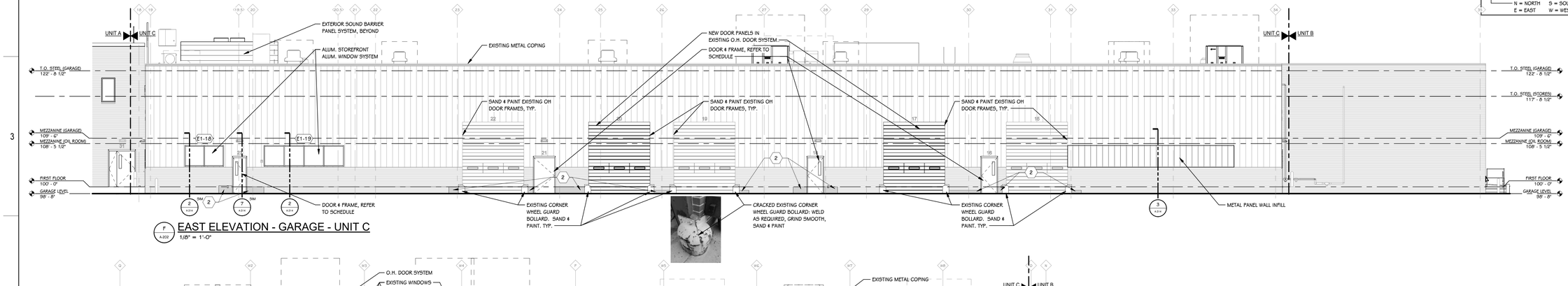

F A-202 EAST ELEVATION - GARAGE - UNIT C
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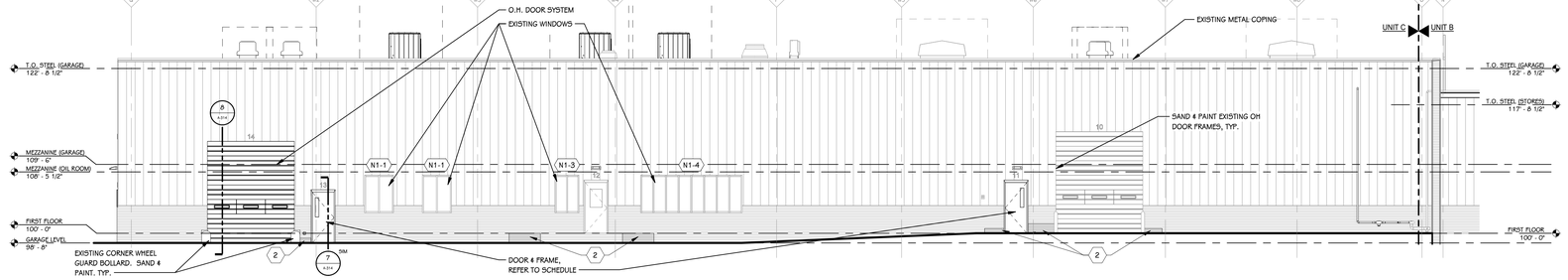
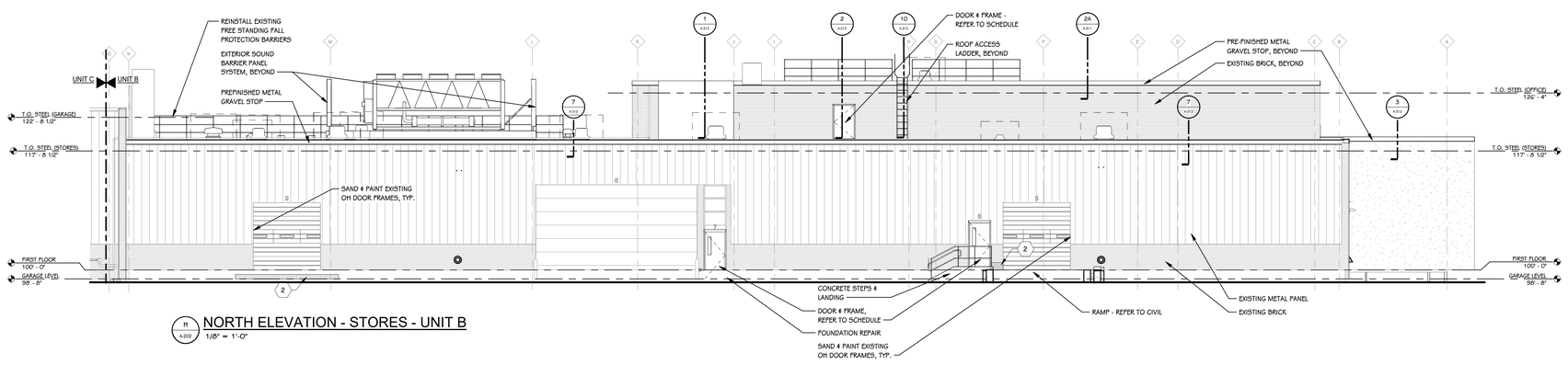


G A-202 NORTH ELEVATION - GARAGE - UNIT C
1/8" = 1'-0"



H A-202 NORTH ELEVATION - STORES - UNIT B
1/8" = 1'-0"

KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

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EXTERIOR ELEVATION KEY

WT-1 WINDOW TAG
- WINDOW NUMBER
- LEVEL
- N = NORTH S = SOUTH
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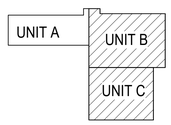
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

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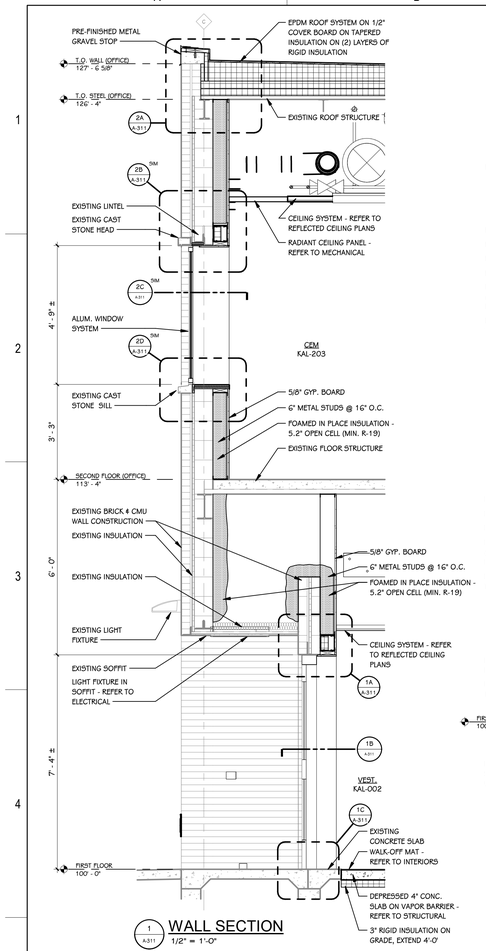
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

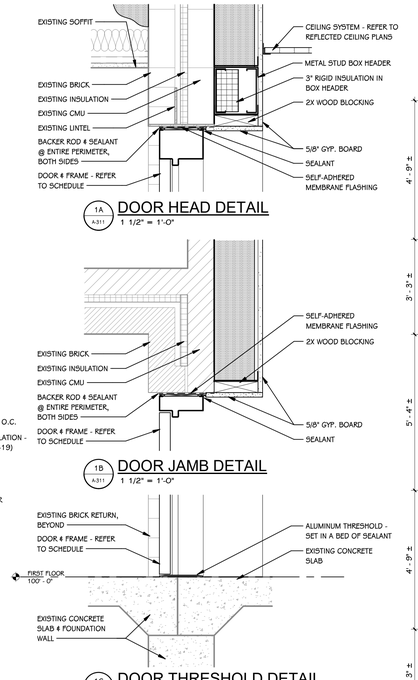
SHEET TITLE
EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-202
REV: D

22-133.010



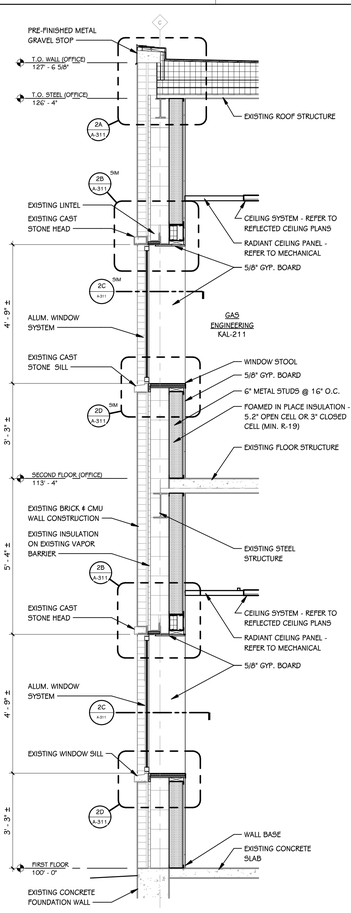
1 A-311 **WALL SECTION**
1/2" = 1'-0"



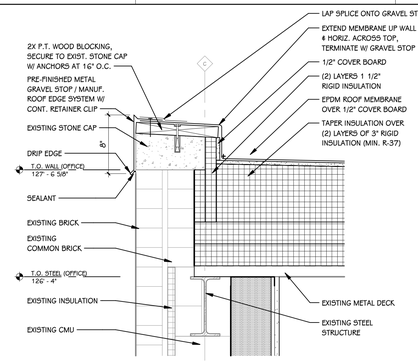
1A A-311 **DOOR HEAD DETAIL**
1 1/2" = 1'-0"

1B A-311 **DOOR JAMB DETAIL**
1 1/2" = 1'-0"

1C A-311 **DOOR THRESHOLD DETAIL**
1 1/2" = 1'-0"



2 A-311 **WALL SECTION - TYP. WEST**
1/2" = 1'-0"



2A A-311 **TOP OF WALL DETAIL - TYP.**
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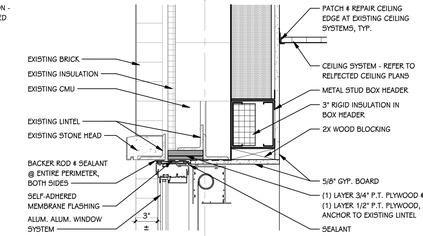
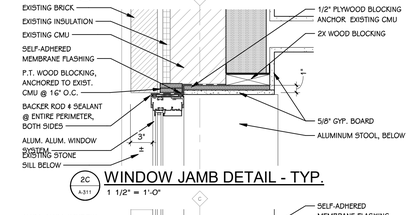


2B A-311 **WINDOW HEAD DETAIL - TYP.**
1 1/2" = 1'-0"



2C A-311 **WINDOW JAMB DETAIL - TYP.**
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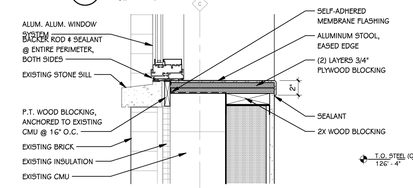

2D A-311 **WINDOW SILL DETAIL - TYP.**
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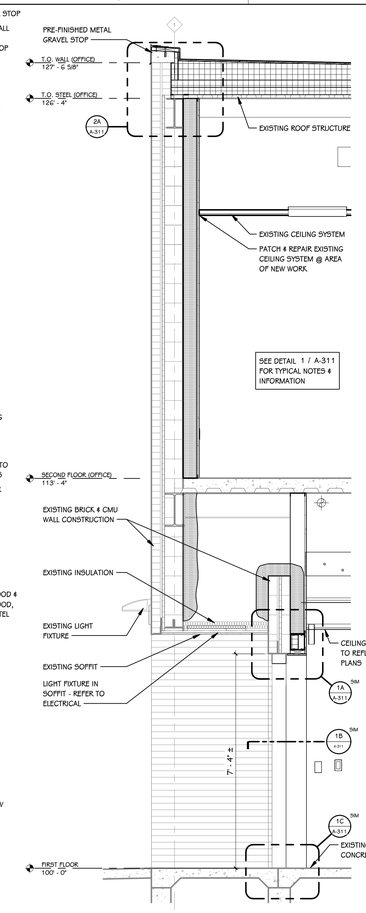

3 A-311 **WALL SECTION - SOUTH**
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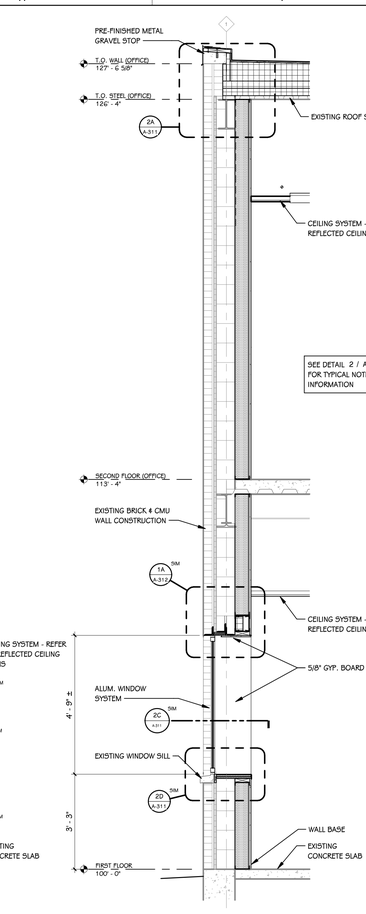
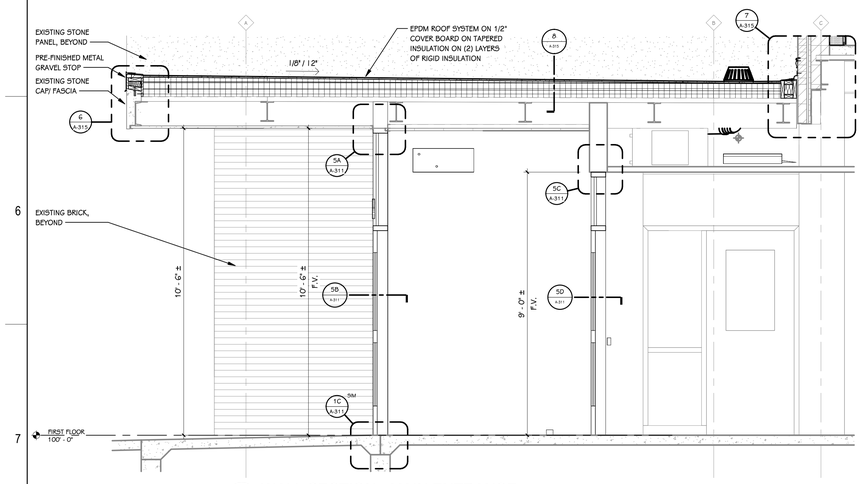


4 A-311 **WALL SECTION - SOUTH**
1/2" = 1'-0"



5 A-311 **WALL SECTION - MAIN ENTRANCE**
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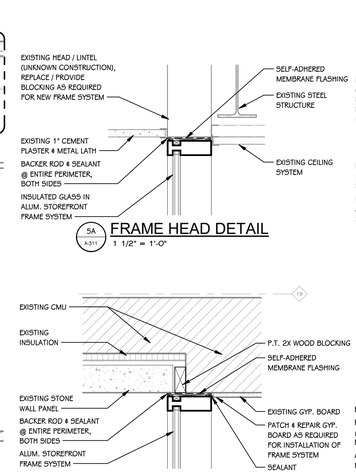
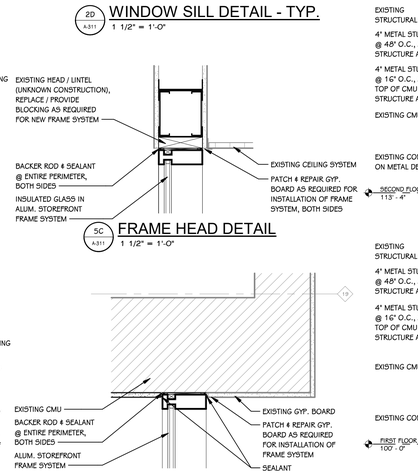


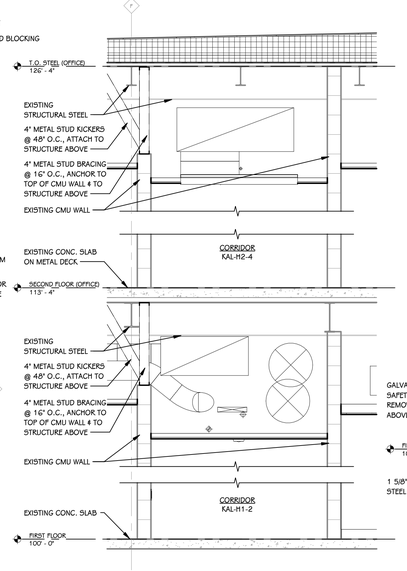
5A A-311 **FRAME HEAD DETAIL**
1 1/2" = 1'-0"



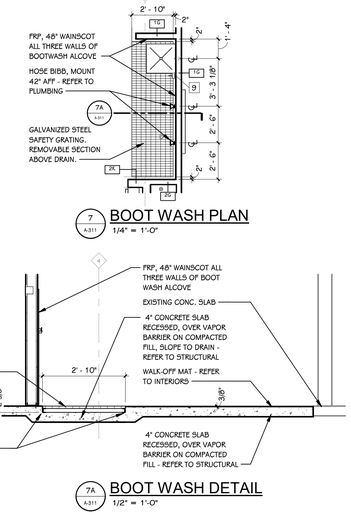
5C A-311 **FRAME HEAD DETAIL**
1 1/2" = 1'-0"

5B A-311 **FRAME JAMB DETAIL**
1 1/2" = 1'-0"

5D A-311 **FRAME JAMB DETAIL**
1 1/2" = 1'-0"



6 A-311 **CORRIDOR WALL SECTION**
1/2" = 1'-0"



7 A-311 **BOOT WASH PLAN**
1/4" = 1'-0"

7A A-311 **BOOT WASH DETAIL**
1/2" = 1'-0"

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SHEET TITLE
WALL SECTIONS AND DETAILS

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-311	D

22-133.010

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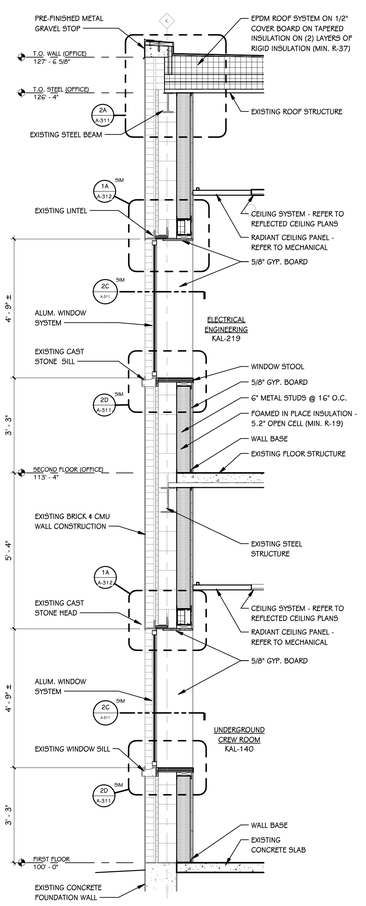
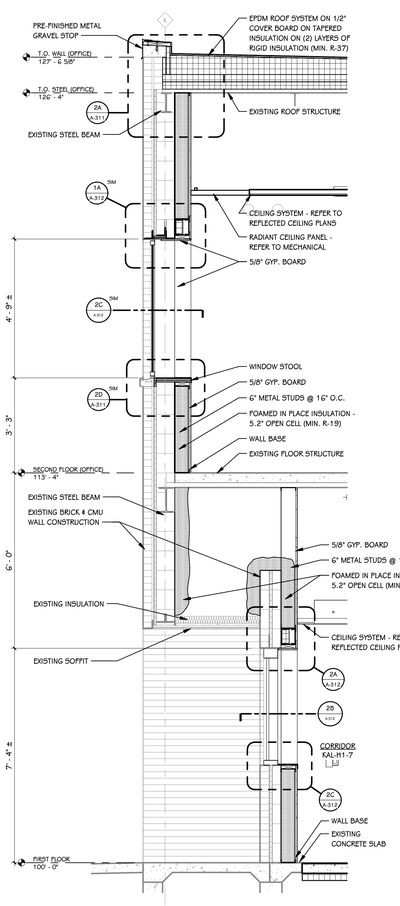
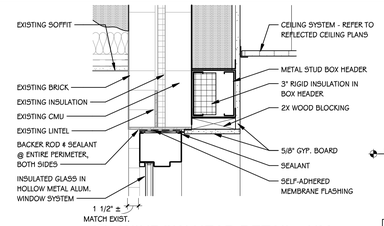


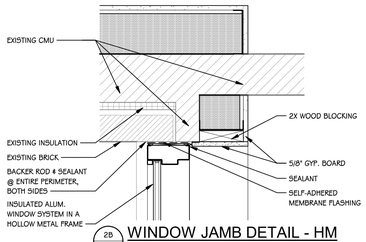
1 A-312 — WALL SECTION - TYP. EAST
1/2" = 1'-0"



2 A-312 — WALL SECTION
1/2" = 1'-0"



2A A-312 — WINDOW HEAD DETAIL - HM
1 1/2" = 1'-0"



2B A-312 — WINDOW JAMB DETAIL - HM
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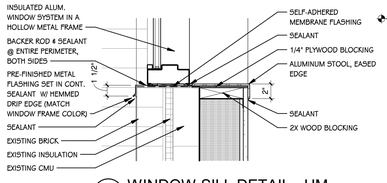

2C A-312 — WINDOW SILL DETAIL - HM
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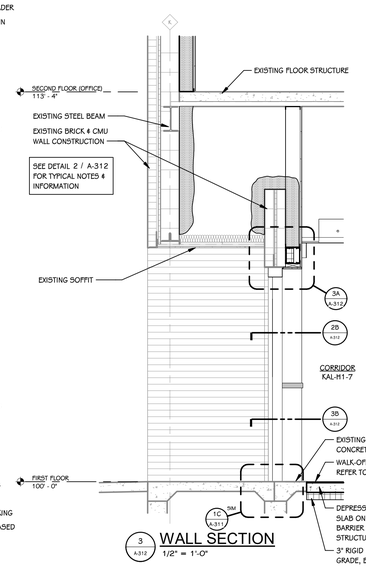
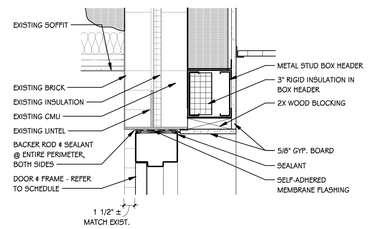
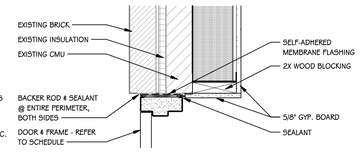


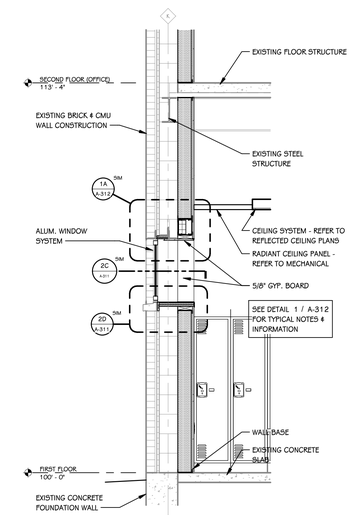
3 A-312 — WALL SECTION
1/2" = 1'-0"



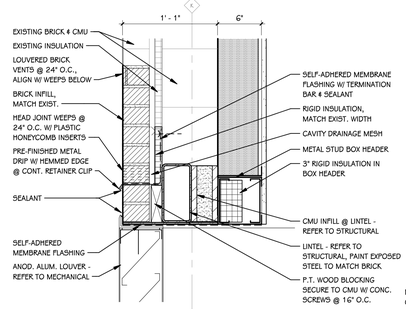
3A A-312 — DOOR HEAD DETAIL - HM
1 1/2" = 1'-0"



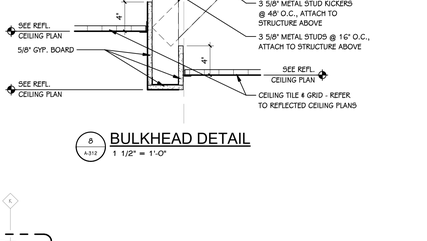
3B A-312 — DOOR JAMB DETAIL - HM
1 1/2" = 1'-0"



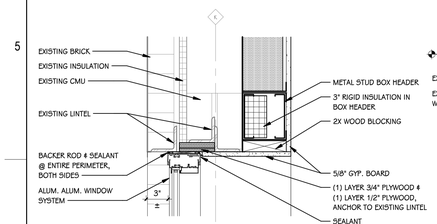
4 A-312 — WALL SECTION
1/2" = 1'-0"



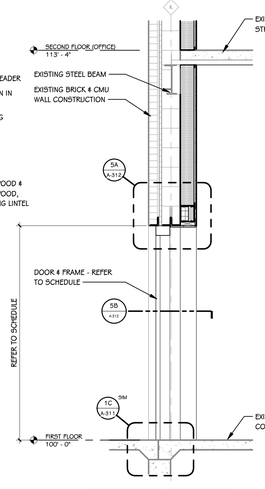
6A A-312 — LOUVER HEAD DETAIL
1 1/2" = 1'-0"



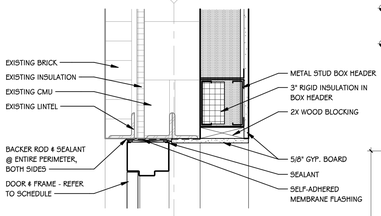
6 A-312 — BULKHEAD DETAIL
1 1/2" = 1'-0"



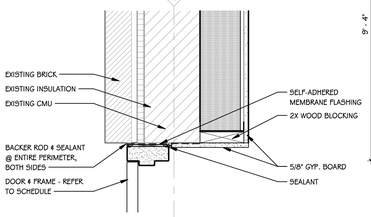
1A A-312 — WINDOW HEAD DETAIL
1 1/2" = 1'-0"



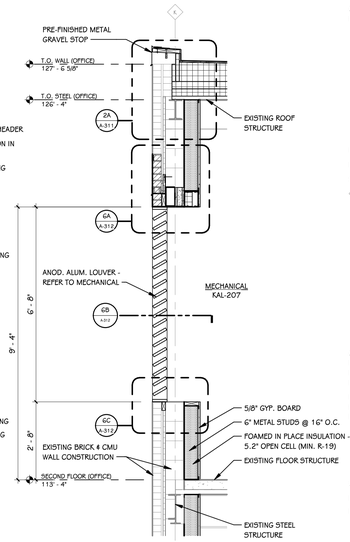
5 A-312 — WALL SECTION
1/2" = 1'-0"



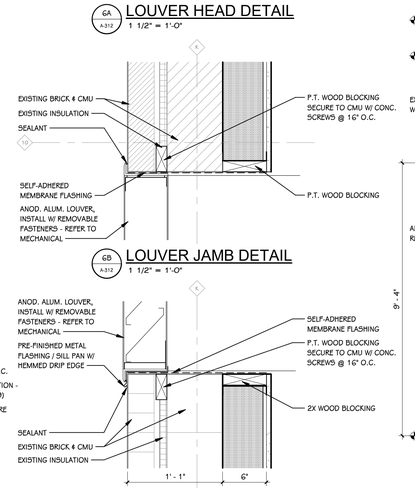
5A A-312 — DOOR HEAD DETAIL - HM
1 1/2" = 1'-0"



5B A-312 — DOOR JAMB DETAIL - HM
1 1/2" = 1'-0"

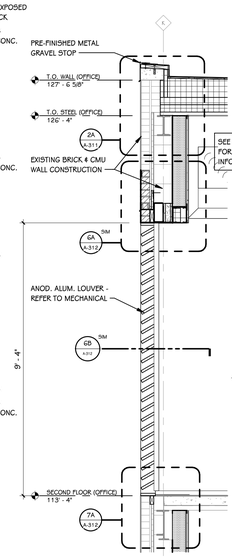


6 A-312 — WALL SECTION - LOUVER
1/2" = 1'-0"

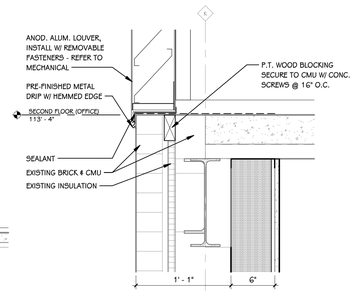


6B A-312 — LOUVER JAMB DETAIL
1 1/2" = 1'-0"

6C A-312 — LOUVER SILL DETAIL
1 1/2" = 1'-0"



7 A-312 — WALL SECTION - LOUVER
1/2" = 1'-0"



7A A-312 — LOUVER SILL DETAIL
1 1/2" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
WALL SECTIONS AND DETAILS

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-312	D

22-133.010

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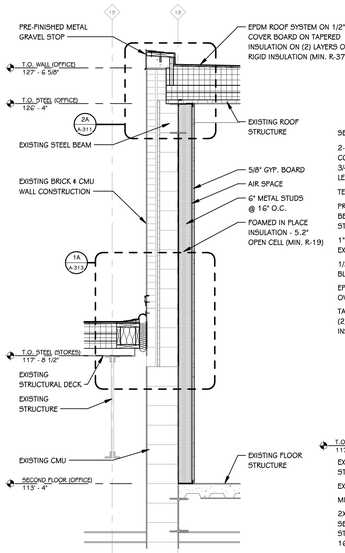
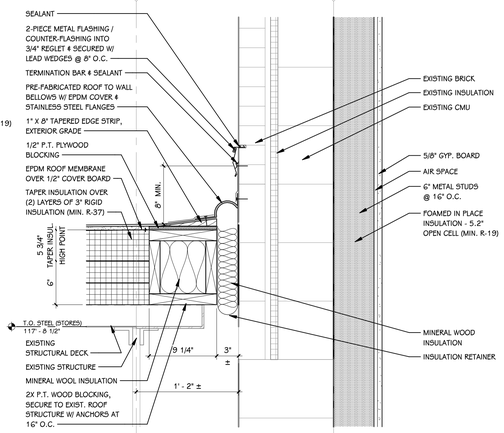
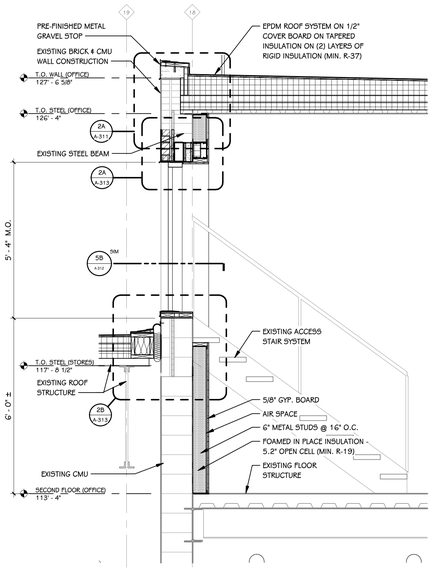


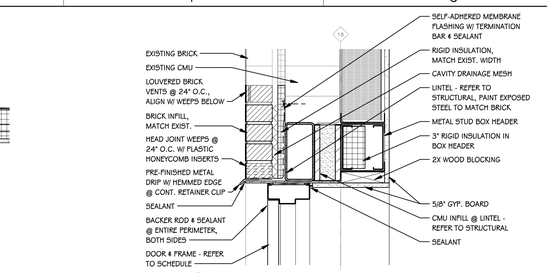
1 A-313 WALL SECTION
1/2" = 1'-0"



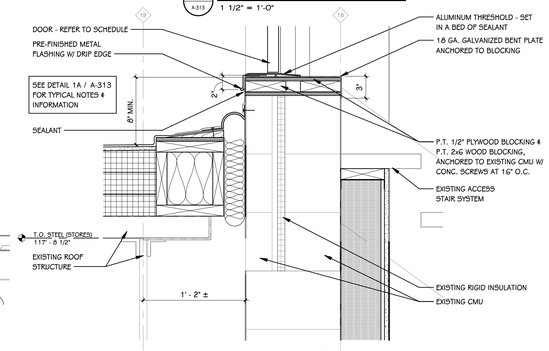
1A A-313 ROOF TO WALL DETAIL
1 1/2" = 1'-0"



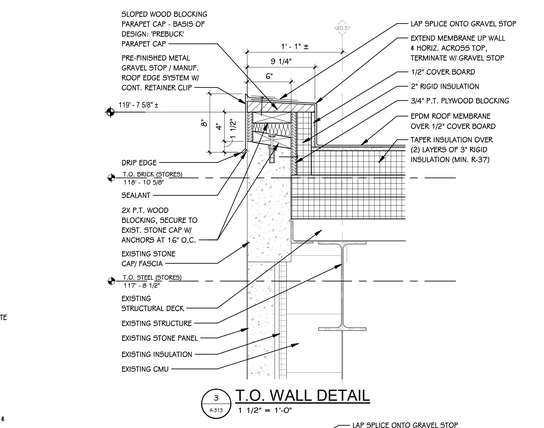
2 A-313 WALL SECTION
1/2" = 1'-0"



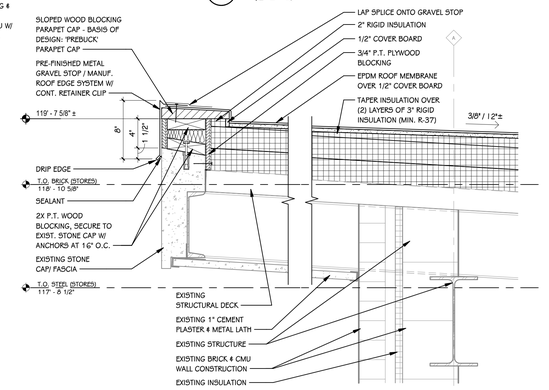
2A A-313 DOOR HEAD DETAIL - HM
1 1/2" = 1'-0"



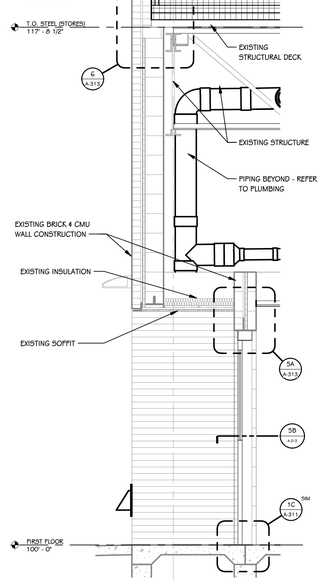
2B A-313 DOOR SILL DETAIL - HM
1 1/2" = 1'-0"



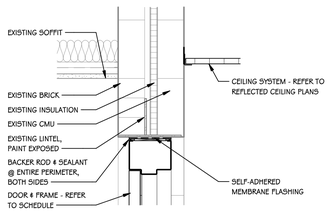
3 A-313 T.O. WALL DETAIL
1 1/2" = 1'-0"



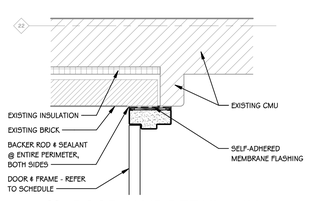
4 A-313 ROOF EDGE DETAIL
1 1/2" = 1'-0"



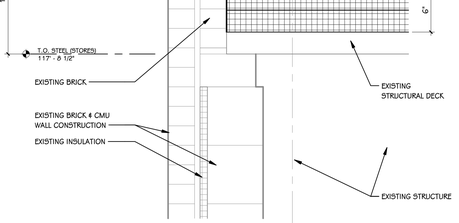
5 A-313 WALL SECTION
1/2" = 1'-0"



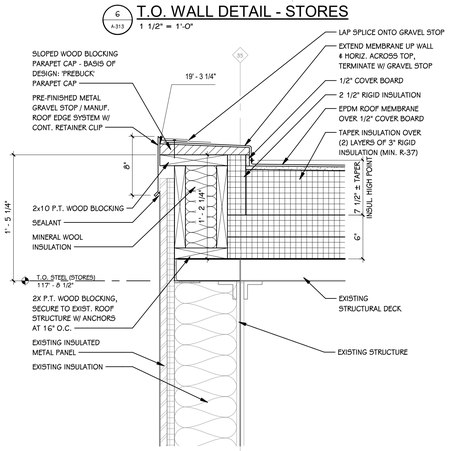
5A A-313 DOOR HEAD DETAIL - HM
1 1/2" = 1'-0"



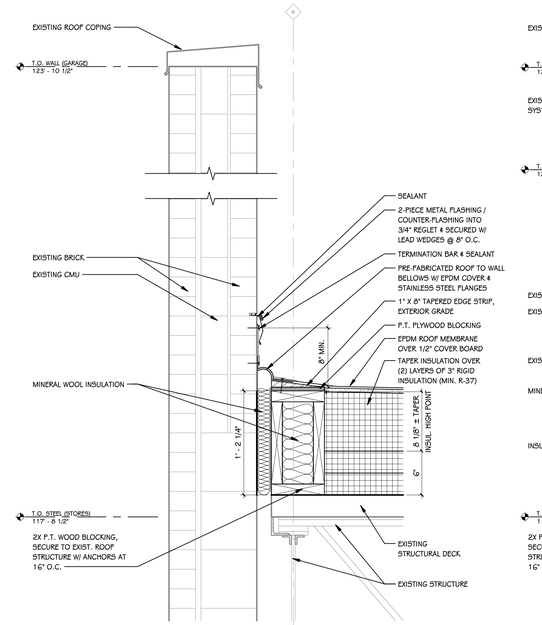
5B A-313 DOOR JAMB DETAIL - HM
1 1/2" = 1'-0"



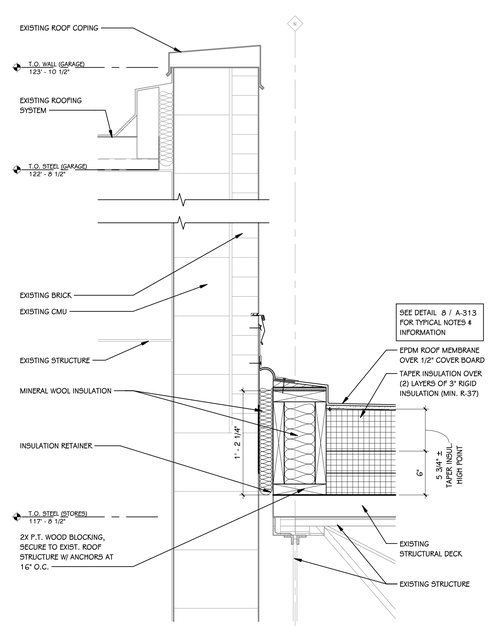
6 A-313 T.O. WALL DETAIL - STORES
1 1/2" = 1'-0"



7 A-313 T.O. WALL DETAIL - STORES
1 1/2" = 1'-0"



6 A-313 T.O. WALL DETAIL - STORES
1 1/2" = 1'-0"



9 A-313 T.O. WALL DETAIL - STORES / GARAGE
1 1/2" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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Architecture · Engineering · Interiors

SHEET TITLE
WALL SECTIONS AND DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-313
REV: D

22-133.010

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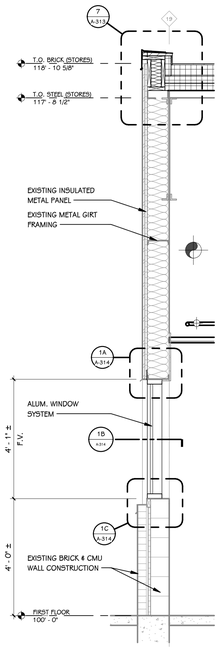
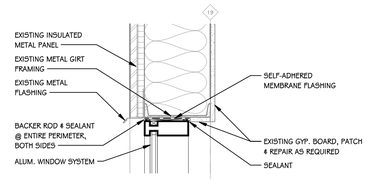
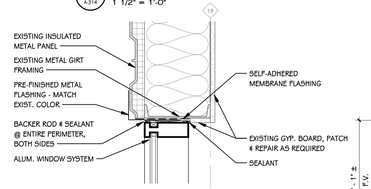


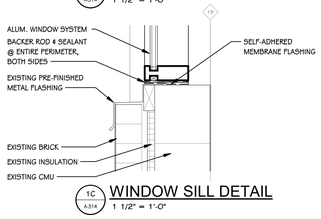
1 A-314 WALL SECTION - STORES
1/2" = 1'-0"



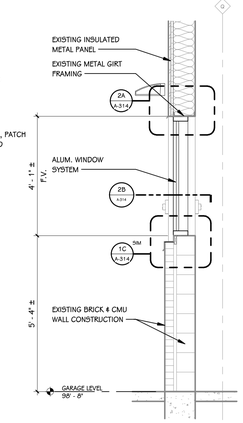
1A A-314 WINDOW HEAD DETAIL
1 1/2" = 1'-0"



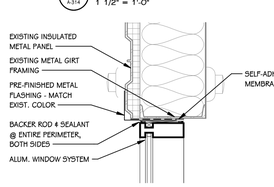
1B A-314 WINDOW JAMB DETAIL
1 1/2" = 1'-0"



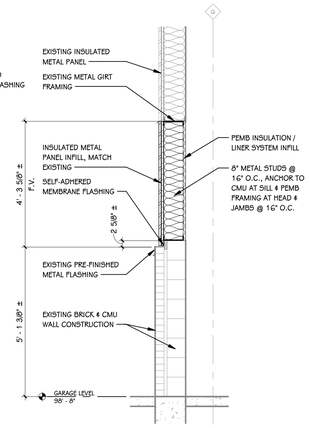
1C A-314 WINDOW SILL DETAIL
1 1/2" = 1'-0"



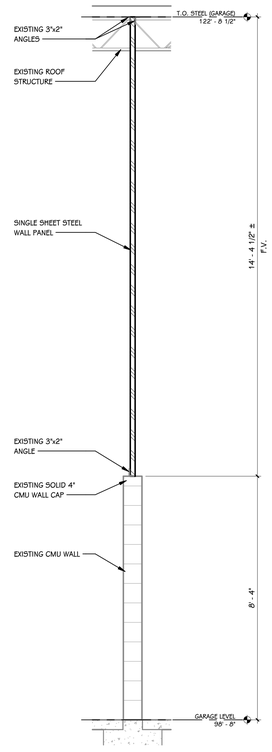
2 A-314 WALL SECTION - GARAGE
1/2" = 1'-0"



2B A-314 WINDOW JAMB DETAIL
1 1/2" = 1'-0"



3 A-314 WALL SECTION - GARAGE
1/2" = 1'-0"



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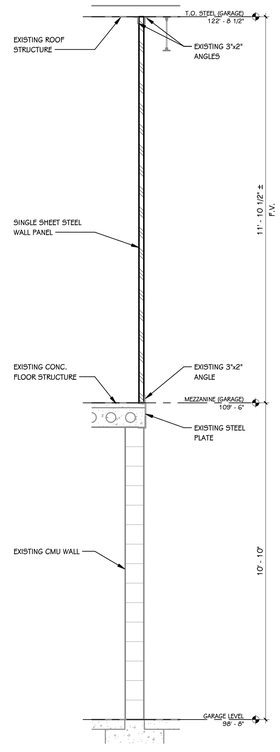
1/2" = 1'-0"



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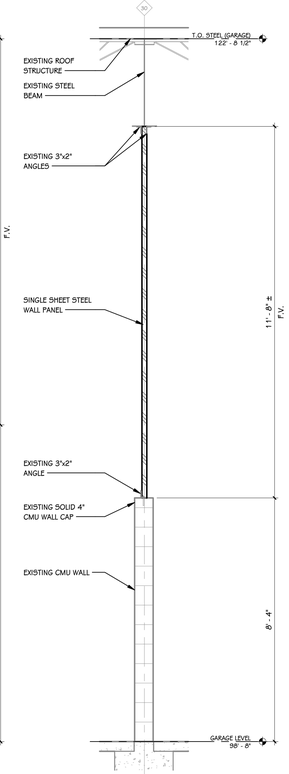
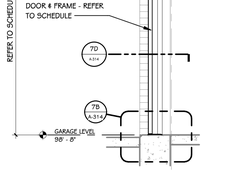
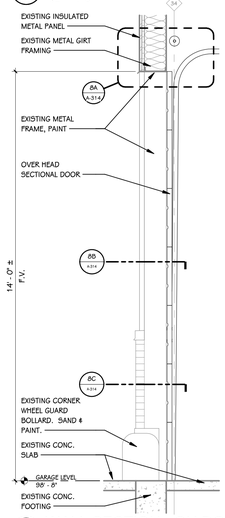
1/2" = 1'-0"



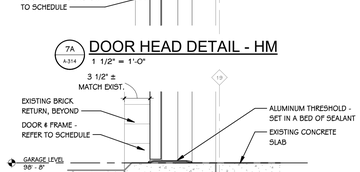
6 A-314 WALL SECTION - GARAGE
1/2" = 1'-0"



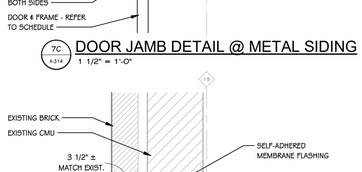
7 A-314 WALL SECTION - GARAGE
1/2" = 1'-0"



8 A-314 WALL SECTION - OH DOOR
1/2" = 1'-0"



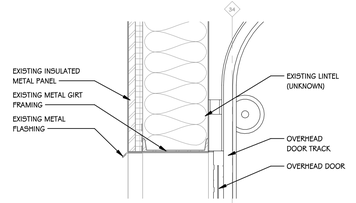
7A A-314 DOOR HEAD DETAIL - HM
1 1/2" = 1'-0"



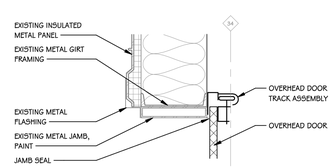
7C A-314 DOOR JAMB DETAIL @ METAL SIDING
1 1/2" = 1'-0"

7B A-314 DOOR SILL DETAIL - HM
1 1/2" = 1'-0"

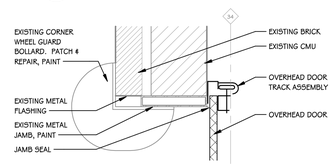
7D A-314 DOOR JAMB DETAIL @ BRICK / CMU
1 1/2" = 1'-0"



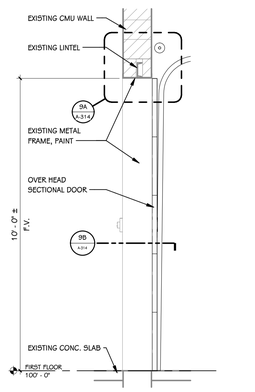
8A A-314 OH DOOR HEAD DETAIL
1 1/2" = 1'-0"



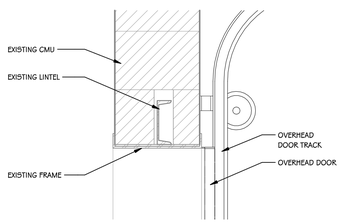
8B A-314 OH DOOR JAMB @ METAL PANEL
1 1/2" = 1'-0"



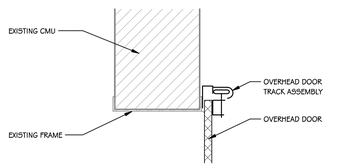
8C A-314 OH DOOR JAMB @ BRICK/CMU
1 1/2" = 1'-0"



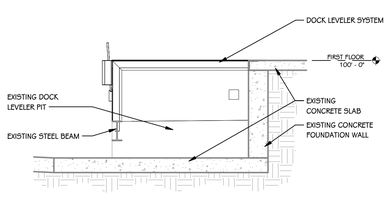
9 A-314 WALL SECTION - OH DOOR
1/2" = 1'-0"



9A A-314 OH DOOR HEAD DETAIL
1 1/2" = 1'-0"



9B A-314 OH DOOR JAMB DETAIL
1 1/2" = 1'-0"



10 A-314 DOCK LEVELER DETAIL
1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
WALL SECTIONS AND DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-314
REV: D

22-133.010

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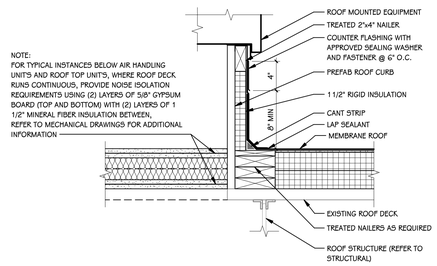
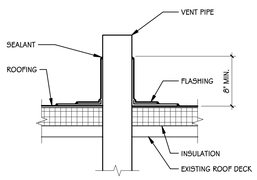
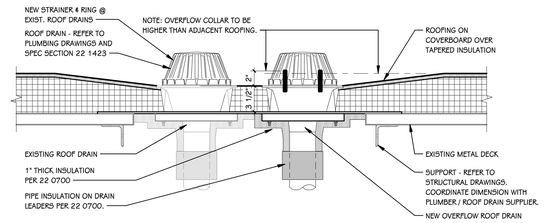


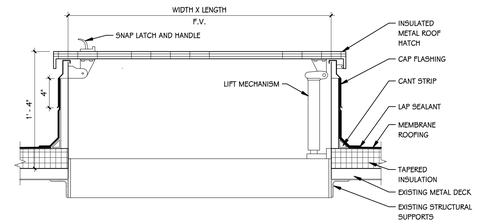
1 A-315 — TYPICAL ROOF CURB
1 1/2" = 1'-0"



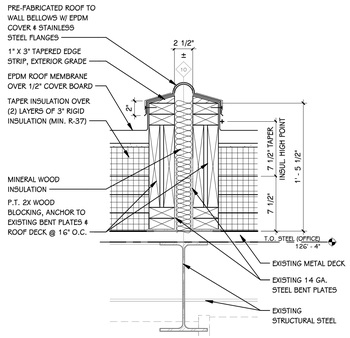
2 A-315 — TYPICAL ROOF PENETRATION
1 1/2" = 1'-0"



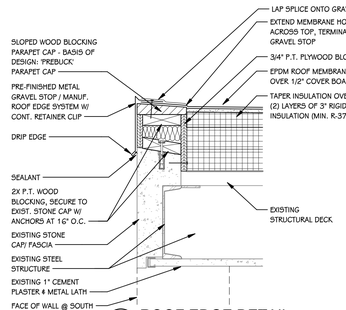
3 A-315 — ROOF DRAIN WITH OVERFLOW DETAIL
1 1/2" = 1'-0"



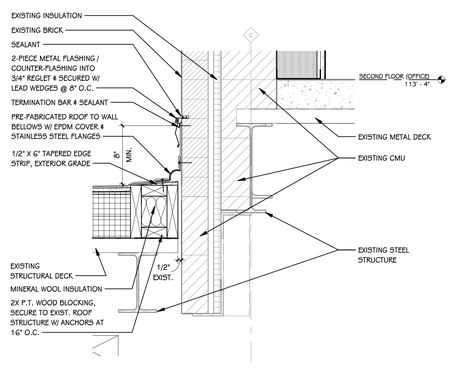
4 A-315 — ROOF HATCH DETAIL
1 1/2" = 1'-0"



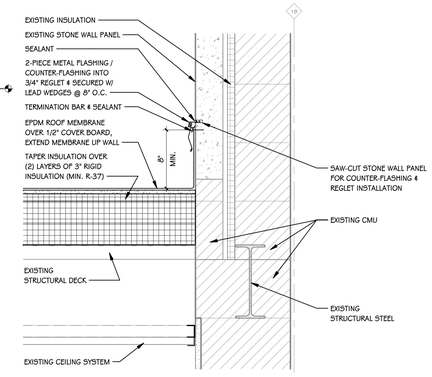
5 A-315 — ROOF CURB DETAIL
1 1/2" = 1'-0"



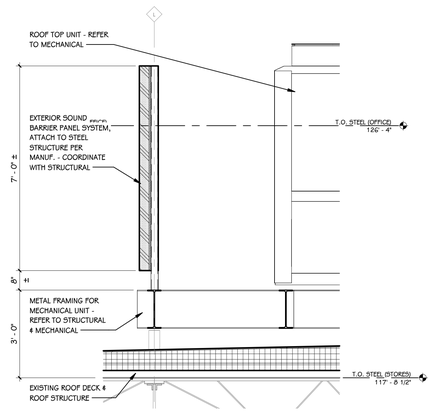
6 A-315 — ROOF EDGE DETAIL
1 1/2" = 1'-0"



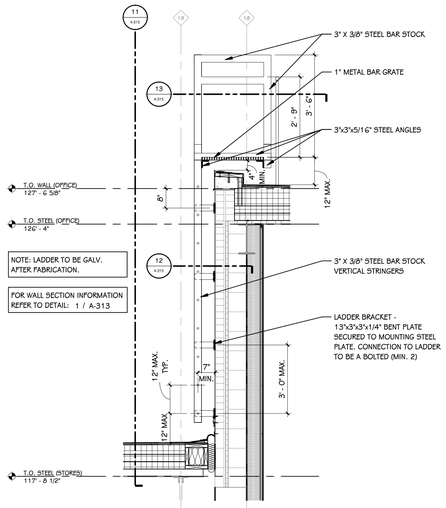
7 A-315 — ROOF TO WALL DETAIL
1 1/2" = 1'-0"



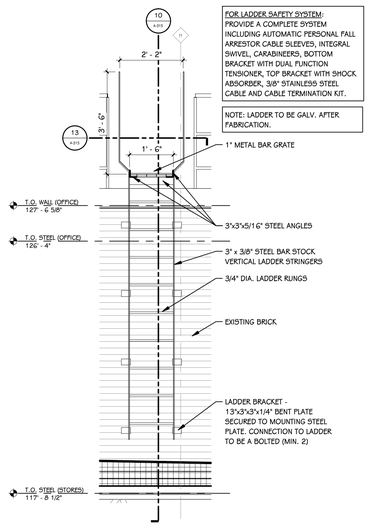
8 A-315 — ROOF TO WALL DETAIL
1 1/2" = 1'-0"



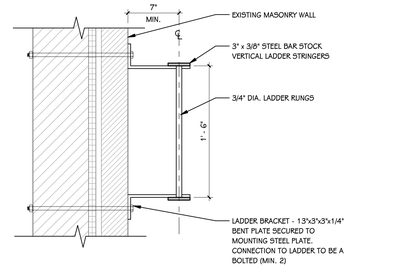
9 A-315 — SOUND ATTENUATION SCREEN WALL DETAIL
1/2" = 1'-0"



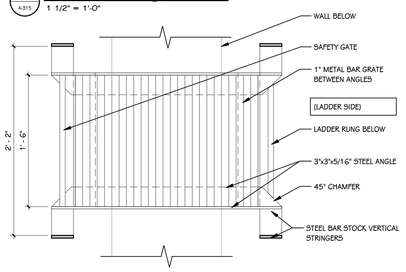
10 A-315 — ROOF ACCESS LADDER SECTION
1/2" = 1'-0"



11 A-315 — ROOF ACCESS LADDER ELEVATION
1/2" = 1'-0"



12 A-315 — PLAN DETAIL @ LADDER
1 1/2" = 1'-0"



13 A-315 — PLAN DETAIL @ LADDER PLATFORM
1 1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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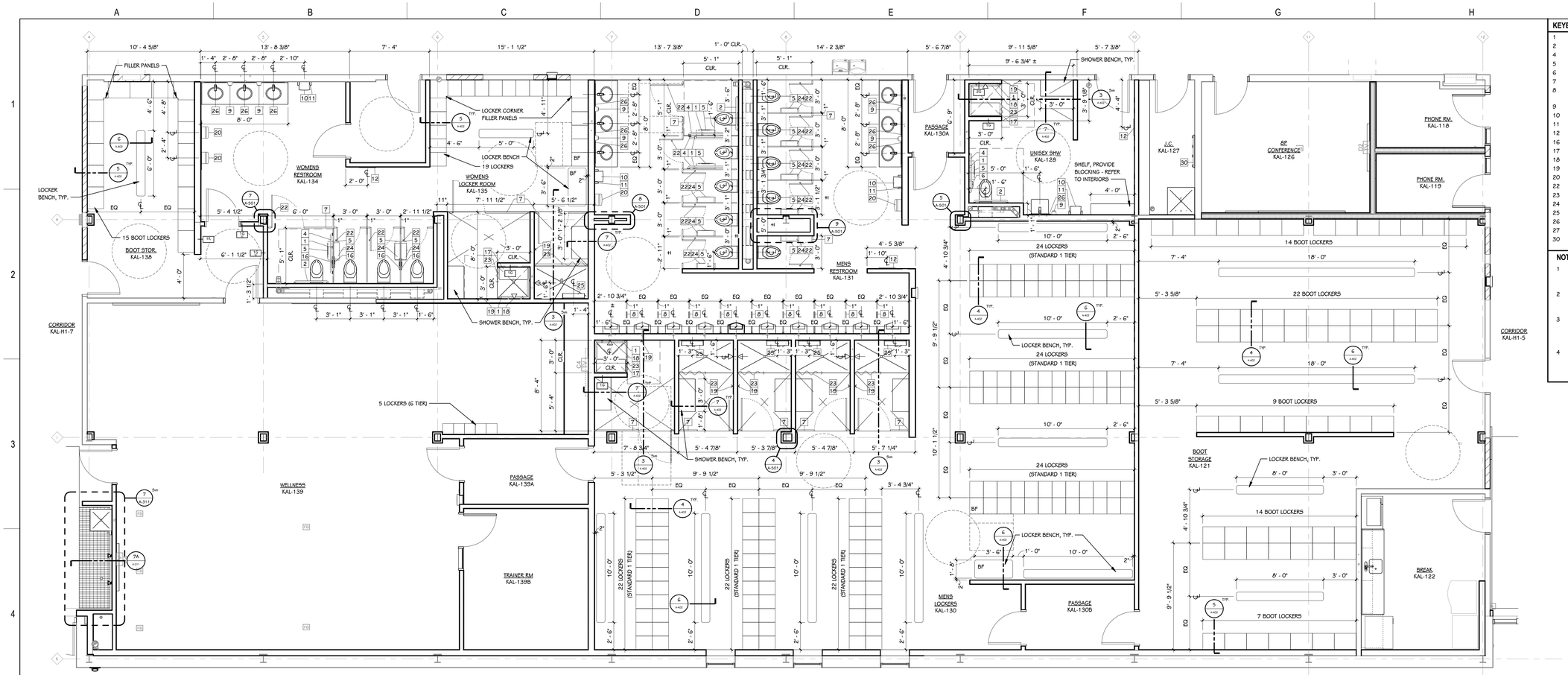
SHEET TITLE
ROOF DETAILS

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-315	D

22-133.010



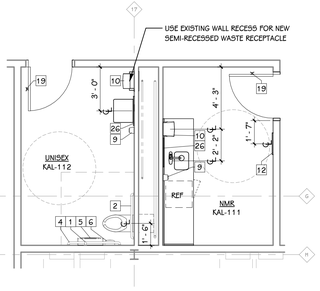
KEYED NOTES - TOILET ACCESSORY

1	18" VERTICAL STAINLESS STEEL GRAB BAR
2	36" STAINLESS STEEL GRAB BAR
4	42" STAINLESS STEEL GRAB BAR
5	TOILET PAPER DISPENSER
6	SANITARY NAPKIN DISPOSAL
7	TOILET PARTITION
8	URINAL SCREEN - HEAVY DUTY CONTINUOUS BRACKET FULL SCREEN HEIGHT
9	SOAP DISPENSER - O.P., C.I.
10	PAPER TOWEL (ROLL) DISPENSER - O.P., C.I.
11	SEMI-RECESSED WASTE RECEPTACLE
12	STAINLESS STEEL FRAMED MIRROR (24"Wx60"H)
16	SANITARY NAPKIN DISPOSAL - THROUGH PARTITION TYPE
17	FOLD DOWN SHOWER SEAT
18	CONTINUOUS SHOWER GRAB BAR
19	DOUBLE ROBE HOOK
20	ELECTRIC HAND DRYER
22	CLOTHES HOOK - STAINLESS STEEL, DOOR MOUNTED
23	SHOWER ROD AND CURTAIN
24	STAINLESS STEEL SHELF (8"X16")
25	WALL MOUNTED STAINLESS STEEL SHOWER SHELF (5'X24")
26	STAINLESS STEEL FRAMED MIRROR (24"Wx36"H)
27	STAINLESS STEEL FRAMED MIRROR (18"Wx36"H)
30	MOP AND BROOM HOLDER

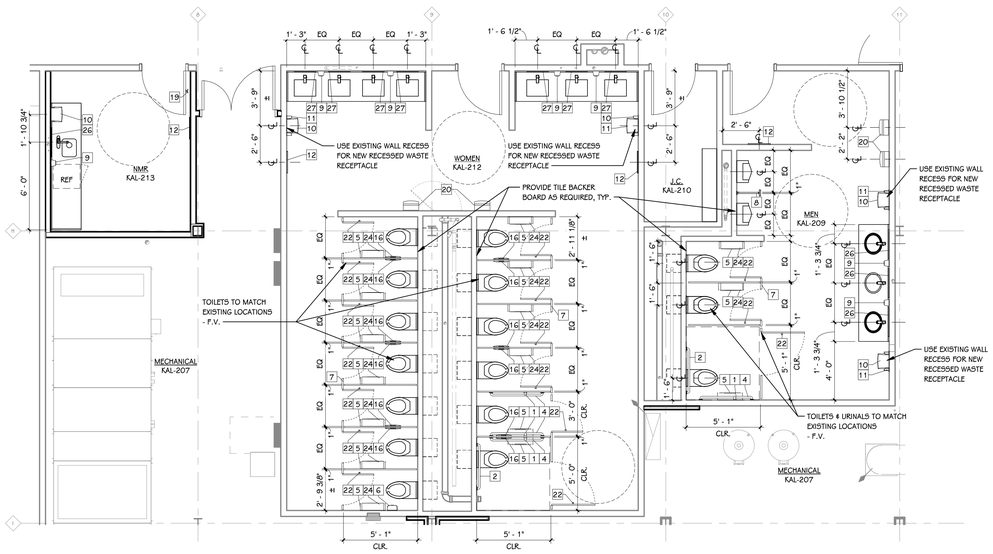
NOTES - TOILET ACCESSORY

1. OP = OWNER PURCHASED, OI = OWNER INSTALLED, CP = CONTRACTOR PURCHASED, CI = CONTRACTOR INSTALLED.
2. DIMENSIONS INDICATED ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.
3. GENERIC PLUMBING FIXTURES ARE SHOWN. REFER TO PLUMBING DRAWINGS AND SPECIFICATIONS FOR FIXTURE TYPES, MANUFACTURERS AND MOUNTING HEIGHTS.
4. CODE REQUIRED INTERIOR SIGNAGE - INCLUDES MINIMUM REQUIRED SIGN TYPES REQUIRED FOR OCCUPANCY AS DICTATED BY IBC, IFC, AND NFPA. COORDINATE WITH ANY OWNER-PROVIDED SIGNAGE.

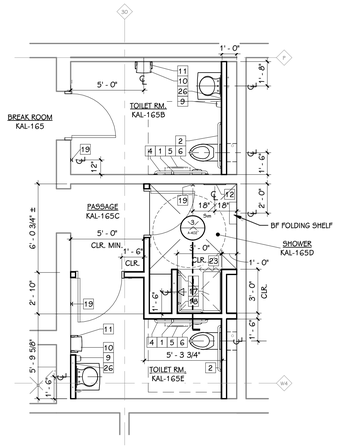
1 A-401 ENLARGED LOCKER, BOOT & TOILET ROOM PLANS - 1ST FLOOR
1/4" = 1'-0"



2 A-401 ENLARGED TOILET ROOM & NRM PLANS - 1ST FLOOR
1/4" = 1'-0"



3 A-401 ENLARGED TOILET ROOM PLANS - 2ND FLOOR
1/4" = 1'-0"



4 A-401 ENLARGED TOILET ROOM PLAN - GARAGE
1/4" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	KD	KH/AL	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	JB	KD	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	KD	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED TOILET ROOM AND LOCKER ROOM PLANS

SCALE: 1/4" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-401
REV: D

22-133.010

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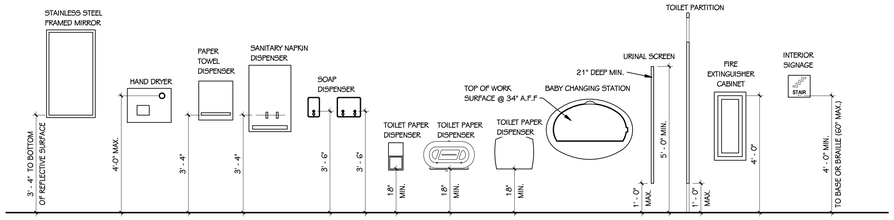
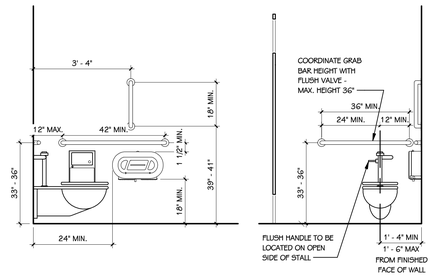
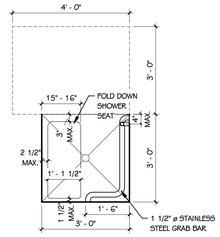


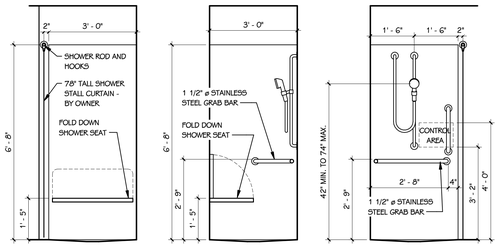
TYPICAL MOUNTING HEIGHTS
1/2" = 1'-0"



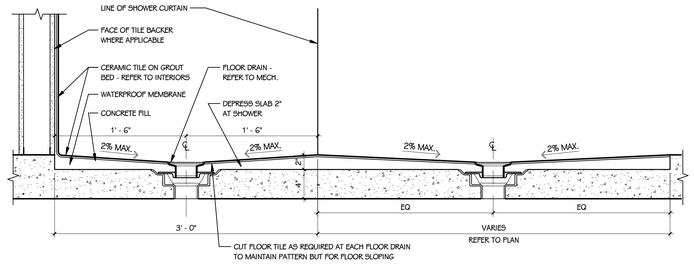
TYPICAL BARRIER-FREE MOUNTING HEIGHTS
1/2" = 1'-0"



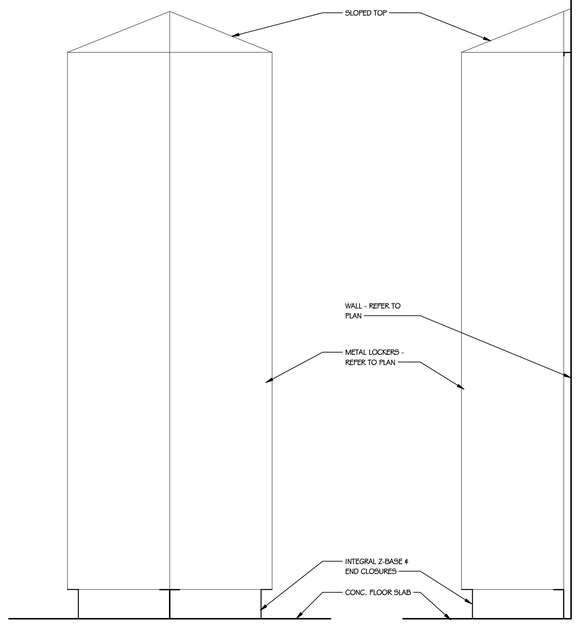
1 A-402 TYPICAL BARRIER-FREE SHOWER PLAN
1/2" = 1'-0"



2 A-402 TYPICAL BARRIER-FREE SHOWER ELEVATION
1/2" = 1'-0"

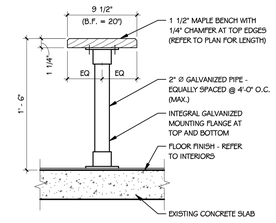


3 A-402 TYPICAL SHOWER FLOOR DETAIL
1 1/2" = 1'-0"

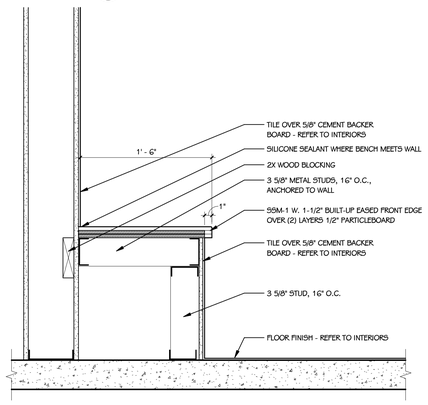


4 A-402 LOCKER WITH BASE DETAIL
1 1/2" = 1'-0"

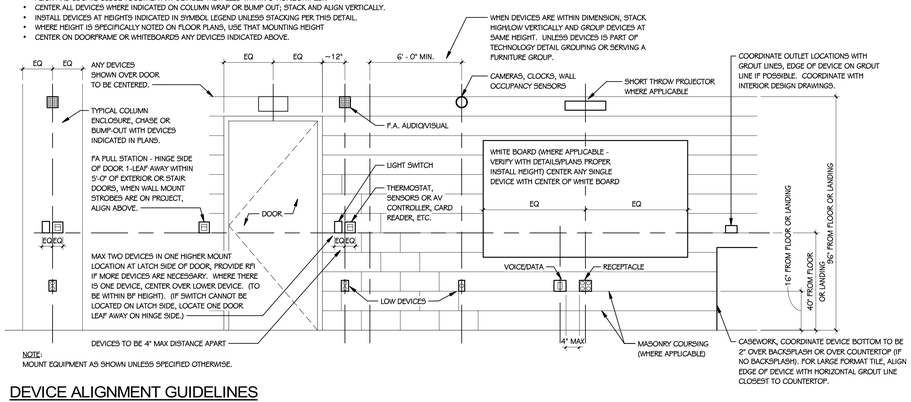
5 A-402 LOCKER WITH BASE DETAIL
1 1/2" = 1'-0"



6 A-402 LOCKER BENCH DETAIL
1 1/2" = 1'-0"



7 A-402 SHOWER BENCH DETAIL
1 1/2" = 1'-0"



DEVICE ALIGNMENT GUIDELINES
12" = 1'-0"

REFERENCE DRAWINGS	REV	DATE	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
TOILET ROOM, LOCKER ROOM, BARRIER-FREE DETAILS, TYP. MOUNTING HEIGHTS, ETC.

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-402	A

22-133.010

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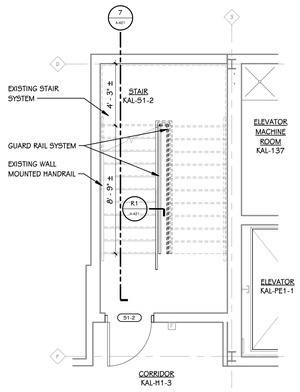
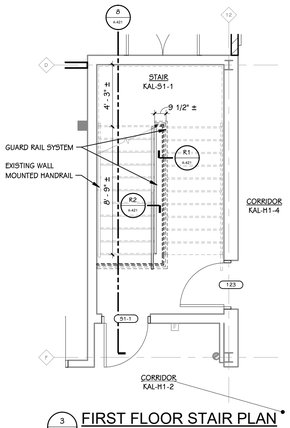
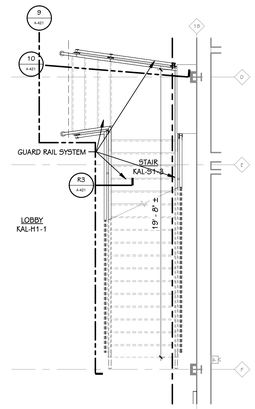


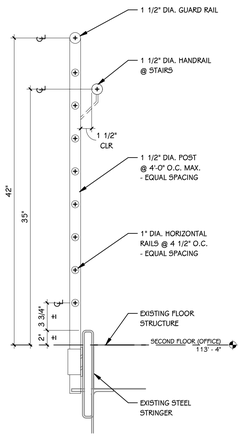
1 A-421 FIRST FLOOR STAIR PLAN
1/4" = 1'-0"



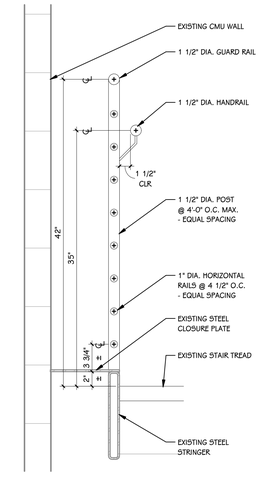
3 A-421 FIRST FLOOR STAIR PLAN
1/4" = 1'-0"



5 A-421 FIRST FLOOR LOBBY STAIR PLAN
1/4" = 1'-0"



R1 A-421 RAILING DETAIL
1 1/2" = 1'-0"



R2 A-421 RAILING DETAIL
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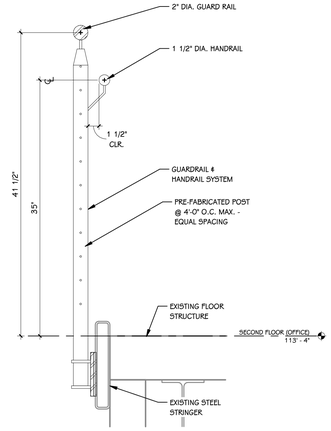
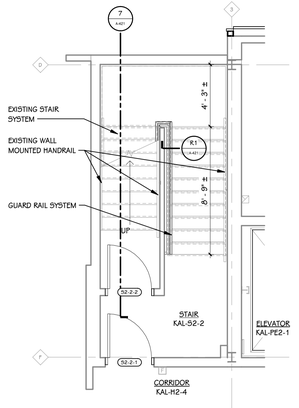
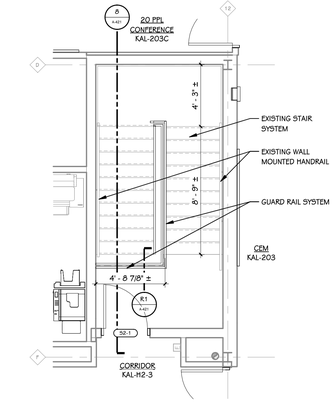


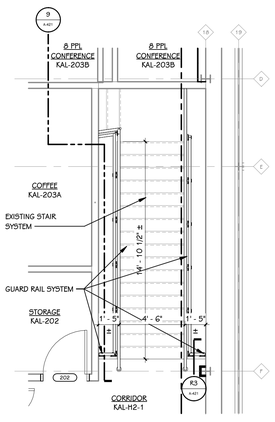
R3 A-421 RAILING DETAIL @ LOBBY STAIRS
1 1/2" = 1'-0"



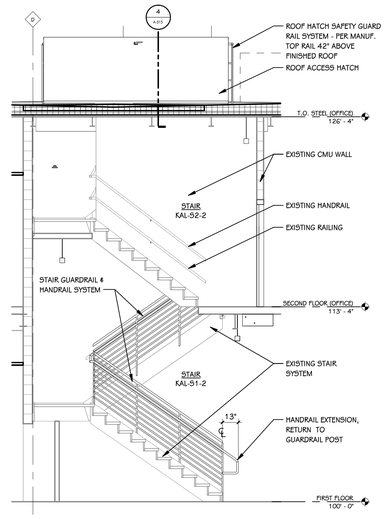
2 A-421 SECOND FLOOR STAIR PLAN
1/4" = 1'-0"



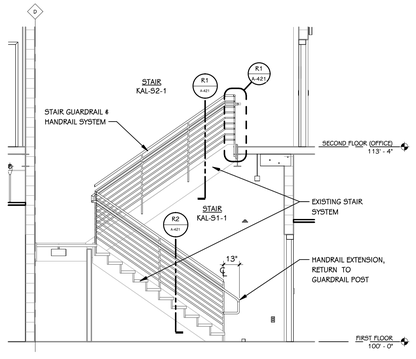
4 A-421 SECOND FLOOR STAIR PLAN
1/4" = 1'-0"



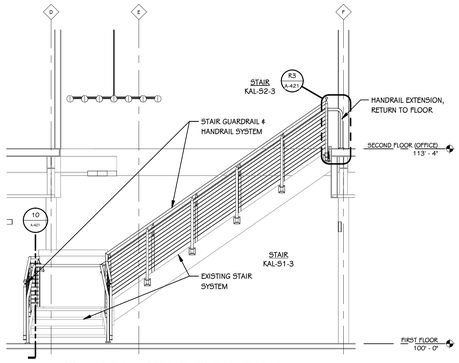
6 A-421 SECOND FLOOR LOBBY STAIR PLAN
1/4" = 1'-0"



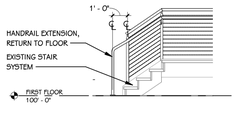
7 A-421 STAIR 3 SECTION
1/4" = 1'-0"



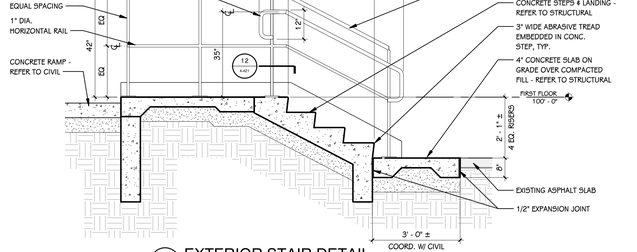
8 A-421 STAIR 2 SECTION
1/4" = 1'-0"



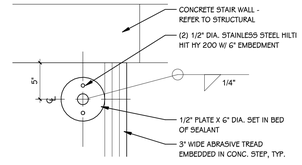
9 A-421 LOBBY STAIR ELEVATION
1/4" = 1'-0"



10 A-421 LOBBY STAIR SECTION
1/4" = 1'-0"



11 A-421 EXTERIOR STAIR DETAIL
1/2" = 1'-0"



12 A-421 POST CONNECTION PLAN DETAIL
1 1/2" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
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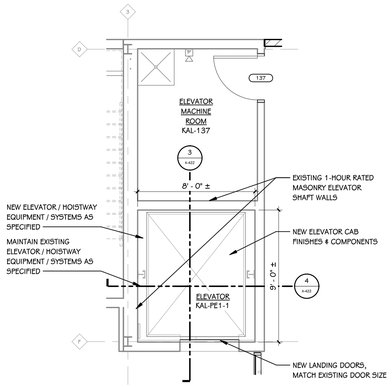
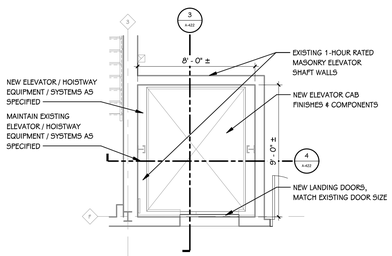
SHEET TITLE
ENLARGED STAIR PLANS, STAIR SECTIONS AND DETAILS

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	A-421	D

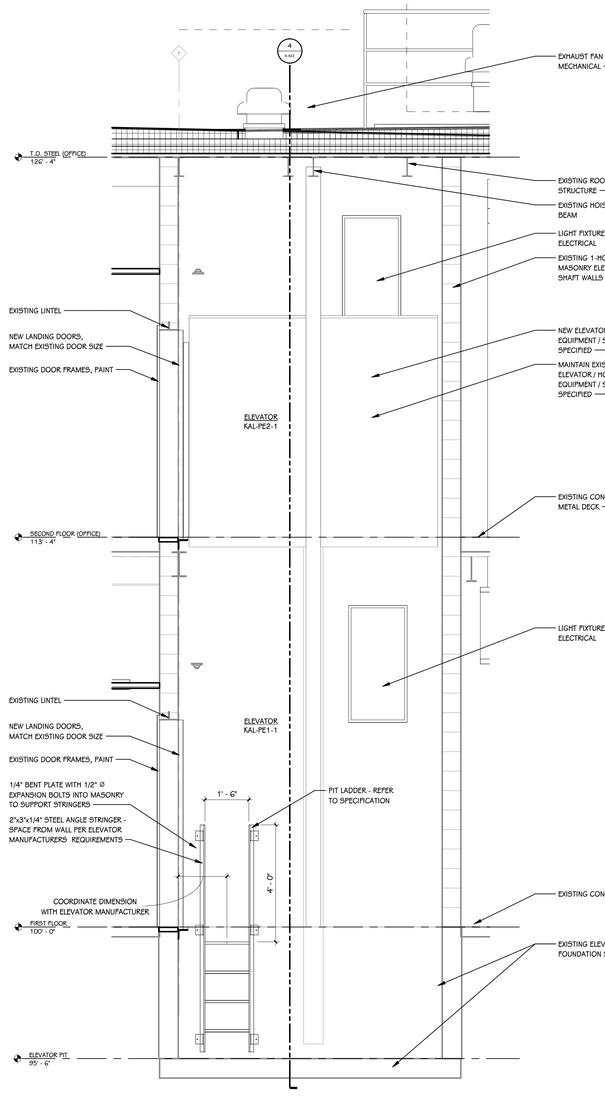
22-133.010



1 A-422 FIRST FLOOR ELEVATOR PLAN
1/4" = 1'-0"



2 A-422 SECOND FLOOR ELEVATOR PLAN
1/4" = 1'-0"



3 A-422 ELEVATOR WALL SECTION
1/2" = 1'-0"

4 A-422 ELEVATOR WALL SECTION
1/2" = 1'-0"

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED ELEVATOR PLANS AND SECTIONS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-422
REV: D

22-133.010

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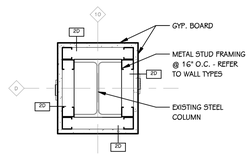
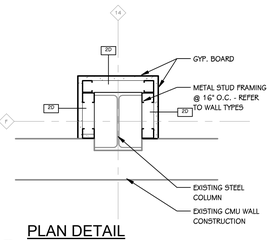
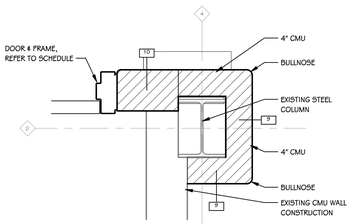


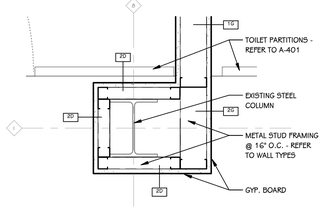
1 A-501 — PLAN DETAIL
COLUMN WRAP - TYP.
1 1/2" = 1'-0"



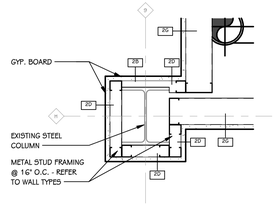
2 A-501 — PLAN DETAIL
COLUMN WRAP - TYP @ WALL
1 1/2" = 1'-0"



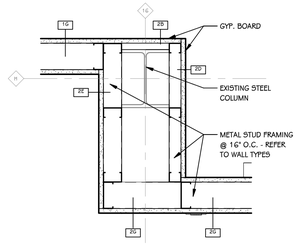
3 A-501 — PLAN DETAIL
1 1/2" = 1'-0"



4 A-501 — PLAN DETAIL
1 1/2" = 1'-0"



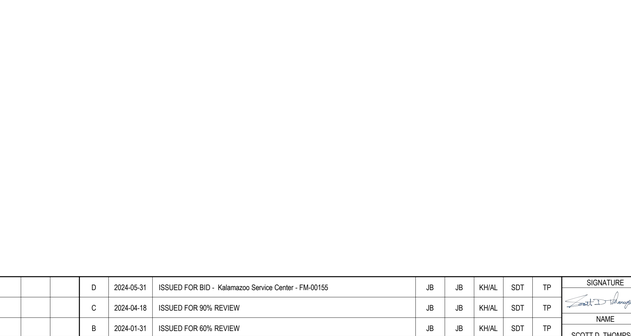
5 A-501 — PLAN DETAIL
1 1/2" = 1'-0"



6 A-501 — PLAN DETAIL
1 1/2" = 1'-0"

7 A-501 — PLAN DETAIL
1 1/2" = 1'-0"

8 A-501 — PLAN DETAIL
1 1/2" = 1'-0"



9 A-501 — PLAN DETAIL
1 1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
PLAN DETAILS

SCALE: 1 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-501
REV: D

22-133.010

FIRST FLOOR DOOR SCHEDULE

NUMBER		ROOM NAME	FIRE RATING		DOOR			SIZE		FRAME			DETAILS			GLASS	ACCESS CONTROLS					HDWR. SET	REMARKS
DOOR	ROOM		DOOR	FRAME	TYPE	MAT	FIN	WIDTH	HEIGHT	ELEV	MAT	FIN	HEAD	JAMB	SILL		A-PHONE	BARRIER-FREE	CARD READER	ELEC. LOCK HDWR.	MAG HOLD		
001-1	KAL-001	VEST.	NA	NA	FG2	AL	ANOD	6' - 0"	7' - 0"	SFG	AL	ANOD	5A/A-311	5B/A-312	1G/A-311	T, ILG	No	Yes	Yes	Yes	No	43	ALTERNATE
001-2	KAL-001	VEST.	NA	NA	FG2	AL	ANOD	6' - 0"	7' - 0"	SFG	AL	ANOD	5C/A-311	5D/A-311	NA	T	No	Yes	Yes	No	No	31	ALTERNATE
002-1	KAL-002	VEST.	NA	NA	FG2	AL	ANOD	3' - 0"	7' - 0"	2	AL	ANOD	1A/A-311	1B/A-311	1G/A-311	T, ILG	No	Yes	Yes	Yes	No	42	-
002-2	KAL-002	VEST.	NA	NA	FG2	AL	ANOD	3' - 0"	7' - 0"	7	AL	ANOD	H2	J1/J2 (SIM)	NA	T	No	No	No	No	No	30	-
103	KAL-103	UNION REP.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	01	-
107A	KAL-107A	SUB METRO FIELD LEADERS	NA	NA	G	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	04	-
109C	KAL-109C	4P CONF	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	07	-
110-1	KAL-110	ELECTRICAL	90 MIN.	90 MIN.	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	Yes	Yes	No	40	-
110-2	KAL-110	ELECTRICAL	NA	NA	F/N	HM	P-?	5' - 0"	7' - 0"	2	HM	P-?	5A/A-312	5B/A-312	1G/A-311	T, ILG	No	No	Yes	Yes	No	46	UNEQUAL LEAF: (1) SLAB= 42", (1) SLAB = 18"
111	KAL-111	NMR	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	16	GASKETING FOR SOUND DAMPENING
112	KAL-112	UNISEX	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	16	-
114-1	KAL-114	AUDITORIUM	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	34	-
114-2	KAL-114	AUDITORIUM	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	34	-
114A	KAL-114A	STOR.	45 MIN.	45 MIN.	F	HM	P-?	6' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	22	-
115-1	KAL-115	LVD CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	10	-
115-2	KAL-115	LVD CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
115A	KAL-115A	ELEC.	-	-	F	HM	P-?	5' - 4"	7' - 0"	-	HM	P-?	H2	J2	NA	-	-	No	No	Yes	No	-	-
116-1	KAL-116	LVD FIELD LEADERS	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	04	-
116-2	KAL-116	LVD FIELD LEADERS	NA	NA	G	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	04	-
117	KAL-117	PHONE RM.	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	4	HM	P-?	H1	J1	NA	T	No	No	No	No	No	02	GASKETING FOR SOUND DAMPENING
118	KAL-118	PHONE RM.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	4	HM	P-?	H1	J1	NA	T	No	No	No	No	No	03	GASKETING FOR SOUND DAMPENING
119	KAL-119	PHONE RM.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	4	HM	P-?	H1	J1	NA	T	No	No	No	No	No	03	GASKETING FOR SOUND DAMPENING
120	KAL-120	MDF	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	Yes	Yes	No	28	OWNER TO PROVIDE LOCKSET CORE.
121	KAL-121	BOOT STORAGE	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	12	-
122	KAL-122	BREAK	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	06	-
123	KAL-123	STOR.	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
124	KAL-124	6P CONF	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	07	GASKETING FOR SOUND DAMPENING
125	KAL-125	PHONE RM.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	02	GASKETING FOR SOUND DAMPENING
126	KAL-126	8P CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	09	GASKETING FOR SOUND DAMPENING
127	KAL-127	J.C.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	19	-
128	KAL-128	UNISEX SHW	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	16	-
129-1	KAL-129	GAS SERVICE CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
129-2	KAL-129	GAS SERVICE CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
129A-1	KAL-129A	GAS SERVICE FIELD LEADERS	NA	NA	G	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	04	-
129A-2	KAL-129A	GAS SERVICE FIELD LEADERS	45 MIN.	45 MIN.	F	HM	P-?	5' - 0"	5' - 2"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	22	-
130A-1	KAL-130A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	13	-
130A-2	KAL-130A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	13	-
130B-1	KAL-130B	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	13	-
130B-2	KAL-130B	PASSAGE	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	11	-
132-1	KAL-132	GAS DIST. CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
132-2	KAL-132	GAS DIST. CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
132A	KAL-132A	GAS DISTRIBUTION FIELD LEADERS	NA	NA	G	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	04	-
132B	KAL-132B	ELEC.	-	-	F	HM	P-?	5' - 4"	7' - 0"	-	HM	P-?	H2	J2	NA	-	-	No	No	Yes	Yes	-	-
133	KAL-133	1GP CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	Yes	Yes	No	25	GASKETING FOR SOUND DAMPENING
134	KAL-134	WOMENS RESTROOM	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	11	-
134A-1	KAL-134A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	13	-
134A-2	KAL-134A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	14	-
136-1	KAL-136	FUTURE	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
136-2	KAL-136	FUTURE	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	10	-
137	KAL-137	ELEVATOR MACHINE ROOM	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
138-1	KAL-138	BOOT STOR.	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	11	-
138-2	KAL-138	BOOT STOR.	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	Yes	No	11	-
139	KAL-139	WELLNESS	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	Yes	Yes	No	26	-
139A-1	KAL-139A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	Yes	No	24	-
139A-2	KAL-139A	PASSAGE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	13	-
139B	KAL-139B	TRAINER RM	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	Yes	Yes	No	23	-
140-1	KAL-140	UNDERGROUND CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
140-2	KAL-140	UNDERGROUND CREW ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T	No	No	No	No	No	08	-
140A	KAL-140A	UNDERGROUND FIELD LEADERS	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	01	-
140B	KAL-140B	ELEC.	-	-	F	HM	P-?	5' - 4"	7' - 0"	-	HM	P-?	H2	J2	NA	-	No	No	Yes	Yes	No	-	-
143-1	KAL-143	SUB METRO SHOP	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
143A-1	KAL-143A	DELIVERY	NA	NA	OH1			10' - 0"	10' - 0"				9A/A-314	9B/A-314	NA	T	No	No	No	No	No	48	NEW OVERHEAD DOOR IN EXISTING OPENING. FIELD VERIFY.
143A-2	KAL-143A	DELIVERY	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
144B	KAL-144B	INVERTER ROOM	45 MIN.	45 MIN.	F	HM	P-?	6' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	Yes	Yes	No	39	ADD PANIC HARDWARE TO DOOR HARDWARE
150-1	KAL-150	BOILER ROOM	NA	NA	F	HM	NA	6' - 0"	7' - 2"	NA	HM	NA	NA	NA	NA	NA	No	No	No	No	No	-	EXISTING DOOR & FRAME - ADD PANIC HARDWARE
150-2	KAL-150	BOILER ROOM	NA	NA	F	HM	NA	6' - 0"	7' - 2"	NA	HM	NA	NA	NA	NA	NA	No	No	No	No	No	-	EXISTING DOOR & FRAME - ADD PANIC HARDWARE
161-1	KAL-161	INDOOR PARKING AREA (IPA)	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
161-2	KAL-161	INDOOR PARKING AREA (IPA)	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
162-3	KAL-162	REPAIR GARAGE	NA	NA	OH2	PREFIN.		12' - 0"	14' - 0"	NA			8A/A-314	8B/A-314	NA	T, ILG	No	No	No	No	No	48	REPLACE OVERHEAD DOOR PANELS. MATCH EXISTING. FIELD VERIFY.
162-5	KAL-162	REPAIR GARAGE	NA	NA	N	HM	P-?	2' - 6"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
162-6	KAL-162	REPAIR GARAGE	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
162-7	KAL-162	REPAIR GARAGE	NA	NA	OH2	PREFIN.		12' - 0"	14' - 0"	NA			8A/A-314	8B/A-314	NA	T, ILG	No	No	No	No	No	48	REPLACE OVERHEAD DOOR PANELS. MATCH EXISTING. FIELD VERIFY.
164-1	KAL-164	FLEET OIL ROOM	NA	NA	F	HM	P-?	4' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	NA	No	No	No	No	No	47	-
165B	KAL-165B	TOILET RM.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	17	-
165D	KAL-165D	SHOWER	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	15	-
165E	KAL-165E	TOILET RM.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	16	-
169-1	KAL-169	REPAIR GARAGE	NA	NA	OH2	PREFIN.		12' - 0"	14' - 0"	NA			8A/A-314	8B/A-314	NA	T, ILG	No	No	No	No	No	48	REPLACE PANELS, PAINT EXISTING FRAME. FIELD VERIFY.
169-2	KAL-169	REPAIR GARAGE	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
170-1	KAL-170	WELD SHOP	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
170-2	KAL-170	WELD SHOP	NA	NA	OH2	PREFIN.		12' - 0"	14' - 0"	NA			8A/A-314	8B/A-314	NA	T, ILG	No	No	No	No	No	48	NEW OVERHEAD DOOR IN EXISTING OPENING. FIELD VERIFY.
170-4	KAL-170	WELD SHOP	NA	NA	N	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	7A/A-314	7C & 7D/A-314	7B/A-314	T, ILG	No	No	Yes	Yes	No	45	-
H1-3-1	KAL-H1-3	CORRIDOR	NA	NA	NF1	HM	P-?	3' - 6"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	36	-
H1-3-2	KAL-H1-3	CORRIDOR	NA	NA	FG	AL	ANOD	3' - 0"	7' - 0"	4	AL	ANOD	1A/A-311	1B/A-311	1G/A-311	T, ILG	No	No	Yes	Yes	No	41	-
H1-5	KAL-H1-5	CORRIDOR	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	6	HM	P-?	3A/A-312	2B & 3B/A-312	1G/A-311	T, ILG	No	No	Yes	Yes	No	41	-
H1-7	KAL-H1-7	CORRIDOR	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	5	HM	P-?	3A/A-312	2B & 3B/A-312	1G/A-311	T, ILG	No	No	Yes	Yes	No	41	-
H1-10	KAL-H1-10	CORRIDOR	NA	NA	F/N	HM	P-?	5' - 0"	7' - 0"	2	HM	P-?	3A/A-313	3B/A-313	1G/A-311	T, ILG	No	No	Yes	Yes	No	44	UNEQUAL LEAF: (1) SLAB= 36", (1) SLAB = 24"
S1-1	KAL-S1-1	STAIR	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	38	-
S1-2	KAL-S1-2	STAIR	45 MIN.	45 MIN.	NF2	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	T, FRG	No	No	No	No	No	38	-

GENERAL NOTES - DOORS

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2 ALL DOOR HINGES TO MATCH FRAME FINISH, TYP.

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AL = ALUMINUM
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FPG = FIRE PROTECTIVE GLASS
ILG = INSULATED GLASS
T = TEMPERED / SAFETY GLASS
P = PAINT
STN = STAIN
NA = NOT APPLICABLE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JB	JB	KH/AL	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE: DOOR SCHEDULES

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-601
REV: D

22-133.010

SECOND FLOOR DOOR SCHEDULE

NUMBER		ROOM NAME	FIRE RATING		DOOR			SIZE		FRAME			DETAILS			GLASS	ACCESS CONTROLS					HDWR. SET	REMARKS
DOOR	ROOM		DOOR	FRAME	TYPE	MAT	FIN	WIDTH	HEIGHT	ELEV	MAT	FIN	HEAD	JAMB	SILL		A-PHONE	BARRIER-FREE	CARD READER	ELEC. LOCK HDWR.	MAG HOLD		
201-1	KAL-201	STORAGE	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
201-2	KAL-201	STORAGE	NA	NA	F	HM	P-?	3' - 0"	4' - 11 1/2"	1	HM	P-?	2A/A-313	5B/A-312	2B/A-313	NA	No	No	No	No	No	29	-
202	KAL-202	STORAGE	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
203A	KAL-203A	COFFEE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	04	-
203B	KAL-203B	8 FPL CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	09	-
203C-1	KAL-203C	20 FPL CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	07	-
203C-2	KAL-203C	20 FPL CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	07	-
204	KAL-204	STORAGE / FUTURE OFFICE	45 MIN.	45 MIN.	F	HM	P-?	5' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	21	-
205	KAL-205	BREAK ROOM	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	10	-
206	KAL-206	IT	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	Yes	Yes	No	27	OWNER TO PROVIDE LOCKSET CORE.
207-1	KAL-207	MECHANICAL	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
207-2	KAL-207	MECHANICAL	45 MIN.	45 MIN.	F/F	HM	P-?	5' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	20	-
207A	KAL-207A	INVERTER ROOM	45 MIN.	45 MIN.	F	HM	P-?	6' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	Yes	Yes	No	39	-
208	KAL-208	BUSINESS CENTER	NA	NA	NF1	HM	P-?	6' - 0"	7' - 2"	1	HM	P-?	H2	J2 (SIM)	NA	NA	No	No	No	No	No	05	-
209	KAL-209	MEN	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	13	-
210	KAL-210	J.C.	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	18	-
211-1	KAL-211	GAS ENGINEERING	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	10	-
211-2	KAL-211	GAS ENGINEERING	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	10	-
211A	KAL-211A	STORAGE	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	20	-
212	KAL-212	WOMEN	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J2	NA	NA	No	No	No	No	No	13	-
213	KAL-213	NMR	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	16	-
214	KAL-214	10P CONFERENCE	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	07	-
215	KAL-215	J.C.	45 MIN.	45 MIN.	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	18	-
216-1	KAL-216	GAS ENGINEERING	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	06	-
216-2	KAL-216	GAS ENGINEERING	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	04	-
217	KAL-217	FUTURE	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	08	-
218	KAL-218	IT OFFICES	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	Yes	Yes	No	23	-
219-1	KAL-219	ELECTRICAL ENGINEERING	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	2	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	06	-
219-2	KAL-219	ELECTRICAL ENGINEERING	NA	NA	NF2	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	T	No	No	No	No	No	08	-
219A	KAL-219A	ELEC.	-	-	F	HM	P-?	5' - 0"	7' - 0"	-	HM	P-?	H2	J2	NA	-	No	No	Yes	Yes	No	-	-
220	KAL-220	16P CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H2	J2	NA	NA	No	No	No	No	No	09	-
221	KAL-221	8P CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	07	GASKETING FOR SOUND DAMPENING
222	KAL-222	FOCUS ROOM	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	02	GASKETING FOR SOUND DAMPENING
223	KAL-223	FOCUS ROOM	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	02	GASKETING FOR SOUND DAMPENING
224	KAL-224	14P CONFERENCE	NA	NA	F	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	07	GASKETING FOR SOUND DAMPENING
H2-1	KAL-H2-1	CORRIDOR	45 MIN.	45 MIN.	F/F	HM	P-?	5' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	37	-
H2-2	KAL-H2-2	CORRIDOR	NA	NA	F	HM	P-?	5' - 8"	7' - 0"	1	HM	P-?	H1	J1	NA	NA	No	No	No	No	No	33	-
H2-3	KAL-H2-3	CORRIDOR	NA	NA	G	HM	P-?	3' - 0"	7' - 0"	3	HM	P-?	H2	J2	NA	T	No	No	No	No	No	35	-
52-1	KAL-52-1	STAIR	45 MIN.	45 MIN.	V	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	T, FRG	No	No	No	No	No	38	-
52-2-1	KAL-52-2	STAIR	45 MIN.	45 MIN.	V	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	T, FRG	No	No	No	No	No	38	-
52-2-2	KAL-52-2	STAIR	45 MIN.	45 MIN.	V	HM	P-?	3' - 0"	7' - 0"	1	HM	P-?	H1	J1	NA	T, FRG	No	No	No	No	No	38	-

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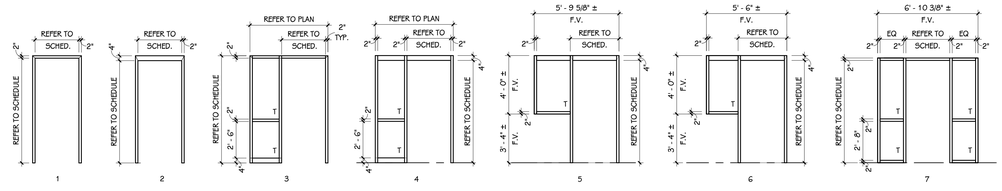
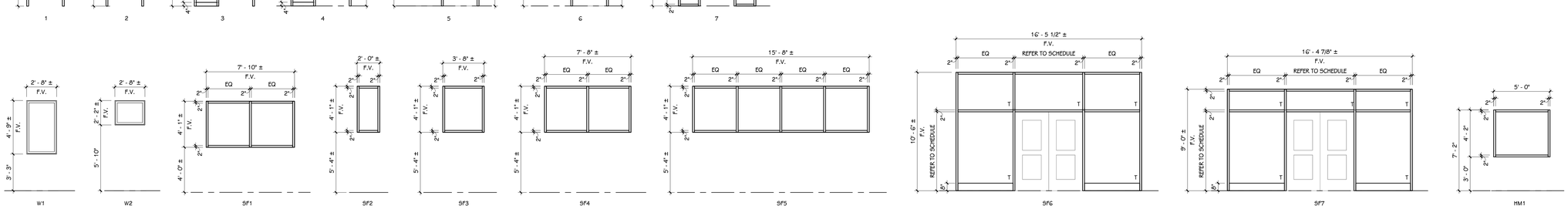
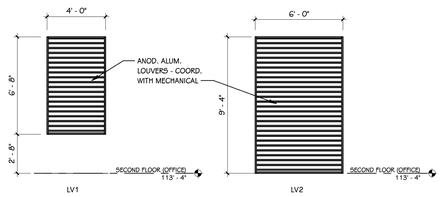
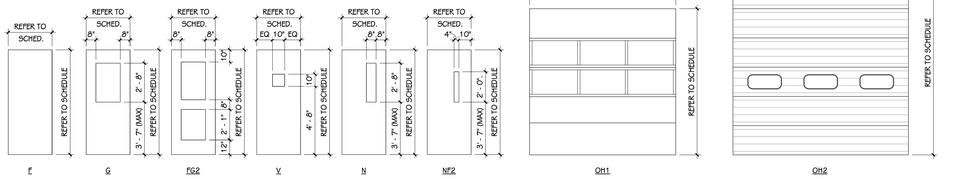
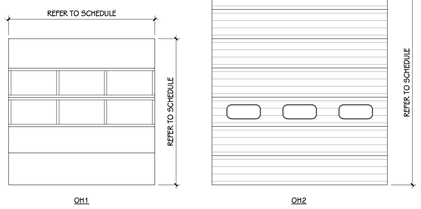




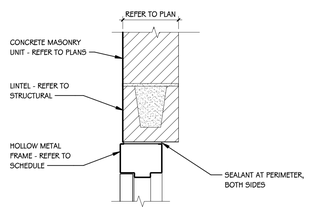


FRAME ELEVATIONS
1/4" = 1'-0"

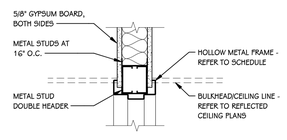




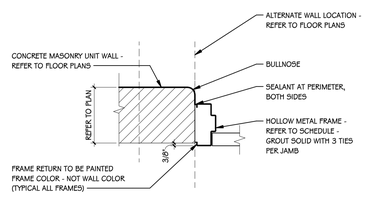
DOOR PANEL ELEVATIONS
1/4" = 1'-0"



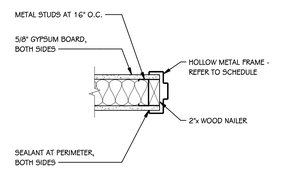
H1 A-602 — MASONRY HEAD DETAIL
1 1/2" = 1'-0"



H2 A-602 — STUD WALL HEAD DETAIL
1 1/2" = 1'-0"



J1 A-602 — MASONRY WALL JAMB DETAIL
1 1/2" = 1'-0"



J2 A-602 — STUD WALL JAMB DETAIL
1 1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JB	JB	KH/AL	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JB	JB	KH/AL	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JB	JB	KH/AL	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
DOOR SCHEDULES, DOOR AND FRAME ELEVATIONS, HEAD AND JAMB DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: A-602
REV: D

22-133.010

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MATERIAL SELECTION SCHEDULE

ABBREV	ITEM	MANUFACTURER	PATTERN	COLOR	PRODUCT NO.	SIZE	SINGLE SOURCE	BASIS OF DESIGN	ADDITIONAL MANUFACTURERS	REMARKS
ACP-1	ACOUSTIC CEILING PANEL	USG	FISSURED PANEL	WHITE	--	2' X 2' X 5/8"	X	--	NONE	SQ EDGE STYLE WITH A DX/DXL GRID PROFILE
AWP-1	ACOUSTICAL WALL PANEL	GUILFORD OF MAINE	FR701 2100 SERIES	COIN	794	--	X	--	NONE	ATS ACOUSTICS BASIS OF DESIGN
CG-1	CORNER GUARD	INPRO IPC CORP.	160BN BULLNOSE SURFACE MOUNT	DESIGNER WHITE	--	4' X 3" | 90 DEG.	X	--	NONE	OUTSIDE CORNERS TYPICAL | INSTALL ABOVE 4" AFF ABOVE RESILIENT BASE
CPTL-1	CARPET TILE	INTERFACE	SHIVER ME TIMBERS	SYCAMORE	#127410AK00-103922	25cm X 1m	X	--	NONE	MATCH EXISTING INSTALLATION PATTERN
CPTL-2	CARPET TILE	INTERFACE	SHIVER ME TIMBERS	SPRUCE	103929	25cm X 1m	X	--	NONE	ACCENT CARPET TILE
CPTL-3	CARPET TILE	INTERFACE	GROUND WAVES VERSE	MIDNIGHT	104900	25cm X 1m	X	--	NONE	ACCENT CARPET TILE
CPTL-4	CARPET TILE	INTERFACE	HARMONIZE	MIDNIGHT	104040	25cm X 1m	X	--	NONE	ACCENT CARPET TILE
CPTL-5	CARPET TILE	INTERFACE	COLORLINE	ONYX	5R799-104937	25cm X 1m	X	--	NONE	WALK OFF CARPET
CT-1	CERAMIC TILE	VIRGINIA TILE - MILESTONE	URBAN LIVING	BALANCE GLOSSY	ML5ULBA312G	3" X 12"	X	--	NONE	CT-P PATTERN OF CT-1 & CT-2
CT-2	CERAMIC TILE	VIRGINIA TILE - MILESTONE	URBAN LIVING	PURE GLOSSY	ML5ULPU312G	3" X 12"	X	--	NONE	CT-P PATTERN OF CT-1 & CT-2
FM-1	FLOOR MAT	ROWLCK	PEDIMAT M2	MANUFACTURERS FULL LINE	--	--	X	--	NONE	ENTRY FLOOR MAT VESTIBULE
FRP-1	FIBER REINFORCED PANEL	--	--	MANUFACTURERS FULL LINE	--	--	--	--	--	INSTALL ALL VERTICAL DIVIDERS AND COORDINATING TRIM PIECES
G-1	GROUT	MAPEI	--	MANUFACTURERS FULL LINE	--	--	X	--	NONE	WALL TILE GROUT
G-1	GROUT	MAPEI	--	MANUFACTURERS FULL LINE	--	--	X	--	NONE	FLOOR TILE GROUT
LVT-1	LUXURY VINYL TILE	MANNINGTON	AMTICO WOOD PLAN TILE	FUSED BIRCH	AROW7500	--	X	--	NONE	6.0mm THICKNESS | 40 MIL WEAR LAYER
P-1	PAINT	BENJAMIN MOORE	EGGSHELL	SUPER WHITE READY MIX #2	--	--	X	--	NONE	WALL FIELD PAINT
P-2	PAINT	BENJAMIN MOORE	MATTE	SUPER WHITE READY MIX #2	--	--	X	--	NONE	USED ON ACOUSTIC PANELS
P-3	PAINT	PRATT & LAMBERT	SATIN	GIGS GREY	28-26	--	X	--	NONE	USED ON INTERIOR DOORS
P-4	PAINT	PRATT & LAMBERT	SEMI GLOSS	GIGS' GREY	28-26	--	X	--	NONE	USED IN INTERIOR DOOR FRAMES
P-5	PAINT	SHERWIN WILLIAMS	EGGSHELL	FRENCH ROAST	SW6069	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-6	PAINT	SHERWIN WILLIAMS	EGGSHELL	HYPER BLUE	SW6965	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-7	PAINT	SHERWIN WILLIAMS	EGGSHELL	ONLINE	SW7072	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-8	PAINT	SHERWIN WILLIAMS	EGGSHELL	HOUSEPLANT	SW6727	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-9	PAINT	SHERWIN WILLIAMS	EGGSHELL	OUTRAGEOUS GREEN	SW6922	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-10	PAINT	SHERWIN WILLIAMS	EGGSHELL	RESONANT BLUE	SW6954	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-11	PAINT	SHERWIN WILLIAMS	EGGSHELL	MANDARIN	SW6891	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
P-12	PAINT	SHERWIN WILLIAMS	EGGSHELL	DIGNITY BLUE	SW6804	--	X	--	NONE	ACCENT PAINT - ONE ACCENT WALL IN ALL OPEN OFFICE SPACES, CONFERENCE ROOMS AND PHONE BOOTH ROOMS
PCE	PRE-CATALYZED EPOXY	SHERWIN WILLIAMS	PRO INDUSTRIAL PRE-CATALYZED WATERBASED EPOXY	--	--	--	--	--	--	--
PL-1	PLASTIC LAMINATE	PIONITE	STANDARD LAMINATE	CRADLE OF LIBERTY	AB221	--	X	--	NONE	BUSINESS CENTER COUNTER
PL-2	PLASTIC LAMINATE	WILSONART	STANDARD LAMINATE	FASHION GREY	D381-60	--	X	--	NONE	BUSINESS CENTER CABINET DOOR | PVC EDGE BAND, CHARTER INDUSTRIES, W1500-GREY, 1/8" THICKNESS CABINET DOOR|DRAWER EDGE TYPICAL
PL-3	PLASTIC LAMINATE	WILSONART	STANDARD LAMINATE	WHITE	1570-60	--	X	--	NONE	BUSINESS CENTER CABINET INTERIOR
PT-1	PORCELAIN TILE	CAESAR CERAMICS USA	LINK	CHAIN	--	12" X 24"	X	--	NONE	--
PT-2	PORCELAIN TILE	CAESAR CERAMICS USA	LINK	TIE	--	6" X 24"	X	--	NONE	--
PT-3	PORCELAIN TILE	CAESAR CERAMICS USA	LINK	CHAIN	--	2" X 2"	X	--	NONE	12" X 12" MESH MOUNTED SHEET
PT-4	PORCELAIN TILE	B4T CERAMICS	DISTRICT	BLACK	--	4" X 12"	X	--	NONE	--
PTB-1	PORCELAIN TILE BASE	CAESAR CERAMICS USA	LINK	CHARCOAL	--	6" X 24"	X	--	NONE	INSTALL SCHLUTER DILEX-AHK COVE STRIP BETWEEN BASE AND FLOOR TILE TYPICAL
RB-1	RUBBER BASE	JOHNSONITE	BASEWORKS	CHARCOAL	--	STANDARD 4" TOE	X	--	NONE	BUILDING STANDARD, 120' COIL|ROLL BASE REQUIRED
RBST-1	RUBBER STAIR TREAD RISER	JOHNSONITE					--	--		
RBT-1	RUBBER TILE	MONDO AMERICA INC.	SPORT IMPACT	DARK GREY	018	3/8" THICKNESS	X	--	NONE	--
RF-1	RESINOUS FLOOR	DUR-A-FLEX	POLY-CRETE (PRIMER/BASE COAT), ACCELERA (TOP COAT)	--	Q28-24	--	X	--	NONE	(RF-P) PATTERN COMPRISED OF RF-1, RF-2, RF-3 & RF-4
RF-2	RESINOUS FLOOR	DUR-A-FLEX	POLY-CRETE (PRIMER/BASE COAT), ACCELERA (TOP COAT)	--	Q28-17	--	X	--	NONE	(RF-P) PATTERN COMPRISED OF RF-1, RF-2, RF-3 & RF-4
RF-3	RESINOUS FLOOR	DUR-A-FLEX	POLY-CRETE (PRIMER/BASE COAT), ACCELERA (TOP COAT)	--	Q28-35	--	X	--	NONE	(RF-P) PATTERN COMPRISED OF RF-1, RF-2, RF-3 & RF-4
RF-4	RESINOUS FLOOR	DUR-A-FLEX	POLY-CRETE (PRIMER/BASE COAT), ACCELERA (TOP COAT)	--	Q28-23	--	X	--	NONE	(RF-P) PATTERN COMPRISED OF RF-1, RF-2, RF-3 & RF-4
RF-5	RESINOUS FLOOR	DUR-A-FLEX	DUR-A-GARD E50	MANUFACTURERS FULL LINE	--	--	X	--	NONE	STATIC DISSIPATIVE SURFACE FOR MDF|IT SPACES
SC-1	SEALED CONCRETE	--	--	--	--	--	--	--	--	--
SSM-1	SOLID SURFACE	CORIAN	--	ASH AGGREGATE	--	--	X	--	NONE	COUNTER AND BACKSPLASH MATERIAL
SSM-2	SOLID SURFACE	CORIAN	--	CARBON AGGREGATE	--	--	X	--	NONE	PANEL BEHIND HAND DRYERS, TYPICAL

MATERIAL SELECTION SCHEDULE NOTES:
- NO COMPARABLE PRODUCTS WILL BE REVIEWED FOR PRODUCTS DESIGNATED AS SINGLE SOURCE.
- REFER TO PRODUCT SPECIFICATION FOR TRIMS AND ACCESSORIES ASSOCIATED WITH SPECIFIED PRODUCTS ABOVE.
- PAINT COLORS ARE CLIENT STANDARDS NOT ALL PAINT COLORS ARE USED.

GENERAL NOTES - INTERIOR - FINISH

1 REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.

2 REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.

3 REFER TO ARCHITECTURAL FLOOR PLANS FOR VISUAL DISPLAY BOARD LOCATIONS AND QUANTITIES.

4 REFER TO ARCHITECTURAL FLOOR PLANS FOR LOCKER LOCATIONS, FINISHES AND QUANTITIES.

5 REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.

6 REFER TO ENLARGED STAIR PLANS AND SECTIONS FOR FINISH COLORS OF STRINGERS AND GUARDRAILS.

7 REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.

8 REFER TO ENLARGED FINISH PLANS FOR TOILET ROOM FINISHES.

9 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.

10 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.

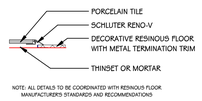
11 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.

12 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.

13 ONLY NOTED EXPOSED COLUMNS TO BE PAINTED SIMILAR TO ADJACENT WALLS.

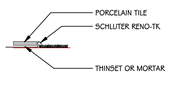
14 WHITE BOARDS (WB-1 & WB-2), TACK BOARDS (TB-1), DIGITAL DISPLAYS (TV) AND UNION BOARDS (UB-1) ARE OWNER PROVIDED CONTRACTOR INSTALLED ITEMS. THEY ARE SHOWN FOR BLOCKING REFERENCE ONLY. COORDINATE WITH OWNER FOR FINAL SIZE AND CONFIRM INSTALLATION LOCATION.

PORCELAIN TILE TO DECORATIVE RESINOUS FLOOR



NOTE: ALL DETALS TO BE COORDINATED WITH RESINOUS FLOOR MANUFACTURERS STANDARDS AND RECOMMENDATIONS

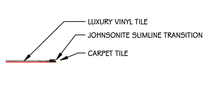
PORCELAIN TILE TO CARPET TILE



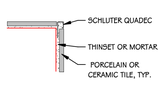
DECORATIVE RESINOUS FLOOR TO RUBBER SPORTS FLOOR

NOTE: ALL DETALS TO BE COORDINATED WITH RESINOUS FLOOR MANUFACTURERS STANDARDS AND RECOMMENDATIONS

LUXURY VINYL TILE TO CARPET TILE

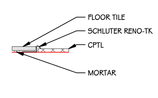


WALL TILE OUTSIDE CORNER



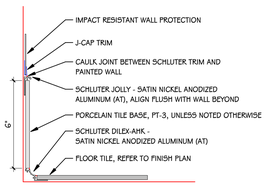
WALL TILE TERMINATION

FLOOR TILE TO CARPET TILE TRANSITION

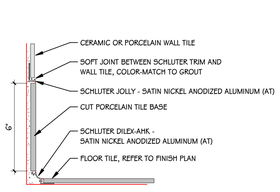


1 IG-001 ENLARGED TYPICAL DETAILS
3" = 1'-0"

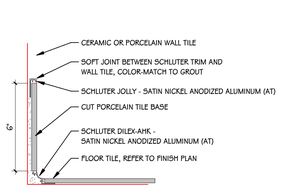
PORCELAIN TILE WALL BASE AT IMPACT RESISTANT WALL PROTECTION



PORCELAIN TILE WALL BASE AT TILED WALLS

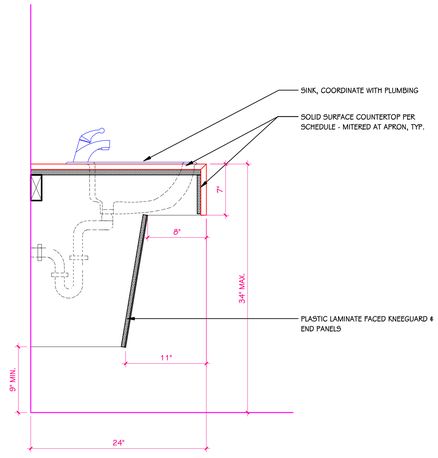


PORCELAIN TILE WALL BASE AT GYP. WALLS



2 IG-001 ENLARGED TYPICAL BASE DETAILS
3" = 1'-0"

TYPICAL SINK SECTION



3 IG-001 VANITIES & LAVATORIES
1 1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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Architecture · Engineering · Interiors

SHEET TITLE
INTERIOR GENERAL NOTES AND MATERIAL SELECTION SCHEDULE

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: IG-001
REV: D

22-133.010

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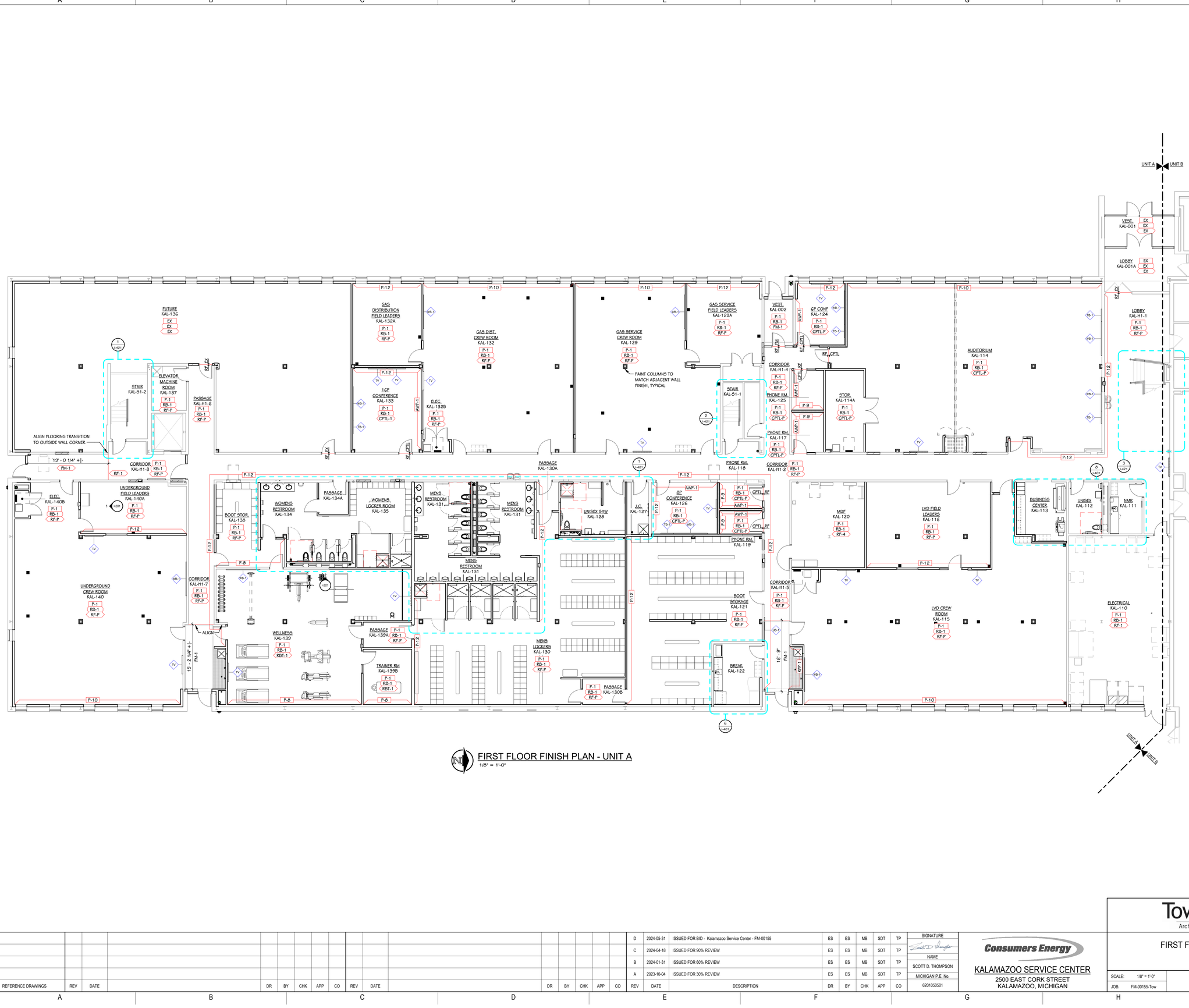

FIRST FLOOR FINISH PLAN - UNIT A

1/8" = 1'-0"

KEY - FINISH PLAN

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- X-# WALL FINISH
- X-# BASE FINISH
- X-# FLOOR FINISH
- X-# COUNTER FINISH
- X-# CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIAL FINISHES
- MULTI INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X-P[A] INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- X-#[W] "W" INDICATES WAINSCOT INSTALLATION, REFER TO TYPICAL DETAILS
- INDICATES MATERIAL INSTALLATION DIRECTION
- XB-# INDICATES VISUAL DISPLAY BOARD - REFER TO SCHEDULES
- CG-# INDICATES CORNER GUARD - REFER TO SCHEDULE

KEY - WINDOW TREATMENT

RS-1 MANUAL ROLLER SHADE, FABRIC: MANUFACTURER FULL LINE, 3% OPEN

1. REFER TO SPECIFICATION FOR MORE INFORMATION.
2. WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
3. REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
4. WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
5. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

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THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

KALAMAZOO SERVICE CENTER

UNIT A / UNIT B / UNIT C

TRUE NORTH

KEY PLAN

SCALE: NO SCALE

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR FINISH PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: I-101A
REV: D

22-133.010

FIRST FLOOR FINISH PLAN - UNIT B
1/8" = 1'-0"

KEY - FINISH PLAN

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIAL FINISHES
- MULTI — INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X-P[A] — INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION; INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- X-#(W) — "W" INDICATES WAINSCOT INSTALLATION, REFER TO TYPICAL DETAILS
- INDICATES MATERIAL INSTALLATION DIRECTION
- XB-# — INDICATES VISUAL DISPLAY BOARD - REFER TO SCHEDULES
- CG-# — INDICATES CORNER GUARD - REFER TO SCHEDULE

KEY - WINDOW TREATMENT

RS-1 — MANUAL ROLLER SHADE, FABRIC: MANUFACTURER FULL LINE, 3% OPEN

1. REFER TO SPECIFICATION FOR MORE INFORMATION.
2. WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
3. REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
4. WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
5. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

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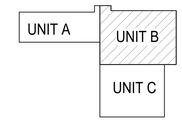
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	ES	ES	MB	SDT	TP
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ES	ES	MB	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ES	ES	MB	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ES	ES	MB	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ES	ES	MB	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

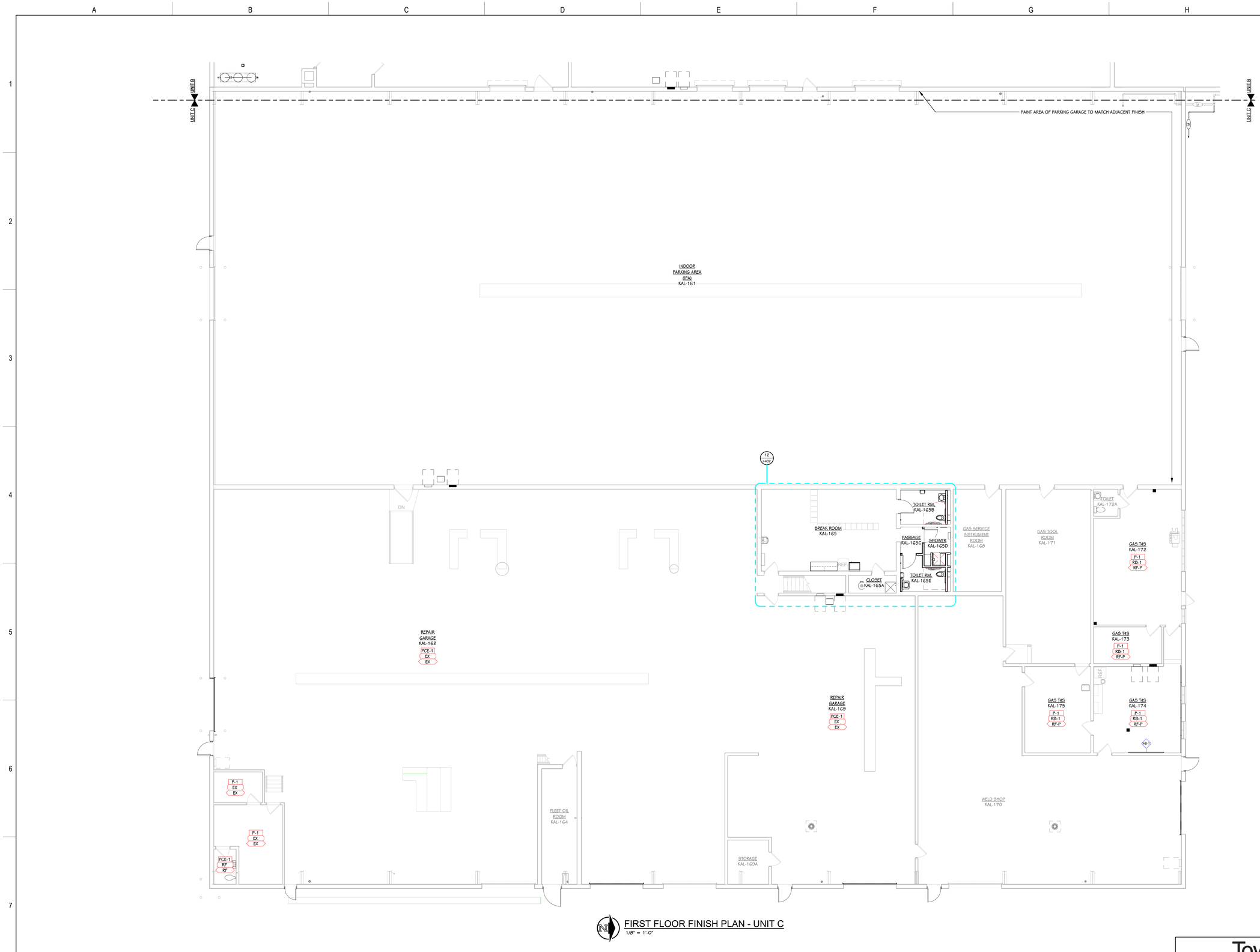
Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
FIRST FLOOR FINISH PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: I-101B
REV: D

22-133.010



FIRST FLOOR FINISH PLAN - UNIT C
1/8" = 1'-0"

KEY - FINISH PLAN

- X-# — INDICATES MATERIAL TYPE
- X-# — INDICATES CORRESPONDING SELECTION IN SCHEDULE
- X-# — WALL FINISH
- X-# — BASE FINISH
- X-# — FLOOR FINISH
- X-# — COUNTER FINISH
- X-# — CABINET FINISH (BASE AND UPPER)
- X-# — INDICATES EXTENT OF ATYPICAL FINISH
- X W X — INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIAL FINISHES
- MULTI — INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X-P(A) — INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
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3 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.

4 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.

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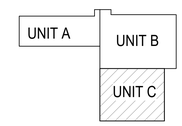
KALAMAZOO SERVICE CENTER



TRUE NORTH **KEY PLAN**
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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A	2023-10-04	ISSUED FOR 30% REVIEW	ES	ES	MB	SDT	TP

REFERENCE DRAWINGS

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MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR FINISH PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: I-101C
REV: D

22-133.010

SECOND FLOOR FINISH PLAN - UNIT A
1/8" = 1'-0"

KEY - FINISH PLAN

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
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- XB-# — INDICATES VISUAL DISPLAY BOARD - REFER TO SCHEDULES
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KEY - WINDOW TREATMENT

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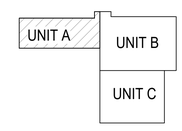
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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KALAMAZOO, MICHIGAN

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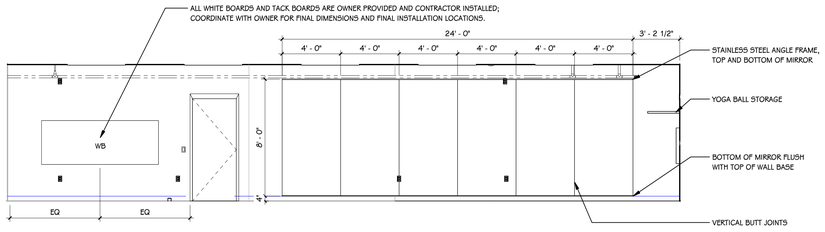
SHEET TITLE
SECOND FLOOR FINISH PLAN - UNIT A

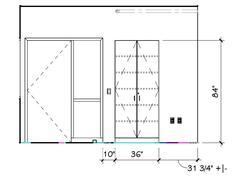
SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	I-102A	D

22-133.010

ELEVATIONS REMOVED DUE TO SCOPE CHANGE, FORMATTING TO REMAIN FOR CM|ARCHITECT COORDINATION

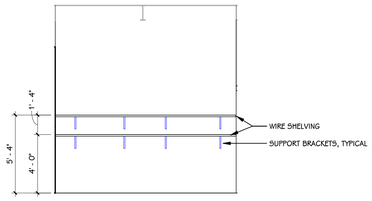


2 / I-201 WELLNESS ROOM 116 WEST
1/4" = 1'-0"



1 / I-201 UNDERGROUND FIELD LEADERS 115 SOUTH
1/4" = 1'-0"

ELEVATIONS REMOVED DUE TO SCOPE CHANGE, FORMATTING TO REMAIN FOR CM|ARCHITECT COORDINATION



3 / I-201 JANITORS CLOSET WIRE SHELVING TYPICAL
1/4" = 1'-0"

ELEVATIONS REMOVED DUE TO SCOPE CHANGE, FORMATTING TO REMAIN FOR CM|ARCHITECT COORDINATION

GENERAL NOTES - CASEWORK

1. VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
2. FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.
3. REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
4. FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
5. ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
6. SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTER.
7. PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AWI STANDARDS, UNLESS NOTED OTHERWISE.
8. LOCKS...._____ STATE INTENT FOR LOCKS/KEYING HERE.
9. GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS
10. 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED QUARTZ, NATURAL STONE, OR SOLID SURFACE IS SPECIFIED.

STANDARD ABBREVIATIONS - CASEWORK

ADJ	ADJUSTABLE	PO	PULL-OUT DRAWER
FP	FILLER PANEL	BF	BARRIER_FREE
RP	REMOVABLE PANEL	CLR	CLEAR OPENING

CASEWORK HARWARE & ACCESSORY SELECTIONS

1. PULL SELECTION & FINISH.
2. GROMMETS TYPE & FINISH, WHERE INDICATED
3. COUNTERTOP EDGE TYPE / PROFILE
4. SUPPORT BRACKET TYPES & FINISH.
5. PULL-OUT BINS, HOOKS, ETC.

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B	2024-01-31	ISSUED FOR 60% REVIEW	ES	ES	MB	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ES	ES	MB	SDT	TP

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KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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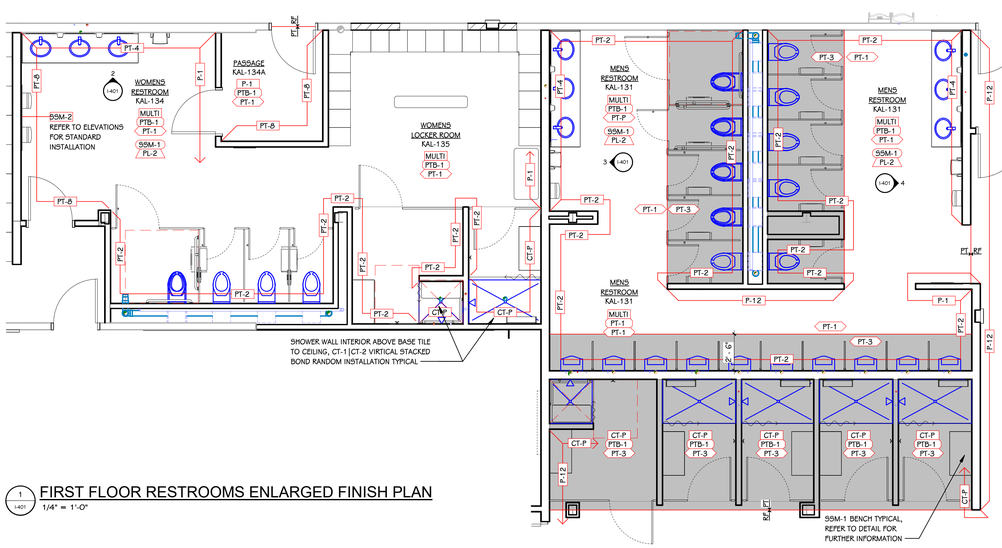
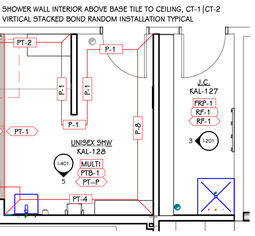
SHEET TITLE
INTERIOR ELEVATIONS

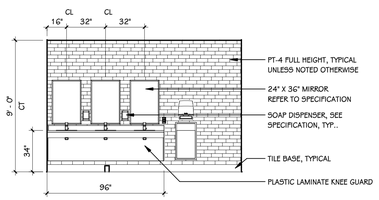
SCALE: 1/4" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: I-201
REV: D

22-133.010

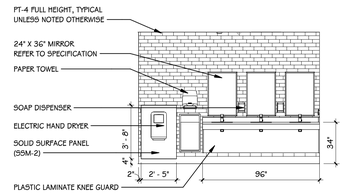


1 1401 FIRST FLOOR RESTROOMS ENLARGED FINISH PLAN
1/4" = 1'-0"

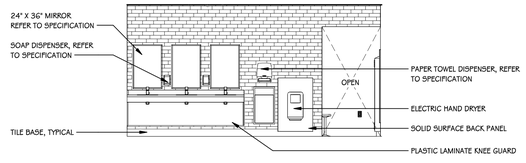




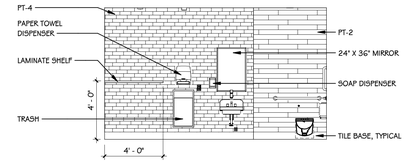
2 1401 WOMENS RESTROOM 118 WEST
1/4" = 1'-0"



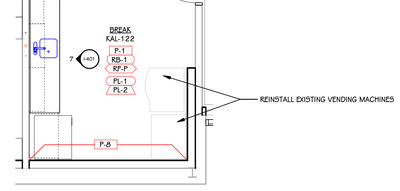
3 1401 MENS RESTROOM 121 SOUTH
1/4" = 1'-0"



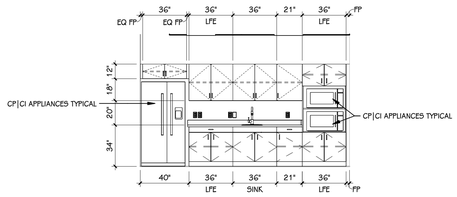
4 1401 MENS 121 NORTH
1/4" = 1'-0"



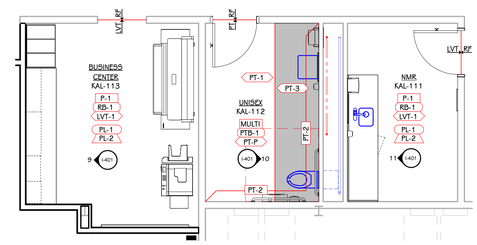
5 1401 UNISEX SHOWER 122 EAST
1/4" = 1'-0"



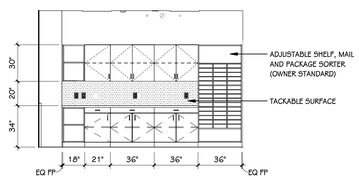
6 1401 BREAK ROOM 125 ENLARGED FINISH PLAN
1/4" = 1'-0"



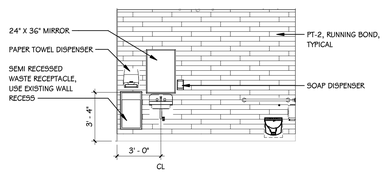
7 1401 BREAK 125 SOUTH
1/4" = 1'-0"



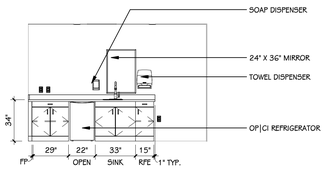
8 1401 FIRST FLOOR ENLARGED FINISH PLAN
1/4" = 1'-0"



9 1401 BUSINESS CENTER 129 SOUTH
1/4" = 1'-0"



10 1401 UNISEX RESTROOM 130 NORTH
1/4" = 1'-0"



11 1401 NMR 131 SOUTH
1/4" = 1'-0"

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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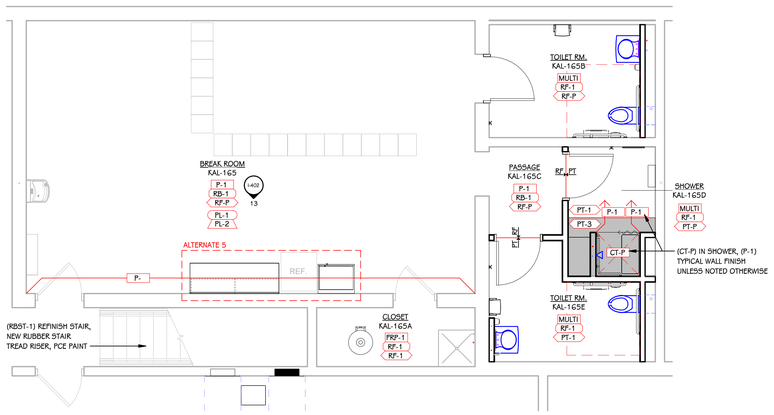
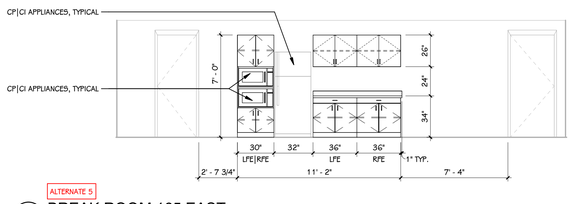
SHEET TITLE
ENLARGED FINISH PLANS, ELEVATIONS AND DETAILS

SCALE: 1/4" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: I-401
REV: D

22-133.010

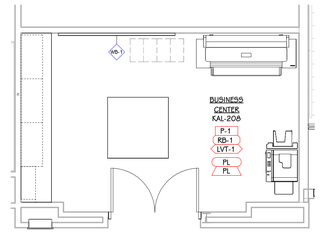


12 I-402 REPAIR GARAGE BREAK ROOM ENLARGED FINISH PLAN
1/4" = 1'-0"

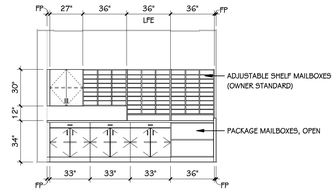


ALTERNATE 5

13 I-402 BREAK ROOM 165 EAST
1/4" = 1'-0"



14 I-402 BUSINESS CENTER ENLARGED FINISH PLAN
1/4" = 1'-0"



15 I-402 BUSINESS CENTER 208 SOUTH
1/4" = 1'-0"

KEY - FINISH PLAN

- X-# — INDICATES MATERIAL TYPE
- X-# — INDICATES CORRESPONDING SELECTION IN SCHEDULE
- X-# — WALL FINISH
- X-# — BASE FINISH
- X-# — FLOOR FINISH
- X-# — COUNTER FINISH
- X-# — CABINET FINISH (BASE AND UPPER)
- X-# — INDICATES EXTENT OF ATYPICAL FINISH
- X / X — INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIAL FINISHES
- MULTI — INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X-P[A] — INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- X-#[W] — "W" INDICATES WAINSCOT INSTALLATION, REFER TO TYPICAL DETAILS
- INDICATES MATERIAL INSTALLATION DIRECTION
- XB-# — INDICATES VISUAL DISPLAY BOARD - REFER TO SCHEDULES
- CG-# — INDICATES CORNER GUARD - REFER TO SCHEDULE

KEY - WINDOW TREATMENT

RS-1 — MANUAL ROLLER SHADE, FABRIC: MANUFACTURER FULL LINE, 3% OPEN

1. REFER TO SPECIFICATION FOR MORE INFORMATION.
2. WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
3. REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
4. WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
5. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

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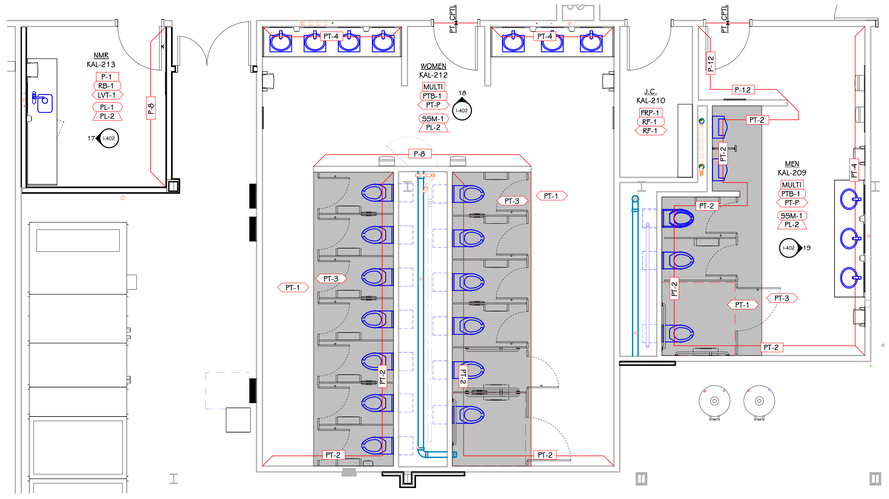
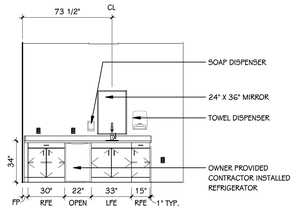
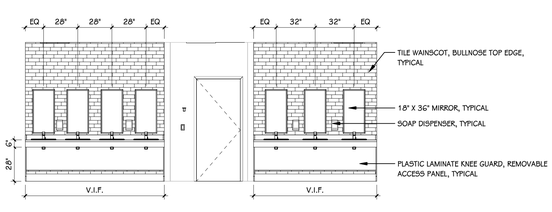


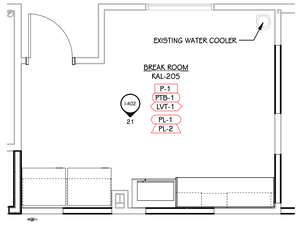
16 I-402 SECOND FLOOR RESTROOMS ENLARGED FINISH PLAN
1/4" = 1'-0"



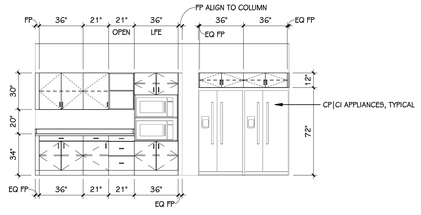
17 I-402 NMR 222 SOUTH
1/4" = 1'-0"



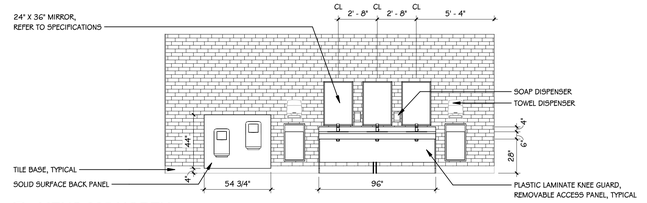
18 I-402 WOMENS 223 WEST
1/4" = 1'-0"



20 I-402 SECOND FLOOR BREAK ROOM ENLARGED FINISH PLAN
1/4" = 1'-0"



21 I-402 BREAK ROOM 228 EAST
1/4" = 1'-0"



19 I-402 MENS 225 NORTH
1/4" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ES	ES	MB	SDT	TP
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SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

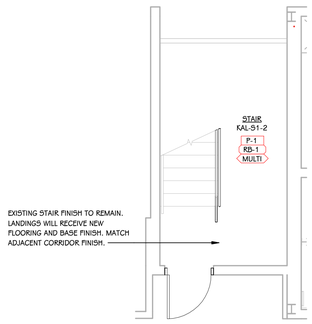
Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

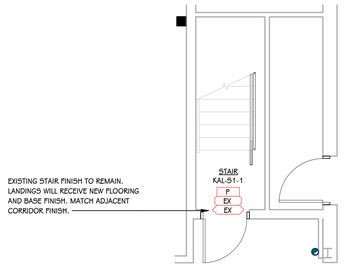
SHEET TITLE
ENLARGED FINISH PLANS, ELEVATIONS AND DETAILS

SCALE:	1/4" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	I-402	D

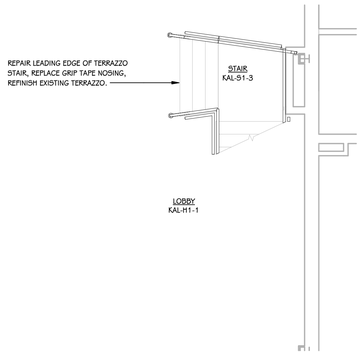
22-133.010



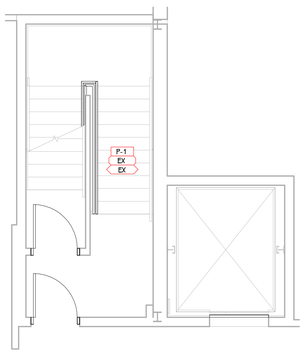
1 / 1421 FIRST FLOOR STAIR S3 ENLARGED FINISH PLAN
1/4" = 1'-0"



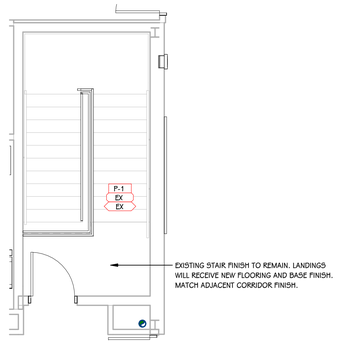
2 / 1421 FIRST FLOOR STAIR S2 ENLARGED FINISH PLAN
1/4" = 1'-0"



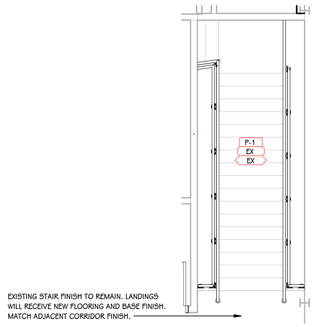
3 / 1421 FIRST FLOOR STAIR S1 ENLARGED FINISH PLAN
1/4" = 1'-0"



6 / 1421 SECOND FLOOR STAIR S3 ENLARGED FINISH PLAN
1/4" = 1'-0"



4 / 1421 SECOND FLOOR STAIR S2 ENLARGED FINISH PLAN
1/4" = 1'-0"



5 / 1421 SECOND FLOOR STAIR S1 ENLARGED FINISH PLAN
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22-133.010

ABBREVIATIONS

A.C.D.	AUTOMATIC CONTROL DAMPER
A.F.F.	ABOVE FINISHED FLOOR
A.G.	ABOVE GRADE
A.P.D.	AIR PRESSURE DROP
B.D.	BALANCING DAMPER
B.D.D.	BACKDRAFT DAMPER
B.F.	BARRIER FREE
BTUH	BRITISH THERMAL UNIT PER HOUR
B.V.	BALANCING VALVE
C.B.	CATCH BASIN
C.B.V.	CALIBRATED BALANCING VALVE
C.F.H.	CUBIC FEET PER HOUR
C.F.M.	CUBIC FEET PER MINUTE
C.H.	CABINET HEATER
C.I.	CAST IRON
C.M.	CEILING MOUNTED
C.O.	CLEAN OUT
C.V.	CONTROL VALVE
D.F.	DRINKING FOUNTAIN
DN.	DOWN
D.S.	DOWN SPOUT
E.A.	EXHAUST AIR
E.A.T.	ENTERING AIR TEMPERATURE
E.D.B.	ENTERING DRY BULB
E.F.	EXHAUST FAN
E.S.P.	EXTERNAL STATIC PRESSURE
E.W.B.	ENTERING WET BULB
E.W.C.	ELECTRIC WATER COOLER
E.W.T.	ENTERING WATER TEMPERATURE
EXIST.	EXISTING
E.T.R.	EXISTING TO REMAIN
F.C.	FLEXIBLE CONNECTION
F.D.	FLOOR DRAIN
(FD)	FIRE DAMPER
F.H.C.	FIRE HOSE CABINET
F.I.	FIELD INSTALLED
F.M.	FLOOR MOUNTED
F.P.M.	FEET PER MINUTE
F.R.	FIN RADIATION
G.P.M.	GALLONS PER MINUTE
H.B.	HOSE BIBB
HP	HORSE POWER
I.E.	INVERT ELEVATION
L.A.T.	LEAVING AIR TEMPERATURE
LAV.	LAVATORY
L.D.B.	LEAVING DRY BULB
LOUV.	LOUVER
L.W.B	LEAVING WET BULB
L.W.T.	LEAVING WATER TEMPERATURE
M.A.	MIXED AIR
M.A.T.	MIXED AIR TEMPERATURE
MAX.	MAXIMUM
M.B.	MOP BASIN
MBH	BRITISH THERMAL UNIT PER HOUR (THOUSANDS)
MFR.(S)	MANUFACTURER(S)
M.H.	MANHOLE
MIN.	MINIMUM
MTG.	MOUNTING
M.V.	MANUAL AIR VENT
N.C.	NORMALLY CLOSED
N.F.W.H.	NON-FREEZE WALL HYDRANT
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN
O.A.	OUTSIDE AIR
O.A.I.	OUTSIDE AIR INTAKE
OCT.	OCTAVE
P.A.	PIPE ANCHOR
P.D.	PRESSURE DROP
P.I.V	POST INDICATOR VALVE
P.R.V.	PRESSURE REDUCING VALVE
P.T.	PRESSURE / TEMPERATURE TAPPING
R.A.	RETURN AIR
R.D.	ROOF DRAIN
R.H.	RELATIVE HUMIDITY
R.I.O.	ROUGH IN ONLY
R.P.M.	REVOLUTIONS PER MINUTE
RPPBP	REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER
R.V.	RELIEF VALVE
S.A.	SUPPLY AIR
SENS.	SENSIBLE
SHR.	SHOWER
SK.	SINK
S.O.V.	SHUT-OFF VALVE
S.P.	STATIC PRESSURE
S.SK.	SERVICE SINK
TEMP.	TEMPERATURE
TOT.	TOTAL
T.R.	TEMPERATURE RISE
T.S.	TIP SPEED
T.S.P.	TOTAL STATIC PRESSURE
T.U.	TERMINAL UNIT BOX
T.W.C.	TEPID WATER CONNECTION
U.H.	UNIT HEATER
URN.	URINAL
V.	VENT
VEL.	VELOCITY
V.I.	VIBRATION ISOLATORS
V.I.F.	VERIFY IN FIELD
V.S.	VENT STACK
V.T.R.	VENT THRU ROOF
W.	WASTE
W.C.	WATER CLOSET
W.C.O.	WALL CLEAN OUT
W.M.	WALL MOUNTED
W.P.D.	WATER PRESSURE DROP
W.SK.	WASH SINK

CONTROL SYMBOLS

- CONTROL VALVE
- FLOW METER (PROBE TYPE)
- THREE-WAY CONTROL VALVE
- (F) FREEZE STAT
- M MOTORIZED ACTUATOR
- (HS) HUMIDITY SENSOR
- (TS) TEMPERATURE SENSOR
- (CO2) CARBON DIOXIDE SENSOR
- (DP) DIFFERENTIAL PRESSURE SENSOR
- (AS) AIRFLOW SENSOR
- (MS) MOISTURE SENSOR
- (DS) DUCT SMOKE SENSOR

MECHANICAL SYMBOLS

- AW — ACID WASTE
- AWV — ACID WASTE VENT
- BALANCING VALVE
- BUTTERFLY VALVE
- CALIBRATED BALANCING VALVE
- CAP
- CO2 — CARBON DIOXIDE
- CHECK VALVE
- CR — CHILLER RETURN
- CS — CHILLER SUPPLY
- CWR — CHILLED WATER RETURN
- CWS — CHILLED WATER SUPPLY
- COLD WATER (DOMESTIC)
- A — COMPRESSED AIR
- COND — CONDENSATE
- CD — CONDENSATE DRAIN
- CONTROL VALVE
- CTR — COOLING TOWER RETURN
- CTS — COOLING TOWER SUPPLY
- DI — DEIONIZED WATER
- FIRE DAMPER (HORIZONTAL)
- FIRE DAMPER (VERTICAL)
- FIRE/SMOKE DAMPER
- FP — FIRE PROTECTION
- FLOW METER (PROBE TYPE)
- FLOW METER (WAFER TYPE)
- FLOW SWITCH
- FD — FOOTING DRAIN
- FOR — FUEL OIL RETURN
- FOS — FUEL OIL SUPPLY
- G — GAS
- GAS COCK
- GLR — GROUND LOOP WATER RETURN
- GLS — GROUND LOOP WATER SUPPLY
- HR — HEATING HOT WATER RETURN
- HS — HEATING HOT WATER SUPPLY
- HPR — HEAT PUMP RETURN
- HPS — HEAT PUMP SUPPLY
- HOT WATER RETURN (DOMESTIC)
- HOT WATER SUPPLY (DOMESTIC)
- (H) HUMIDISTAT
- MA — MEDICAL AIR
- MVAC — MEDICAL VACUUM
- N — NITROGEN
- N2O — NITROUS OXIDE
- OUTSIDE STEM AND YOKE VALVE
- O2 — OXYGEN
- PRESSURE GAUGE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- PRESSURE / TEMPERATURE TAPPING
- PHR — PRIMARY HEATING HOT WATER RETURN
- PHS — PRIMARY HEATING HOT WATER SUPPLY
- PC — PUMPED CONDENSATE
- REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
- LIQUID — REFRIGERANT LINE (LIQUID)
- SUCTION — REFRIGERANT LINE (SUCTION)
- SAN — SANITARY SEWER (ABOVE FLOOR)
- SAN — SANITARY SEWER (BELOW FLOOR)
- SHUT-OFF VALVE
- SMOKE DAMPER
- SCW — SOFT COLD WATER
- SHW — SOFT HOT WATER
- SHWR — SOFT HOT WATER RETURN
- SPRING CHECK VALVE
- STM (#) — STEAM
- STEAM TRAP
- ST — STORM SEWER (ABOVE FLOOR)
- ST (OF) — STORM SEWER (OVERFLOW SYSTEM)
- ST — STORM (BELOW FLOOR)
- STRAINER
- SMR — SNOWMELT RETURN
- SMS — SNOWMELT SUPPLY
- (TS) TEMPERATURE SENSOR
- TW — TEPID WATER
- TWR — TEPID WATER RETURN
- THERMOMETER
- (T) THERMOSTAT
- THREE-WAY CONTROL VALVE
- THROTTLING VALVE
- TRIPLE DUTY VALVE (ANGLE)
- TRIPLE DUTY VALVE (STRAIGHT)
- UNION
- VAC — VACUUM
- VACUUM BREAKER
- V — VENT

DUCTWORK COLOR LEGEND

- LOWER PRESSURE SUPPLY AIR
- EXHAUST AIR
- RETURN AIR
- MEDIUM PRESSURE SUPPLY AIR
- OUTSIDE AIR

GENERAL NOTES - MECHANICAL - NEW CONSTRUCTION

1. DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.
2. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT OTHER THAN BASIS OF DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED. CONTRACTOR IS REQUIRED TO COVER ALL ELECTRICAL COSTS FOR OTHER THAN BASIS OF DESIGN PRODUCTS SUCH AS DIFFERENT VOLTAGE OR DIFFERENT SIZE MOTER.
3. COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
4. INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.
5. FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.
6. MECHANICAL INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIXTURES, MECHANICAL EQUIPMENT, SHEET METAL, OR PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.
7. ALL PIPING AND DUCTWORK SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.
8. ALL LOW VOLTAGE CABLING SHALL BE RUN IN CONDUIT BETWEEN DEVICE AND CABLE TRAY OR TECHNOLOGY RACK. NO CABLING SHALL BE VISIBLE IN EXPOSED CEILING SPACES AND SHALL BE ROUTED IN CONDUIT THAT IS PAINTED TO MATCH SURFACE IT IS SUPPORTED FROM. CABLING THAT IS ROUTED ABOVE AN ACCESSIBLE CEILING SPACE CAN BE INDEPENDENTLY SUPPORTED WITH COMM HOOKS OR RINGS.
9. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH "ELECTRICAL DEVICES ALIGNMENT GUIDELINES" DETAIL ON SHEET G 001.
10. WHERE SPACE PERMITS, ALL HYDRONIC BRANCH PIPING SHALL TAP OFF OF BOTTOM OR SIDE OF PIPING MAINS PER BRANCH PIPING TAKE-OFF PIPING DETAIL THIS SHEET. MANUAL AIR VENTS SHALL BE INSTALLED AT THE TOP OF ALL HYDRONIC SYSTEMS.
11. ALL EXISTING CLOSED SYSTEMS SHALL BE ISOLATED AND FLUSHED/CLEANED PRIOR TO CONNECTION TO NEW SYSTEMS.
12. ALL BRANCH PIPING SHALL BE FURNISHED WITH SHUT-OFF VALVES IN AN ACCESSIBLE LOCATION NEAR MAIN CONNECTION.
13. AIR TERMINAL UNITS SHALL BE LOCATED WITHIN 24 INCHES OF THE CEILING GRID ON TERMINAL UNIT CENTER LINE. ALL ACCESS PANELS, VALVES, ACTUATORS AND FILTERS SHALL HAVE A MINIMUM OF 36 INCHES CLEAR AROUND FOR MAINTENANCE AND REPAIR. AIR TERMINAL UNITS SHALL NOT BE INSTALLED ABOVE FURNITURE, CABINETRY OR OTHER EQUIPMENT. CLEAR LADDER ACCESS SHALL BE ACCOUNTED FOR BELOW THE AIR TERMINAL UNIT.

GENERAL NOTES - MECHANICAL - DEMOLITION

1. ALL DUCTWORK, PIPING AND EQUIPMENT SHOWN DASHED SHALL BE REMOVED. PROTECT EXISTING WORK WHICH IS TO REMAIN IN PLACE FOR REUSE WITH TEMPORARY COVERS, SHORING, BRACING AND SUPPORTS. VERIFY LOCATIONS OF AND PROTECT EXISTING INTERIOR ELECTRICAL AND MECHANICAL UTILITIES AND SERVICES EXCEPT WHERE INDICATED OTHERWISE. ALL MATERIALS AND EQUIPMENT REMOVED AND NOT REUSED SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. THE OWNER RESERVES THE RIGHT TO KEEP ANY EQUIPMENT OR TO SALVAGE PARTS FROM ANY EQUIPMENT PRIOR TO BEING REMOVED FROM SITE. ALL MATERIALS AND EQUIPMENT REQUIRING REMOVAL AND RELOCATION FOR REUSE SHALL BE CAREFULLY REMOVED AND STORED TO PREVENT DAMAGE AND REINSTALLED AS THE WORK PROGRESSES.
2. CONTRACTOR SHALL PROTECT ALL WALLS, CEILINGS, FLOORS, LIGHTS AND OTHER FINISHED SURFACES NOT BEING DEMOED. IF DAMAGED, THE CONTRACTOR SHALL REPAIR TO MATCH EXISTING CONDITIONS.
3. MODIFICATIONS TO THE ROOFING SYSTEM FOR DEMOLITION OR INSTALLATION OF NEW EQUIPMENT SHALL BE DONE IN A MANNER TO MAINTAIN OWNER'S ROOFING WARRANTY.
4. FOR ALL EXISTING ROOF CURBS WHICH ARE NOT BEING REUSED AND ARE RECEIVING NEW ROOF CAPS, IF THE MAXIMUM DIMENSIONS OF THE CURB EXCEED 30" IN EITHER DIRECTION THEN PROVIDE AND INSTALL 1 1/2" x 1 1/2" x 1/4" SUPPORT ANGLES TO SPAN ACROSS TOP OF ROOF CURB OPENING BELOW ROOF CAP. SPACING BETWEEN ANGLES SHALL NOT EXCEED 24" ON CENTER.
5. FOR EQUIPMENT CONTAINING REFRIGERANT, CONTRACTOR SHALL PROVIDE REFRIGERANT RECOVERY DOCUMENTATION FOR OWNER'S RECORDS INCLUDING APPLIANCE EQUIPMENT INFORMATION WITH AMOUNT OF REFRIGERANT ON APPLIANCE DISPOSAL REPORT, SERVICE TECHNICIAN'S LICENSE/CERTIFICATION ON CONTRACTOR INPUT FORM, AND RECOVERY EQUIPMENT USED ON RECOVERY/RECYCLING EQUIPMENT INPUT FORM. DOCUMENTATION TO BE PLACED IN OWNER'S ONSITE REFRIGERANT COMPLIANCE MANUAL. INFORMATION FOR NEW EQUIPMENT SHALL ALSO BE ENTERED ON APPLIANCE REFRIGERANT INVENTORY CONTROL LOG FORM IN THE REFRIGERANT COMPLIANCE MANUAL.

STATE OF MICHIGAN
SCOTT D. THOMPSON
NO. 6201050501
LICENSED PROFESSIONAL ENGINEER
5-31-2024

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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SHEET TITLE
MECHANICAL & PLUMBING GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS

SCALE:	12" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	MG-001	D

22-133.010

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KEYED NOTE - PLUMBING - DEMOLITION

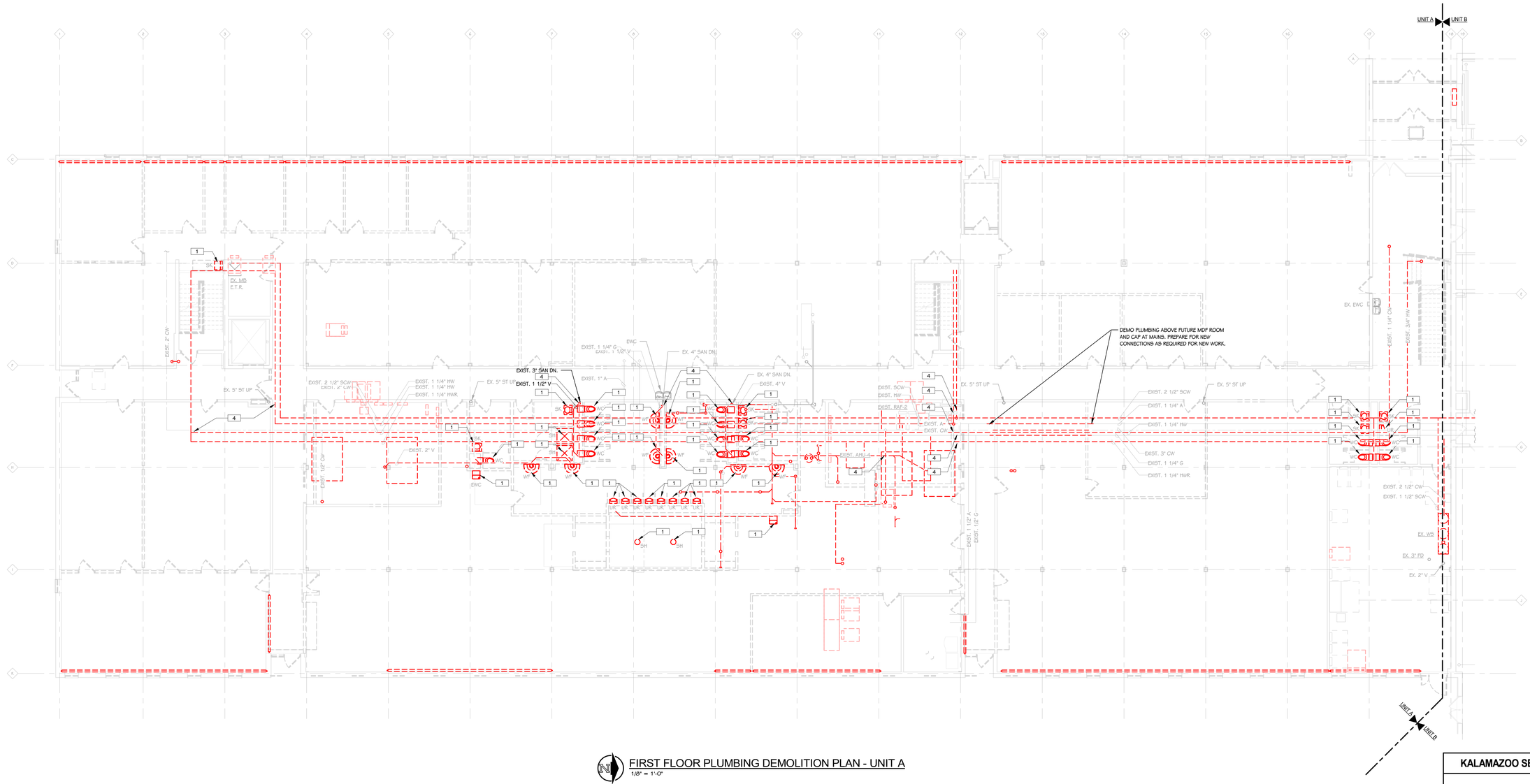
1 REMOVE PLUMBING FIXTURE IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, VALVES, SUPPORTS, ETC.

2 PROVIDE CLEANOUT FOR EXISTING PIPING AT DISCONNECT POINT.

3 EXISTING SANITARY LINE TO BE ABANDONED IN PLACE.

4 REMOVE EXISTING DOMESTIC PLUMBING PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

5 REMOVE DOMESTIC HOT WATER HEATER.



FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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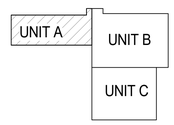

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

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SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: PD-101A
REV: D

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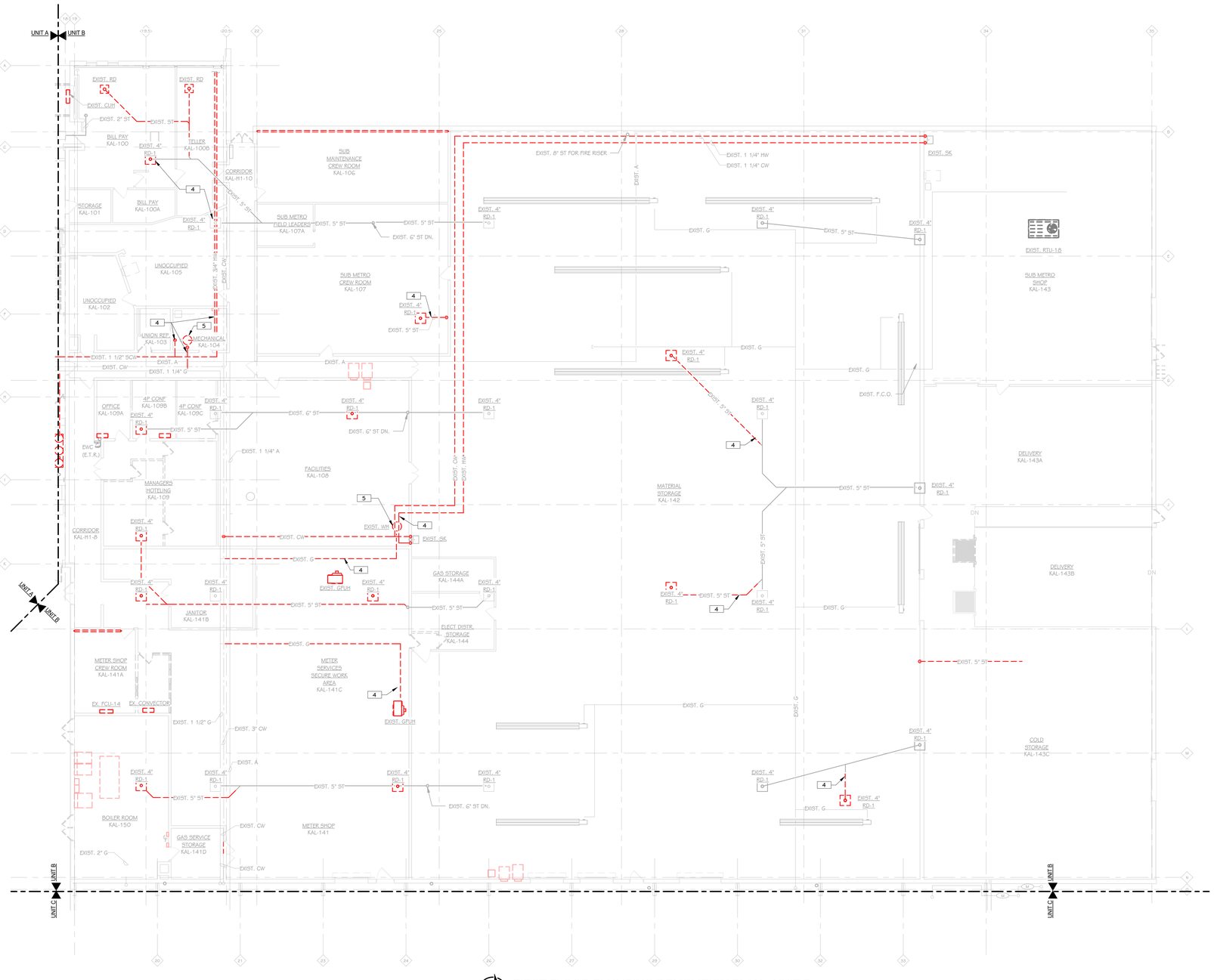
KEYED NOTE - PLUMBING - DEMOLITION

1. REMOVE PLUMBING FIXTURE IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, VALVES, SUPPORTS, ETC.
2. PROVIDE CLEANOUT FOR EXISTING PIPING AT DISCONNECT POINT.
3. EXISTING SANITARY LINE TO BE ABANDONED IN PLACE.
4. REMOVE EXISTING DOMESTIC PLUMBING PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.
5. REMOVE DOMESTIC HOT WATER HEATER.



FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT B
3/32" = 1'-0"

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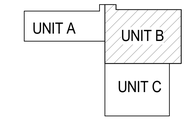

KEY PLAN
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REFERENCE DRAWINGS

SIGNATURE
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MICHIGAN P.E. No.: 6201050501

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SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: PD-101B
REV: D

22-133.010

KEYED NOTE - PLUMBING - DEMOLITION

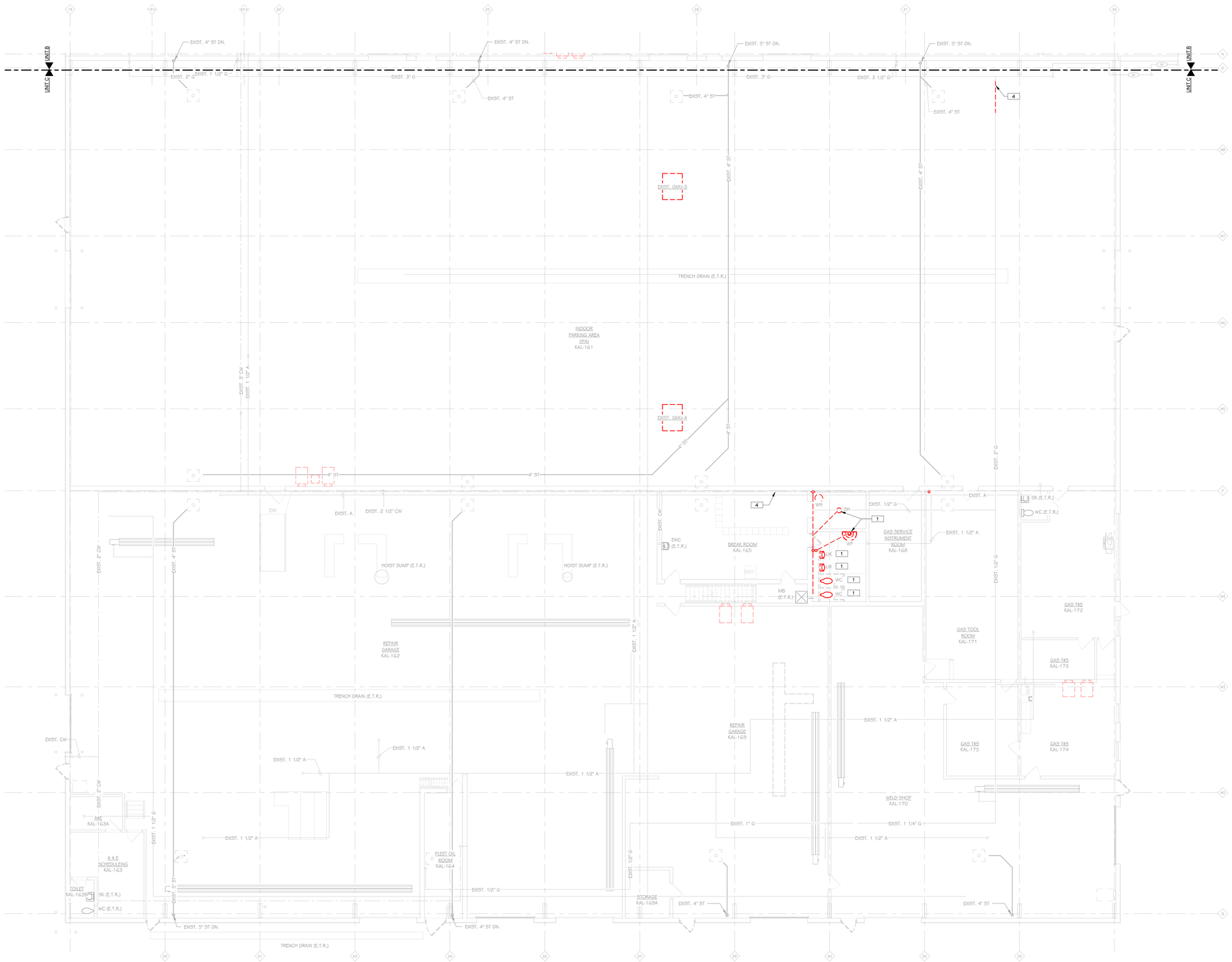
1 REMOVE PLUMBING FIXTURE IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, VALVES, SUPPORTS, ETC.

2 PROVIDE CLEANOUT FOR EXISTING PIPING AT DISCONNECT POINT.

3 EXISTING SANITARY LINE TO BE ABANDONED IN PLACE.

4 REMOVE EXISTING DOMESTIC PLUMBING PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

5 REMOVE DOMESTIC HOT WATER HEATER.



FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

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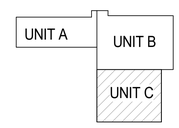

KEY PLAN
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SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: PD-101C
REV: D

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KEYED NOTE - PLUMBING - DEMOLITION

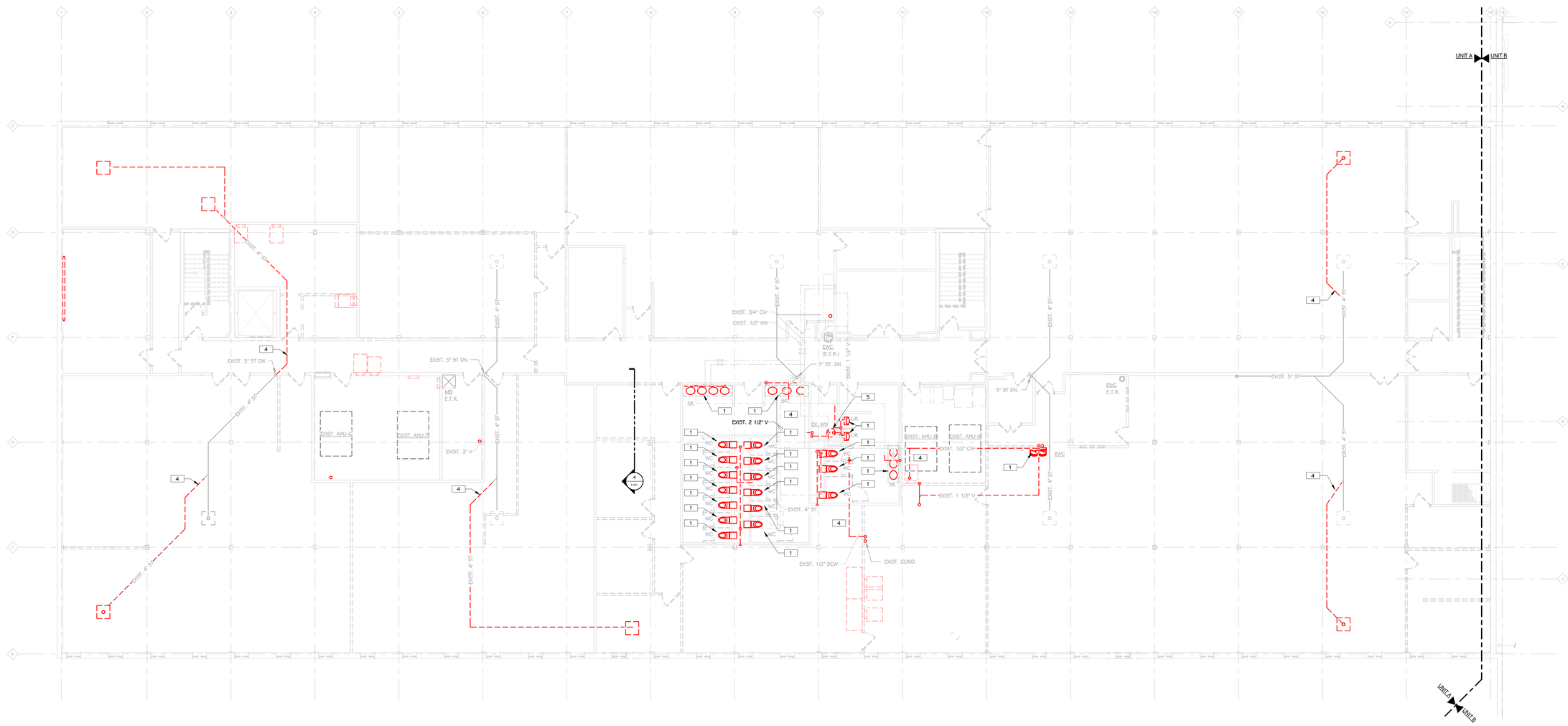
1 REMOVE PLUMBING FIXTURE IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, VALVES, SUPPORTS, ETC.

2 PROVIDE CLEANOUT FOR EXISTING PIPING AT DISCONNECT POINT.

3 EXISTING SANITARY LINE TO BE ABANDONED IN PLACE.

4 REMOVE EXISTING DOMESTIC PLUMBING PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

5 REMOVE DOMESTIC HOT WATER HEATER.



SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT A

1/8" = 1'-0"

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UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

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SHEET TITLE: SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: PD-102A
REV: D

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KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

2 REMOVE AIR-COOLED CHILLER IN ITS ENTIRETY INCLUDING ALL PIPING, WIRING, CONTROLS, ETC. LEAVE EQUIPMENT RAIL IN PLACE FOR REUSE.

3 REMOVE ROOF-MOUNTED AIR-COOLED CONDENSING UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND ROOF SUPPORTS.

4 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING ROOF CURB, WIRING, CONTROLS, ETC.

5 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING, WIRING, CONTROLS, ETC. PATCH ROOF CURB.

6 REMOVE AIR HANDLER UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND CEILING SUPPORTS.

7 REMOVE MAKE-UP AIR UNIT IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

8 REMOVE EXISTING DUCTWORK AND ALL ASSOCIATED GRILLES/DIFFUSERS, HANGERS, AND ACCESSORIES. PATCH OPENINGS AS REQUIRED.

9 REMOVE HEATING HOT WATER BOILER AND CHILLED WATER PLANTS IN THEIR ENTIRETY TO INCLUDE BOILERS, PUMPS, EXPANSION TANKS, PIPING, VENTING, CONTROLS, AND ETC.

10 REMOVE UNIT HEATER IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

11 REMOVE HEATER IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

12 REMOVE EXISTING TEMPERATURE SENSOR.

13 REMOVE EXISTING CABINET HEATER, FIN TUBE, AND ALL ASSOCIATED HANGERS, CONTROLS, AND ACCESSORIES.

14 REMOVE EXISTING IN-LINE EXHAUST FAN AND ALL ASSOCIATED CONTROLS AND ACCESSORIES.

15 REMOVE EXISTING HYDRONIC PIPING IN ITS ENTIRETY, INCLUDING ALL INSULATION AND HANGING MATERIALS.

16 REMOVE EXISTING VENT AND CAP.

17 REMOVE ROOF HOOD IN ITS ENTIRETY.

18 REMOVE OA DAMPER.

19 REMOVE ROOF DRAIN AND ASSOCIATED PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION.

20 REMOVE AIR INTAKE HOOD IN IT'S ENTIRETY INCLUDING ASSOCIATED ROOF CURB. PATCH AND REPAIR ROOF.

22 REMOVE EXISTING GAS PIPING BACK TO ROOF PENETRATION AND CAP. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

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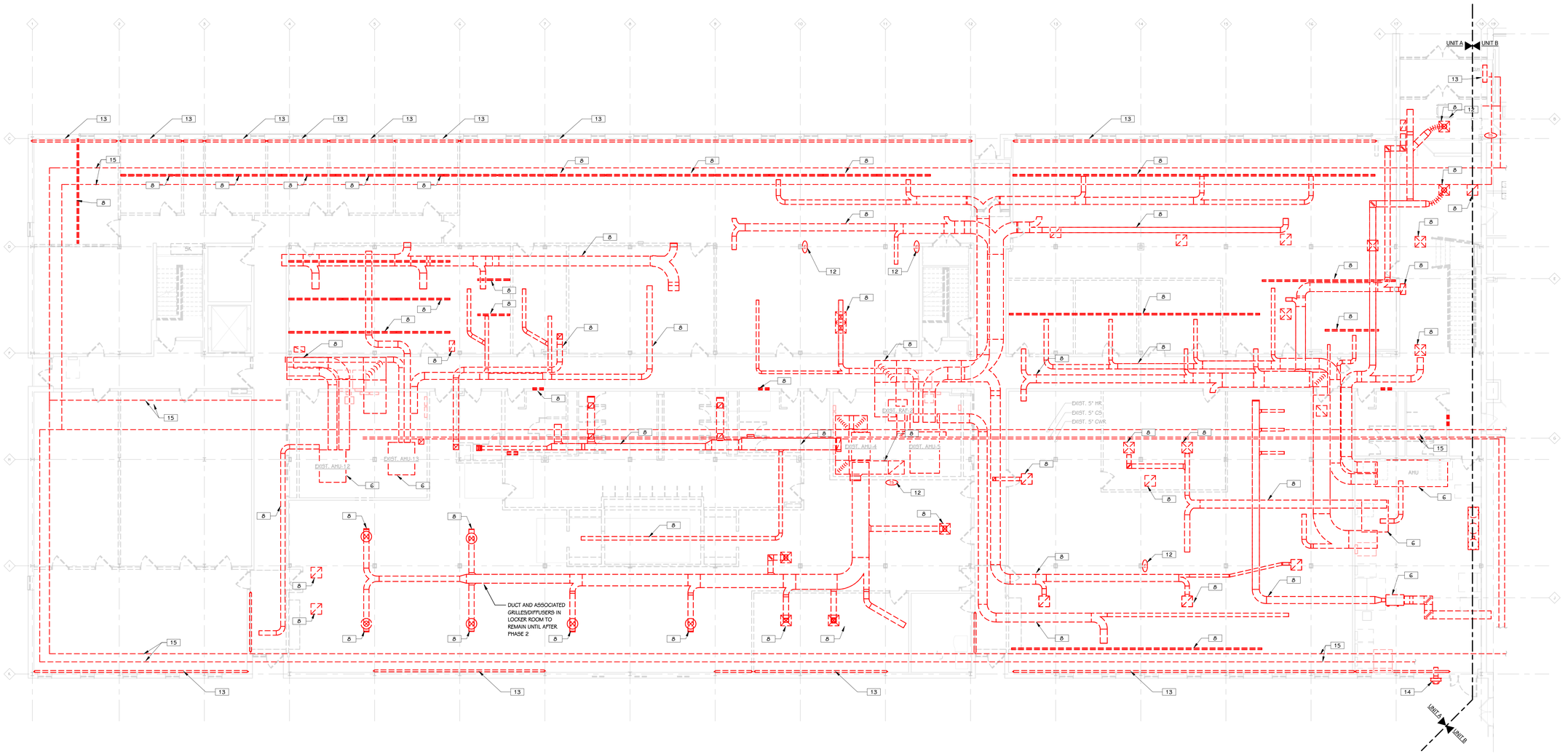

FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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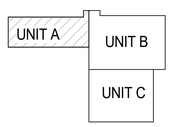

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

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SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-101A
REV: D

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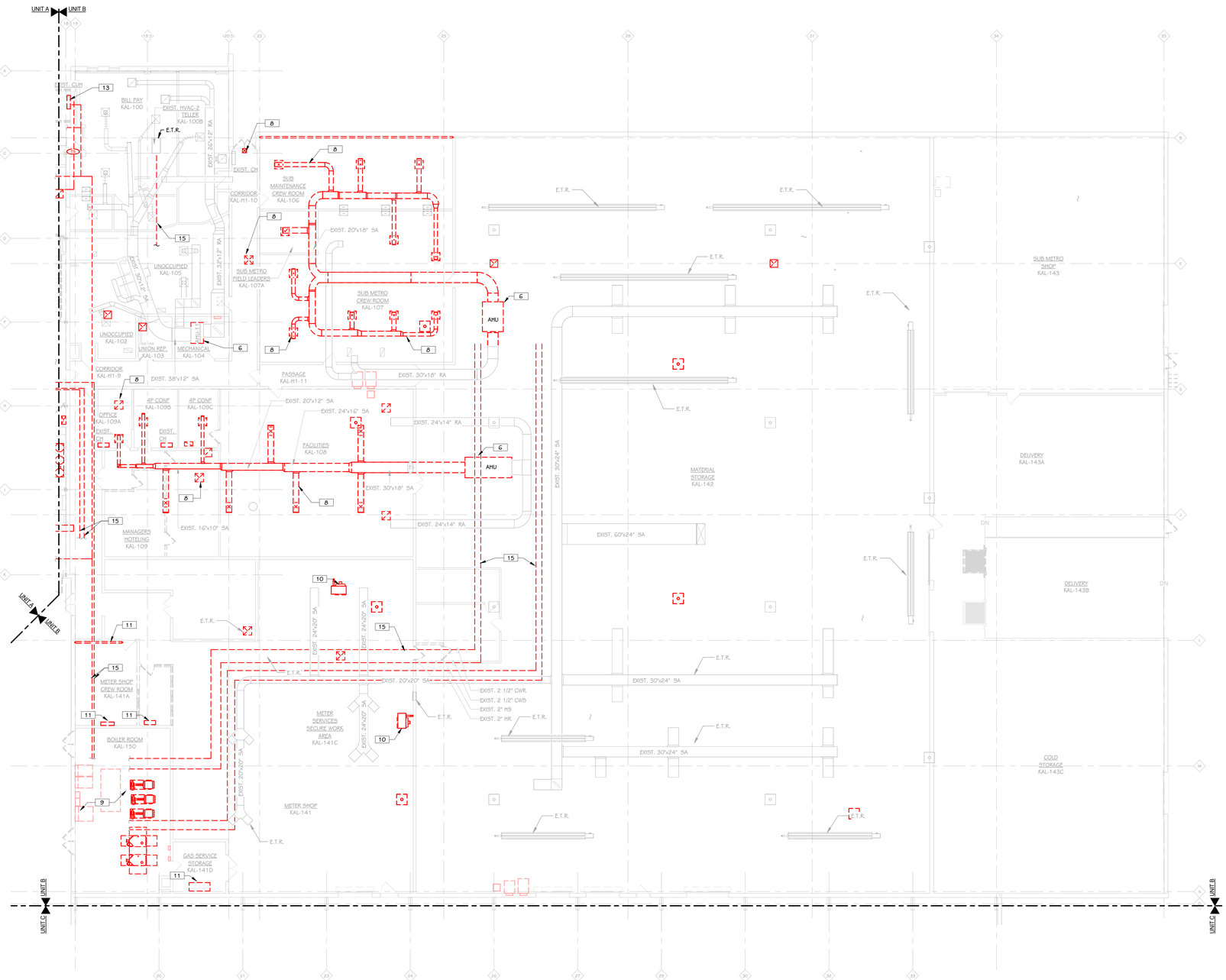

FIRST FLOOR MECHNICAL DEMOLITION PLAN - UNIT B
3/32" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

2 REMOVE AIR-COOLED CHILLER IN ITS ENTIRETY INCLUDING ALL PIPING, WIRING, CONTROLS, ETC. LEAVE EQUIPMENT RAIL IN PLACE FOR REUSE.

3 REMOVE ROOF-MOUNTED AIR-COOLED CONDENSING UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND ROOF SUPPORTS.

4 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING ROOF CURB, WIRING, CONTROLS, ETC.

5 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING, WIRING, CONTROLS, ETC. PATCH ROOF CURB.

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7 REMOVE MAKE-UP AIR UNIT IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

8 REMOVE EXISTING DUCTWORK AND ALL ASSOCIATED GRILLES/DIFFUSERS, HANGERS, AND ACCESSORIES. PATCH OPENINGS AS REQUIRED.

9 REMOVE HEATING HOT WATER BOILER AND CHILLED WATER PLANTS IN THEIR ENTIRETY TO INCLUDE BOILERS, PUMPS, EXPANSION TANKS, PIPING, VENTING, CONTROLS, AND ETC.

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19 REMOVE ROOF DRAIN AND ASSOCIATED PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION.

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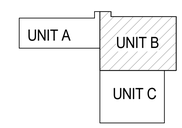

KEY PLAN
SCALE: NO SCALE

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SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-101B
REV: D

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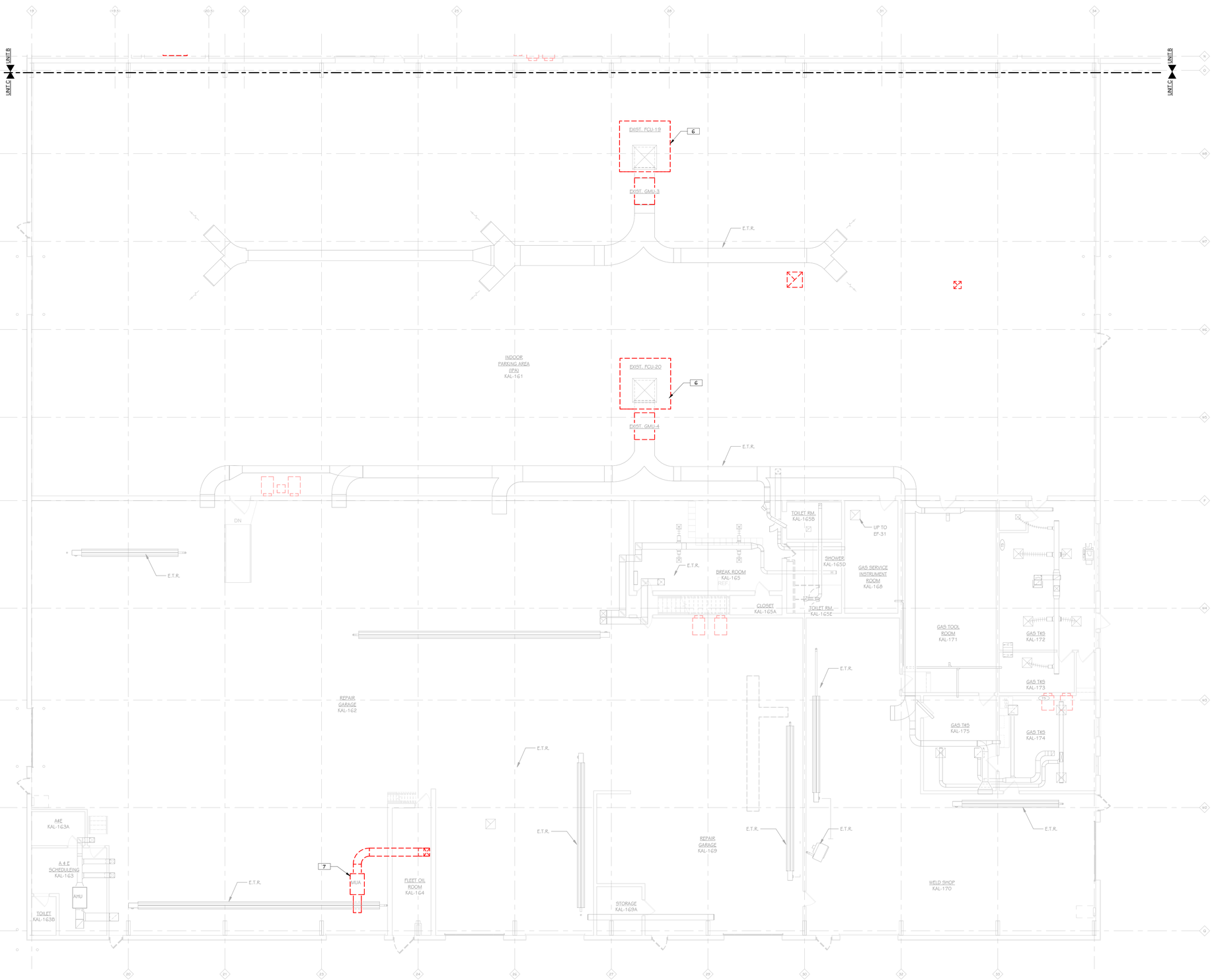

FIRST FLOOR MECHNICAL DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

2 REMOVE AIR-COOLED CHILLER IN ITS ENTIRETY INCLUDING ALL PIPING, WIRING, CONTROLS, ETC. LEAVE EQUIPMENT RAIL IN PLACE FOR REUSE.

3 REMOVE ROOF-MOUNTED AIR-COOLED CONDENSING UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND ROOF SUPPORTS.

4 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING ROOF CURB, WIRING, CONTROLS, ETC.

5 REMOVE ROOF-MOUNTED EXHAUST FAN IN ITS ENTIRETY INCLUDING, WIRING, CONTROLS, ETC. PATCH ROOF CURB.

6 REMOVE AIR HANDLER UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND CEILING SUPPORTS.

7 REMOVE MAKE-UP AIR UNIT IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

8 REMOVE EXISTING DUCTWORK AND ALL ASSOCIATED GRILLES/DIFFUSERS, HANGERS, AND ACCESSORIES. PATCH OPENINGS AS REQUIRED.

9 REMOVE HEATING HOT WATER BOILER AND CHILLED WATER PLANTS IN THEIR ENTIRETY TO INCLUDE BOILERS, PUMPS, EXPANSION TANKS, PIPING, VENTING, CONTROLS, AND ETC.

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11 REMOVE HEATER IN ITS ENTIRETY INCLUDING ALL PIPING, VALVES, WIRING, AND CONTROLS.

12 REMOVE EXISTING TEMPERATURE SENSOR.

13 REMOVE EXISTING CABINET HEATER, FIN TUBE, AND ALL ASSOCIATED HANGERS, CONTROLS, AND ACCESSORIES.

14 REMOVE EXISTING IN-LINE EXHAUST FAN AND ALL ASSOCIATED CONTROLS AND ACCESSORIES.

15 REMOVE EXISTING HYDRONIC PIPING IN ITS ENTIRETY, INCLUDING ALL INSULATION AND HANGING MATERIALS.

16 REMOVE EXISTING VENT AND CAP.

17 REMOVE ROOF HOOD IN ITS ENTIRETY.

18 REMOVE OA DAMPER.

19 REMOVE ROOF DRAIN AND ASSOCIATED PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION.

20 REMOVE AIR INTAKE HOOD IN IT'S ENTIRETY INCLUDING ASSOCIATED ROOF CURB. PATCH AND REPAIR ROOF.

22 REMOVE EXISTING GAS PIPING BACK TO ROOF PENETRATION AND CAP. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

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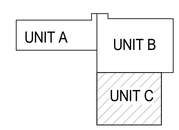
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-101C
REV: D

22-133.010

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KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

2 REMOVE AIR-COOLED CHILLER IN ITS ENTIRETY INCLUDING ALL PIPING, WIRING, CONTROLS, ETC. LEAVE EQUIPMENT RAIL IN PLACE FOR REUSE.

3 REMOVE ROOF-MOUNTED AIR-COOLED CONDENSING UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED PIPING, WIRING, CONTROLS, AND ROOF SUPPORTS.

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8 REMOVE EXISTING DUCTWORK AND ALL ASSOCIATED GRILLES/DIFFUSERS, HANGERS, AND ACCESSORIES. PATCH OPENINGS AS REQUIRED.

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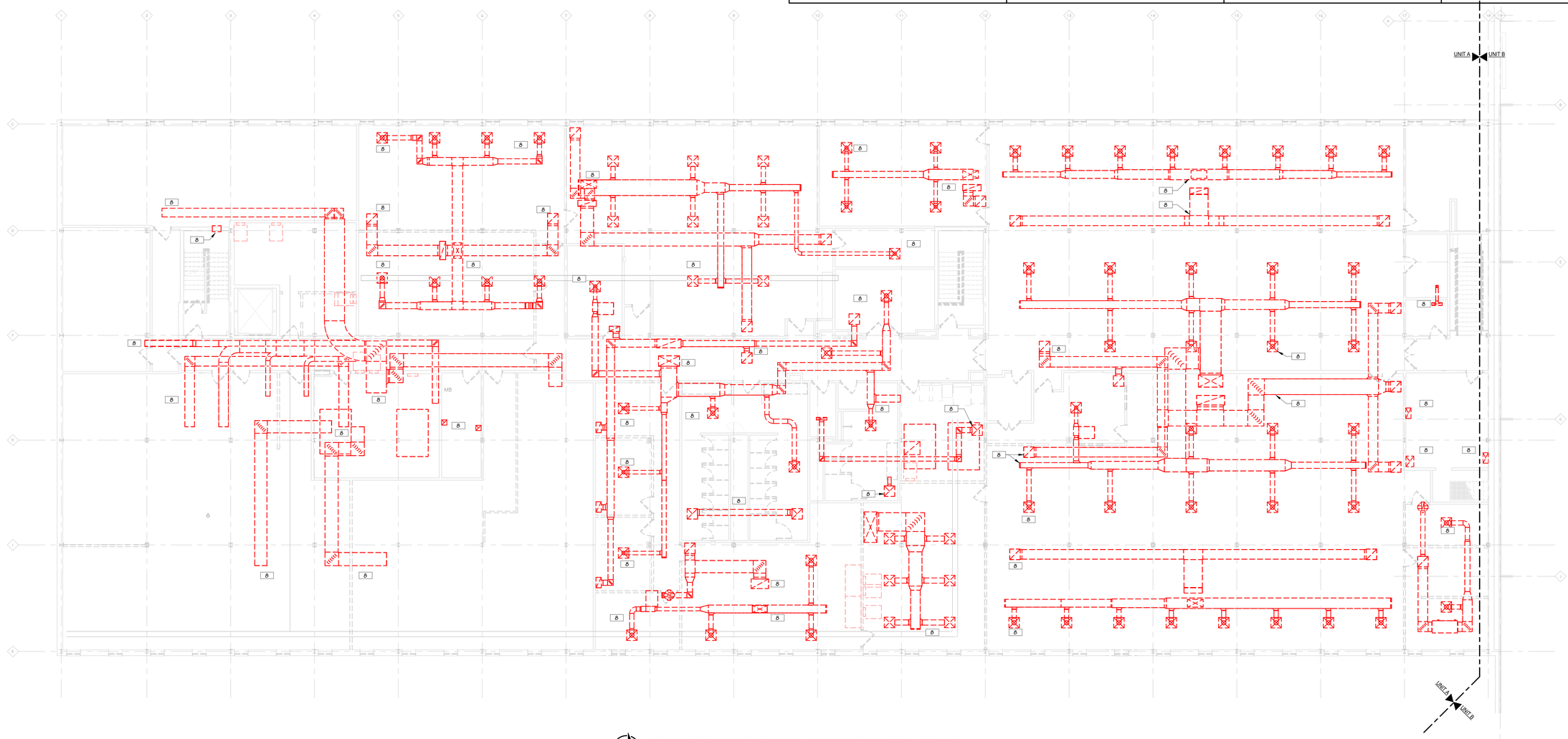

SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

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B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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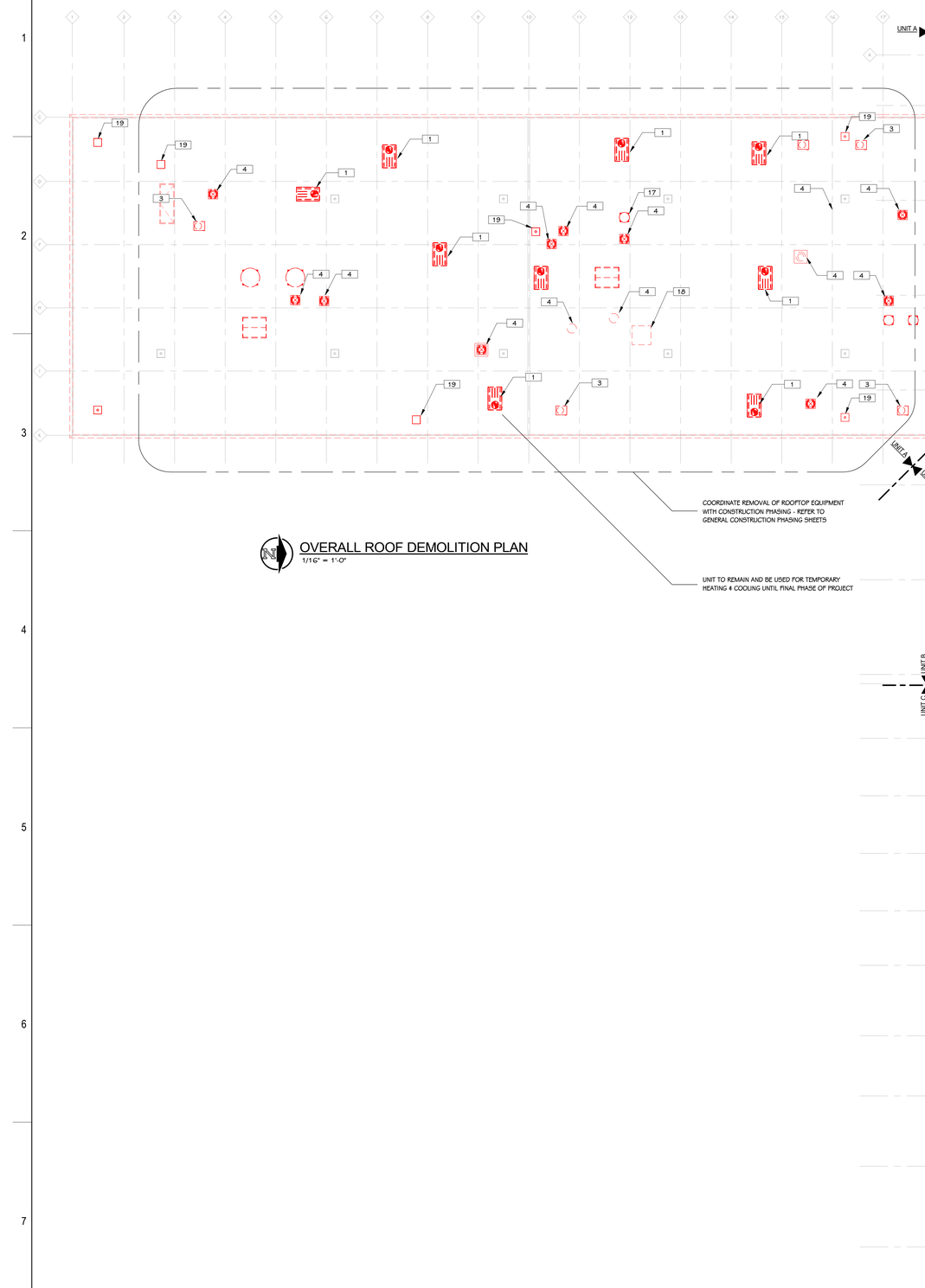
SHEET TITLE
SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-102A
REV: D

22-133.010



OVERALL ROOF DEMOLITION PLAN
1/16" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

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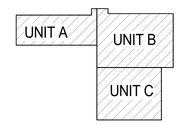

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
OVERALL ROOF MECHANICAL DEMOLITION PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-103
REV: D

22-133.010

KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE PACKAGED ROOFTOP UNIT IN ITS ENTIRETY INCLUDING ALL ASSOCIATED ROOF CURB, WIRING, CONTROLS, ETC. PATCH AND REPAIR ROOF.

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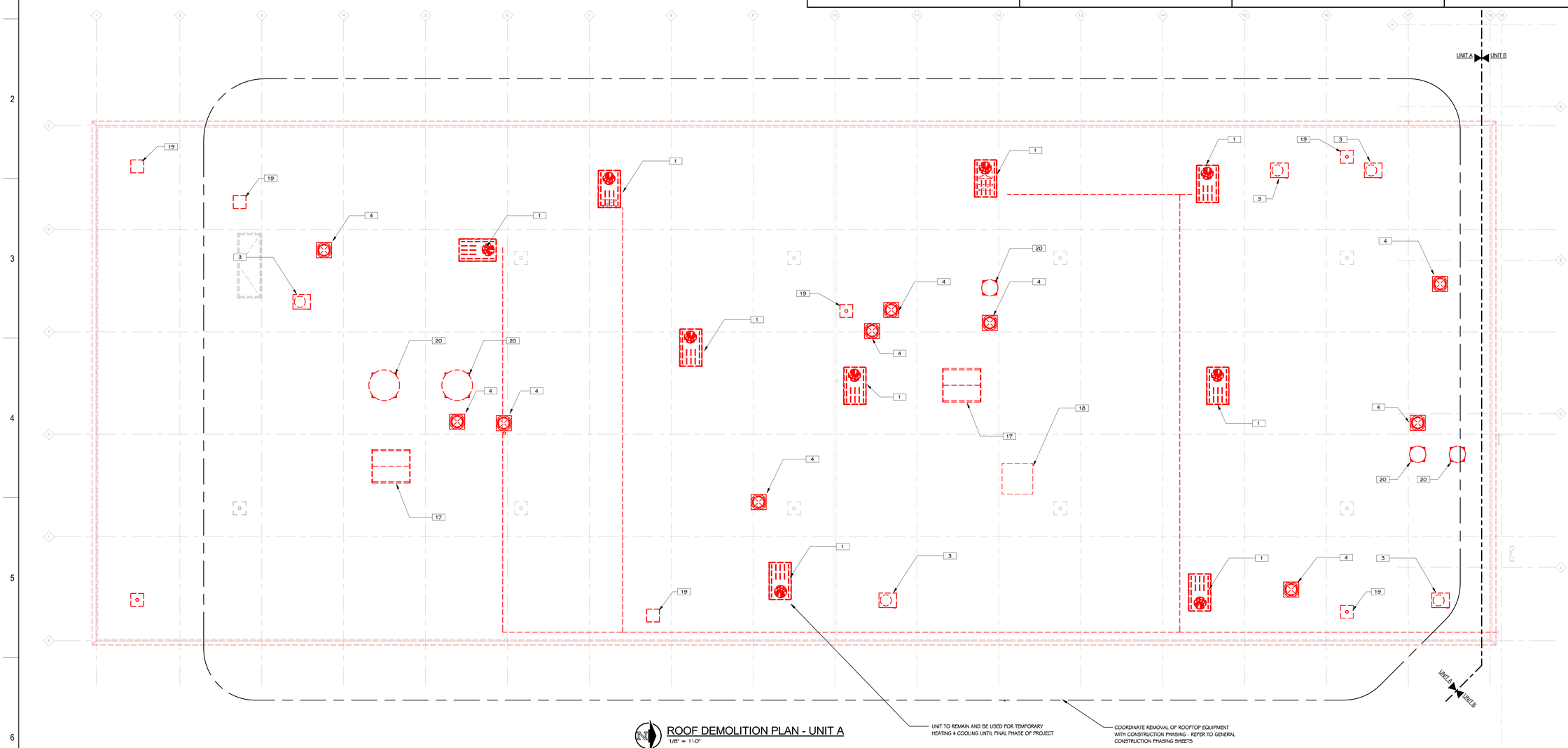

ROOF DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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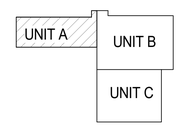

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ROOF MECHANICAL DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-103A
REV: D

22-133.010

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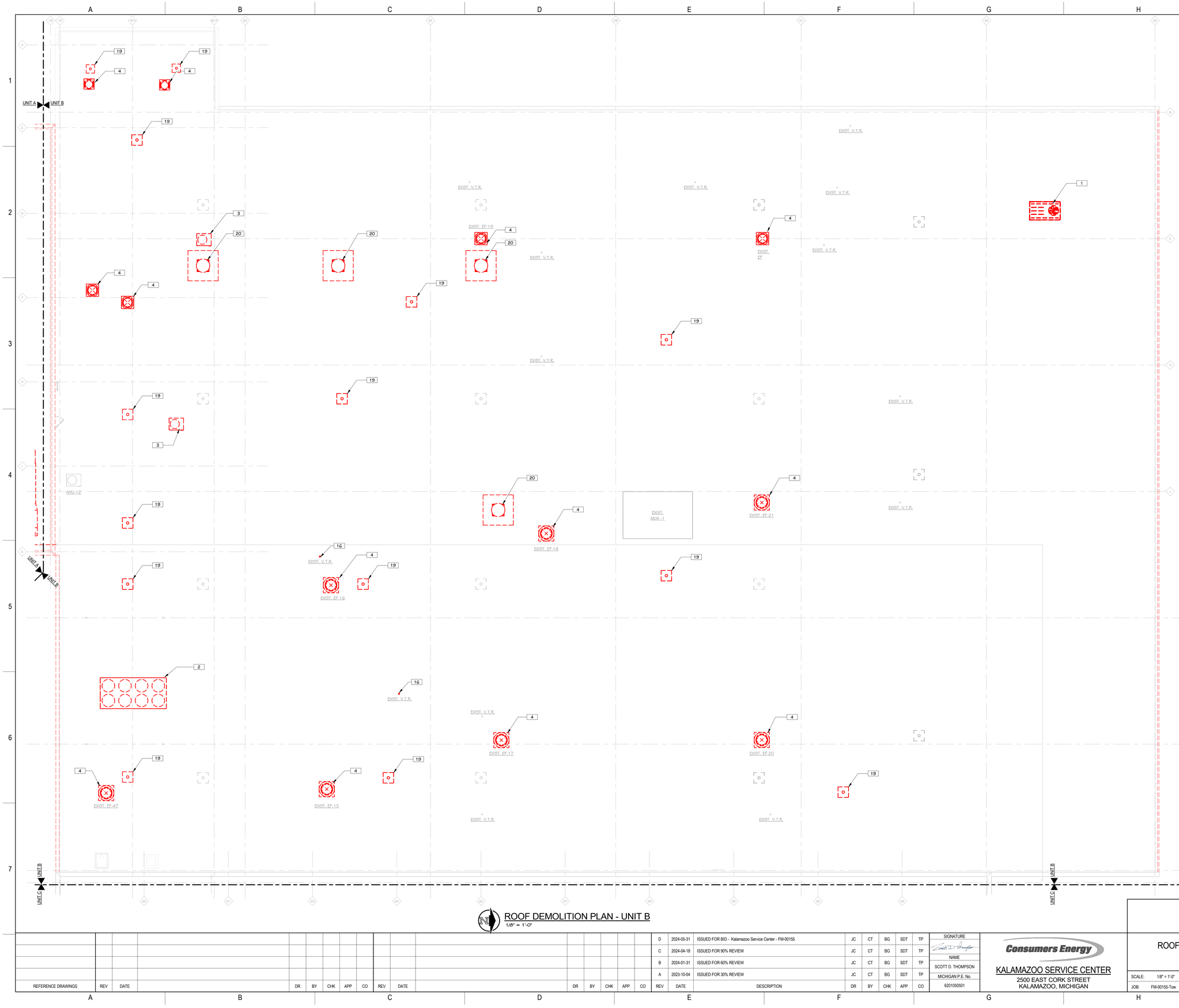

KEYED NOTES - MECHANICAL - DEMOLITION

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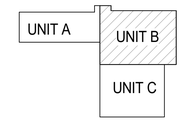

KEY PLAN
SCALE: NO SCALE

ROOF DEMOLITION PLAN - UNIT B
1/8" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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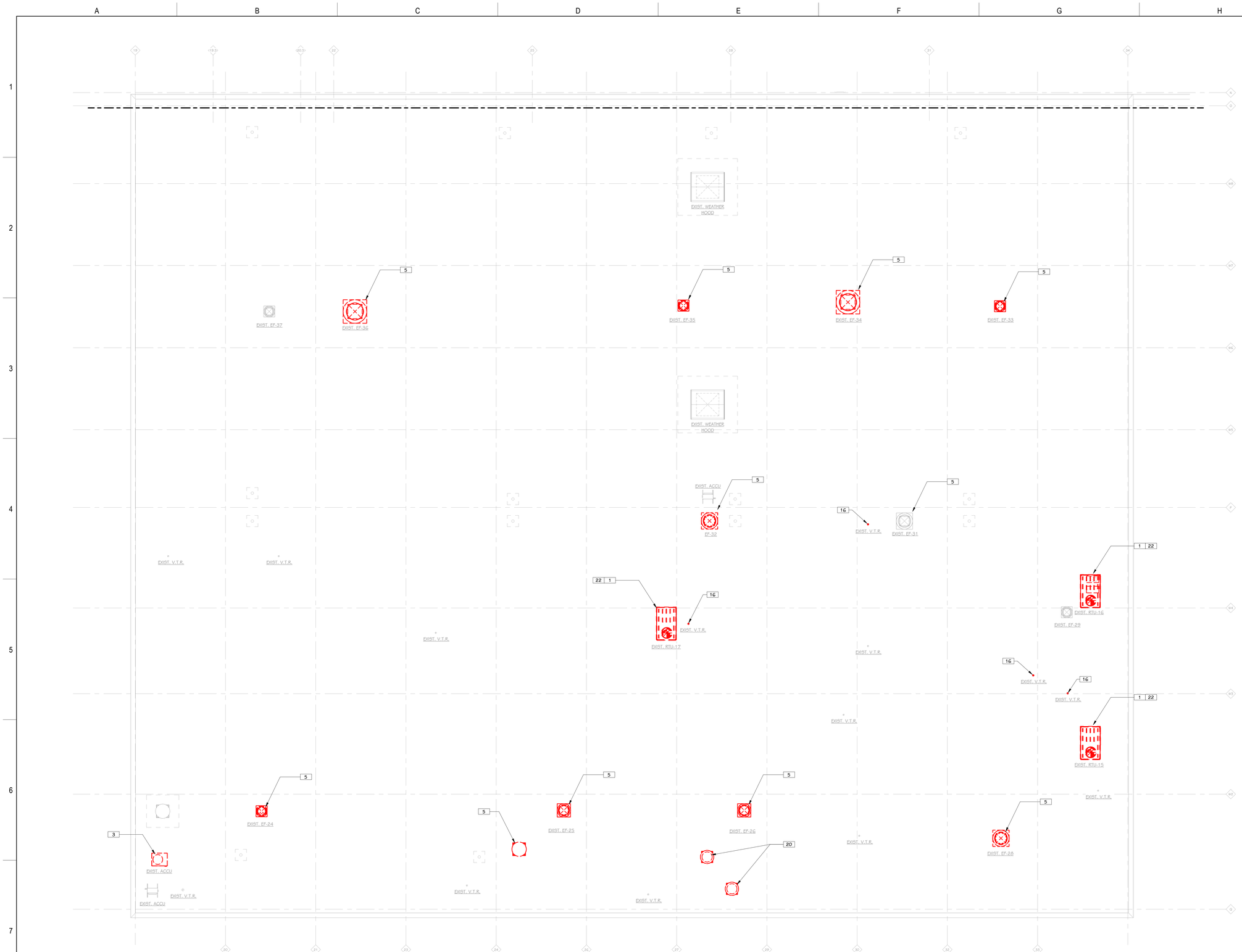
SHEET TITLE
ROOF MECHANICAL DEMOLITION PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-103B
REV: D

22-133.010



ROOF DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

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14 REMOVE EXISTING IN-LINE EXHAUST FAN AND ALL ASSOCIATED CONTROLS AND ACCESSORIES.

15 REMOVE EXISTING HYDRONIC PIPING IN ITS ENTIRETY, INCLUDING ALL INSULATION AND HANGING MATERIALS.

16 REMOVE EXISTING VENT AND CAP.

17 REMOVE ROOF HOOD IN ITS ENTIRETY.

18 REMOVE OA DAMPER.

19 REMOVE ROOF DRAIN AND ASSOCIATED PIPING BACK TO MAIN OR MAIN BRANCH AND CAP AT LOCATION.

20 REMOVE AIR INTAKE HOOD IN ITS ENTIRETY INCLUDING ASSOCIATED ROOF CURB. PATCH AND REPAIR ROOF.

22 REMOVE EXISTING GAS PIPING BACK TO ROOF PENETRATION AND CAP. PREPARE FOR RECONNECTION AS REQUIRED FOR NEW WORK.

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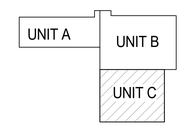
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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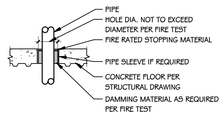
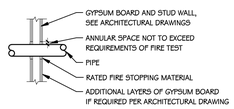
SHEET TITLE
ROOF MECHANICAL DEMOLITION PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MD-103C
REV: D

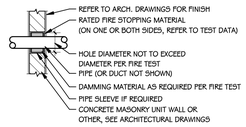
22-133.010



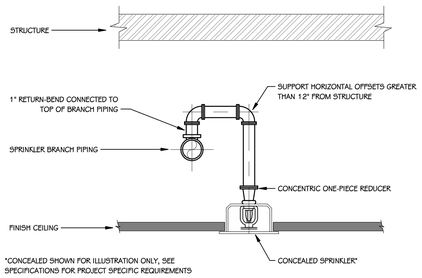
MECHANICAL FIRE STOPPING - FLOOR PENETRATIONS
SCALE: NONE



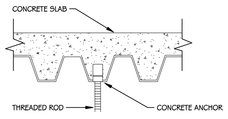
MECHANICAL FIRE STOPPING - STUD WALL PENETRATIONS
SCALE: NONE



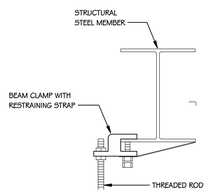
MECHANICAL FIRE STOPPING - WALL PENETRATIONS
SCALE: NONE



RETURN BEND PIPING
SCALE: NONE



ATTACHMENT TO CONCRETE STRUCTURE



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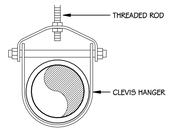
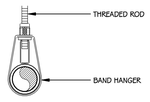


PIPE HANGERS FOR NPS 4" AND LARGER



PIPE HANGERS FOR NPS 3" AND SMALLER

NFPA 13 MINIMUM REQUIRED HANGER ROD SIZES	
PIPE SIZE	DIAMETER OF ROD
UP TO AND INCLUDING 4"	3/8"
5", 6", 8"	1/2"
10", 12"	5/8"

SURGE RESTRAINT

PROVIDE SURGE RESTRAIN AT HANGER VIA RESTRAINT CLIP OR THREADED ROD EXTENSION TO PIPE SURFACE AS REQUIRED BY NFPA 13.

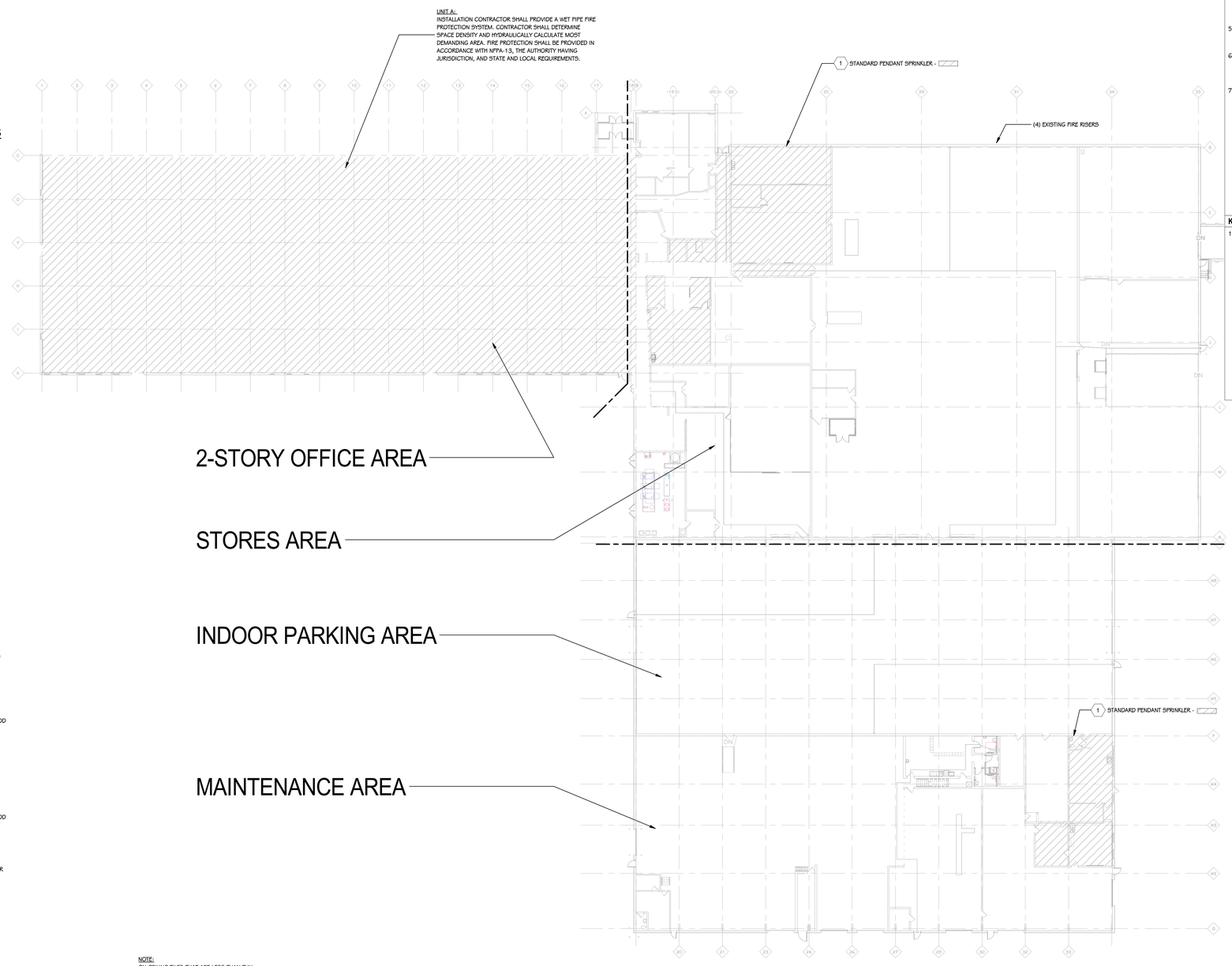
1. END OF BRANCH PIPING WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
2. RETURN BEND OFFSETS GREATER THAN 12" WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
3. RETURN BEND OFFSETS GREATER THAN 24".

PIPING SUPPORTS
SCALE: NONE

UNIT A: 27,750 SF / FLOOR (2-STORY OFFICE) 55,500 TOTAL - 13' FLOOR-TO-FLOOR

UNIT B: 47,234 SF (PARTS STORAGE) - 18' ROOF HEIGHT

UNIT C: 43,280 SF (INDOOR PARKING / MAINT.) - 24' ROOF HEIGHT



OVERALL FIRST FLOOR FIRE PROTECTION PLAN
3/64" = 1'-0"

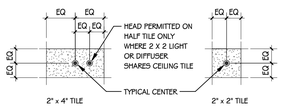
GENERAL NOTES - FIRE PROTECTION

1. DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.
2. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT OTHER THAN BASIS OF DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
3. COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
4. INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.
5. FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.
6. FIRE PROTECTION INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIXTURES, MECHANICAL EQUIPMENT, SHEET METAL, OR PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.
7. ALL PIPING SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.

KEYED NOTES - FIRE PROTECTION - CONSTRUCTION

1. INSTALLATION CONTRACTOR SHALL RELOCATE OR PROVIDE NEW SPRINKLER HEADS AS REQUIRED TO MAINTAIN CURRENT SPRINKLER COVERAGE DENSITY. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS. INSTALLATION CONTRACTOR SHALL RELOCATE OR PROVIDE NEW SPRINKLER HEADS AS REQUIRED TO MAINTAIN CURRENT SPRINKLER COVERAGE DENSITY. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS.

NOTE:
ON CEILING TILES THAT ARE LESS THAN FULL, HEAD SHALL BE CENTERED IN ALL DIRECTIONS.



CEILING TILE DETAIL
SCALE: NONE

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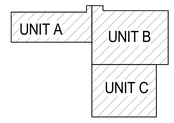

KEY PLAN
SCALE: NO SCALE

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A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL FIRST FLOOR FIRE PROTECTION PLAN

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: FP-101
REV: D

22-133.010

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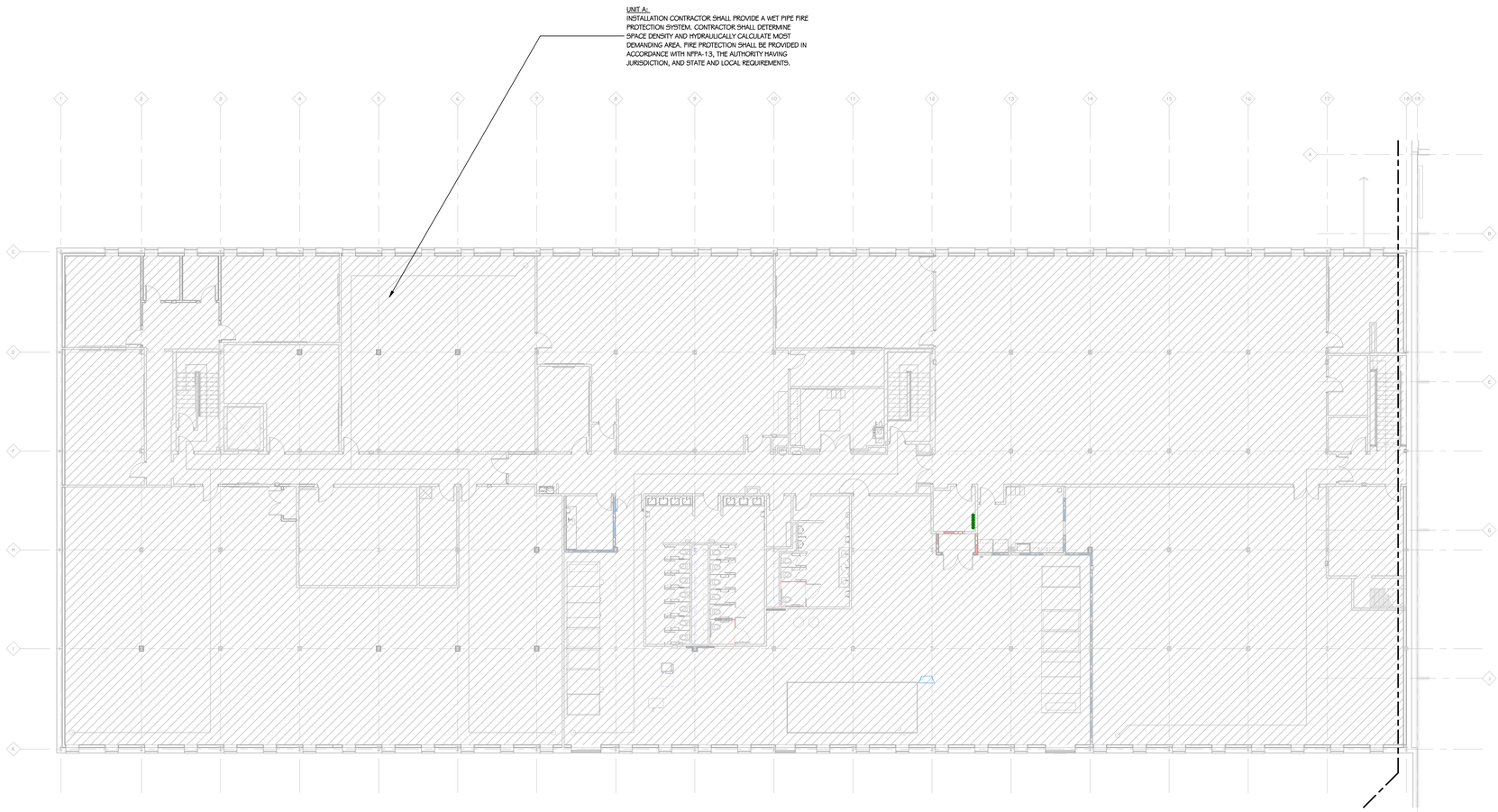

SECOND FLOOR FIRE PROTECTION PLAN
3/32" = 1'-0"

GENERAL NOTES - FIRE PROTECTION

1 DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.

2 IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT OTHER THAN BASIS OF DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.

3 COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.

4 INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.

5 FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.

6 FIRE PROTECTION INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIXTURES, MECHANICAL EQUIPMENT, SHEET METAL, OR PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.

7 ALL PIPING SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.

KEYED NOTES - FIRE PROTECTION - CONSTRUCTION

1 INSTALLATION CONTRACTOR SHALL RELOCATE OR PROVIDE NEW SPRINKLER HEADS AS REQUIRED TO MAINTAIN CURRENT SPRINKLER COVERAGE DENSITY. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS. INSTALLATION CONTRACTOR SHALL RELOCATE OR PROVIDE NEW SPRINKLER HEADS AS REQUIRED TO MAINTAIN CURRENT SPRINKLER COVERAGE DENSITY. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS.

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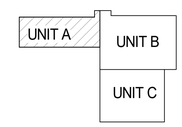

KEY PLAN
SCALE: NO SCALE

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A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

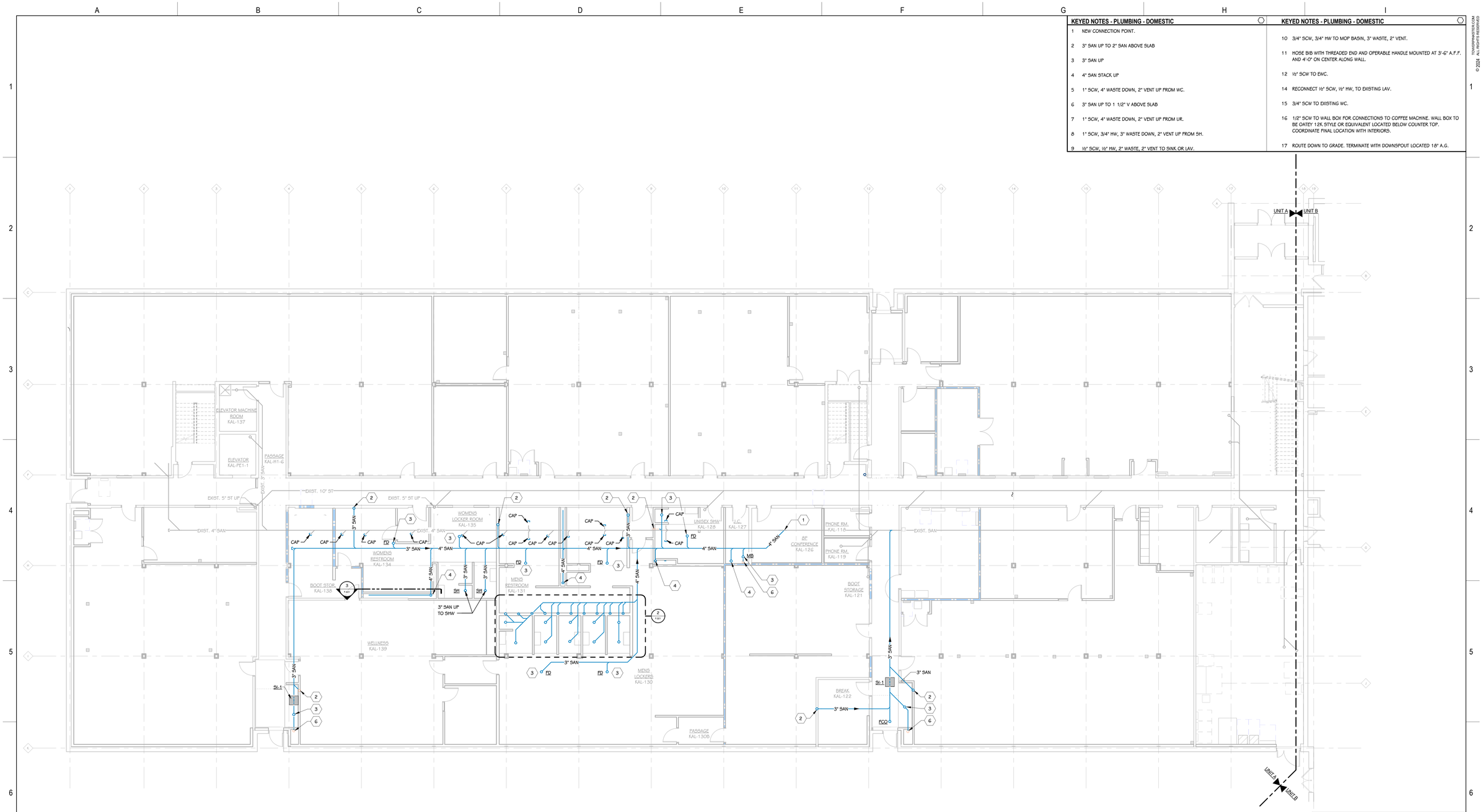
SHEET TITLE: SECOND FLOOR FIRE PROTECTION PLAN

SCALE	JOB	DRAWING NUMBER	SHEET	REV
3/32" = 1'-0"	FM-00155-Tow	3084-KAL-SC01	FP-102	A

22-133.010

KEYED NOTES - PLUMBING - DOMESTIC	
1	NEW CONNECTION POINT.
2	3" SAN UP TO 2" SAN ABOVE SLAB
3	3" SAN UP
4	4" SAN STACK UP
5	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.
6	3" SAN UP TO 1 1/2" V ABOVE SLAB
7	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.
8	1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.
9	½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.

KEYED NOTES - PLUMBING - DOMESTIC	
10	3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.
11	HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.
12	½" SCW TO EWC.
14	RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.
15	3/4" SCW TO EXISTING WC.
16	1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 12K STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.
17	ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.



FOUNDATION PLUMBING PLAN - UNIT A
1/8" = 1'-0"

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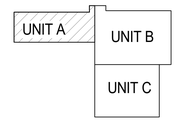

KEY PLAN
SCALE: NO SCALE

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B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
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SHEET TITLE: FOUNDATION PLUMBING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	P-100A	D

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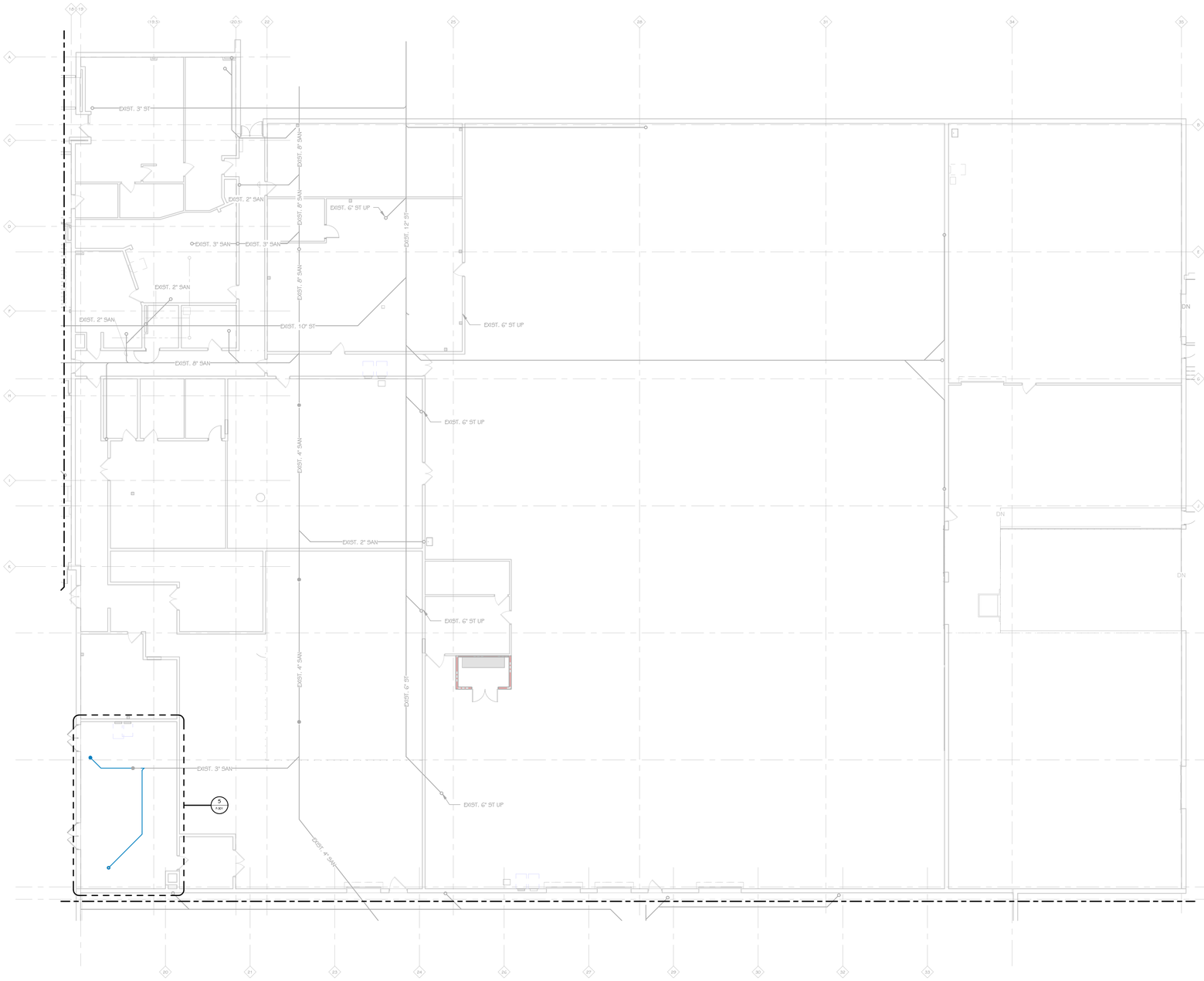

FOUNDATION PLUMBING PLAN - UNIT B
3/32" = 1'-0"

KEYED NOTES - PLUMBING - DOMESTIC

1 NEW CONNECTION POINT.

2 3" SAN UP TO 2" SAN ABOVE SLAB

3 3" SAN UP

4 4" SAN STACK UP

5 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.

6 3" SAN UP TO 1 1/2" V ABOVE SLAB

7 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.

8 1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.

9 ½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.

10 3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.

11 HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.

12 ½" SCW TO EWC.

14 RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.

15 3/4" SCW TO EXISTING WC.

16 1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 1 2X, STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.

17 ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.

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UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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KALAMAZOO, MICHIGAN

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SHEET TITLE
FOUNDATION PLUMBING PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-100B
REV: D

22-133.010

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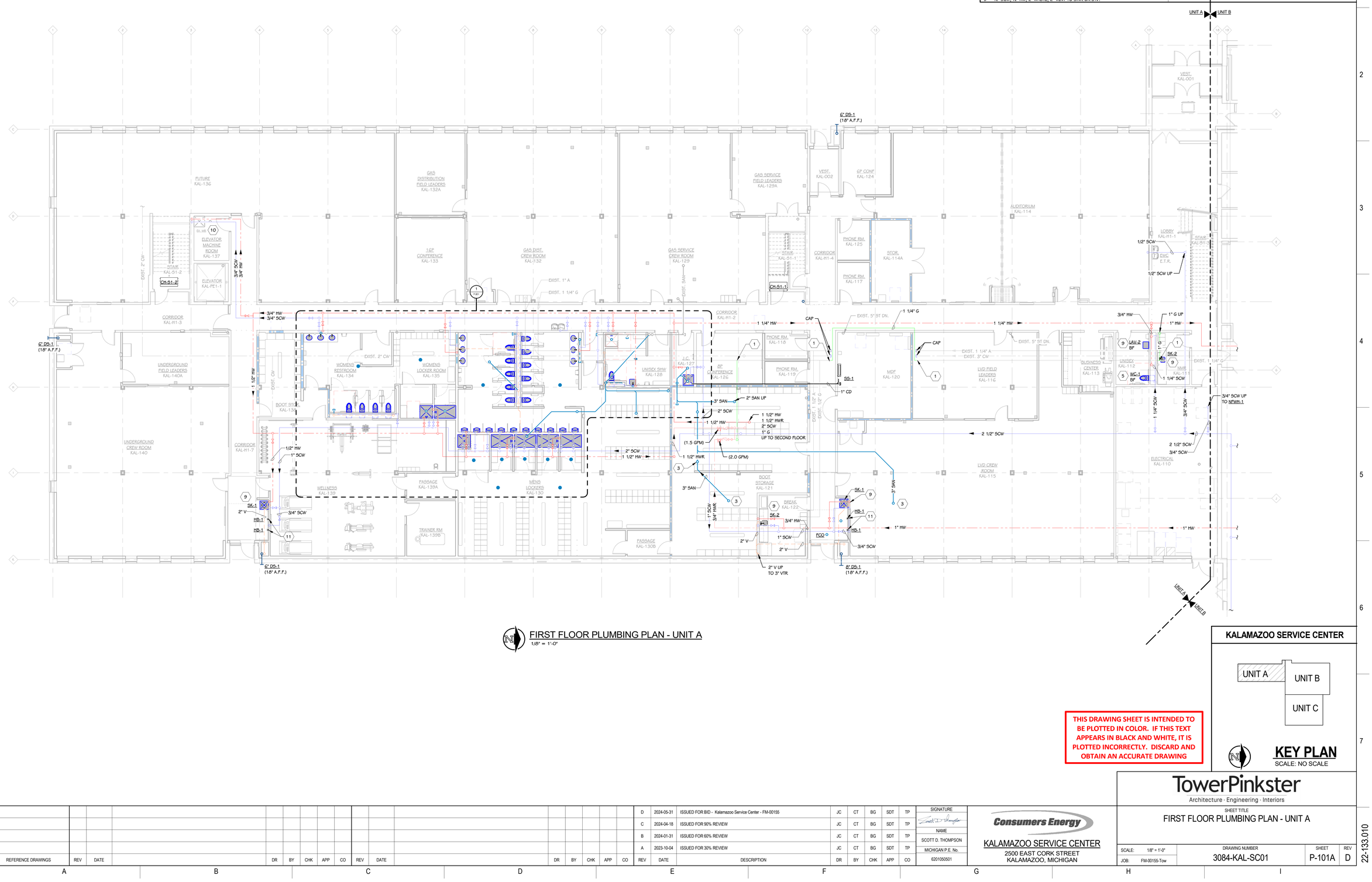
KEYED NOTES - PLUMBING - DOMESTIC		KEYED NOTES - PLUMBING - DOMESTIC	
1	NEW CONNECTION POINT.	10	3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.
2	3" SAN UP TO 2" SAN ABOVE SLAB	11	HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.
3	3" SAN UP	12	½" SCW TO EWC.
4	4" SAN STACK UP	14	RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.
5	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.	15	3/4" SCW TO EXISTING WC.
6	3" SAN UP TO 1 1/2" V ABOVE SLAB	16	1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 12K STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.
7	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.	17	ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.
8	1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.		
9	½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.		



FIRST FLOOR PLUMBING PLAN - UNIT A

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER

KEY PLAN
SCALE: NO SCALE

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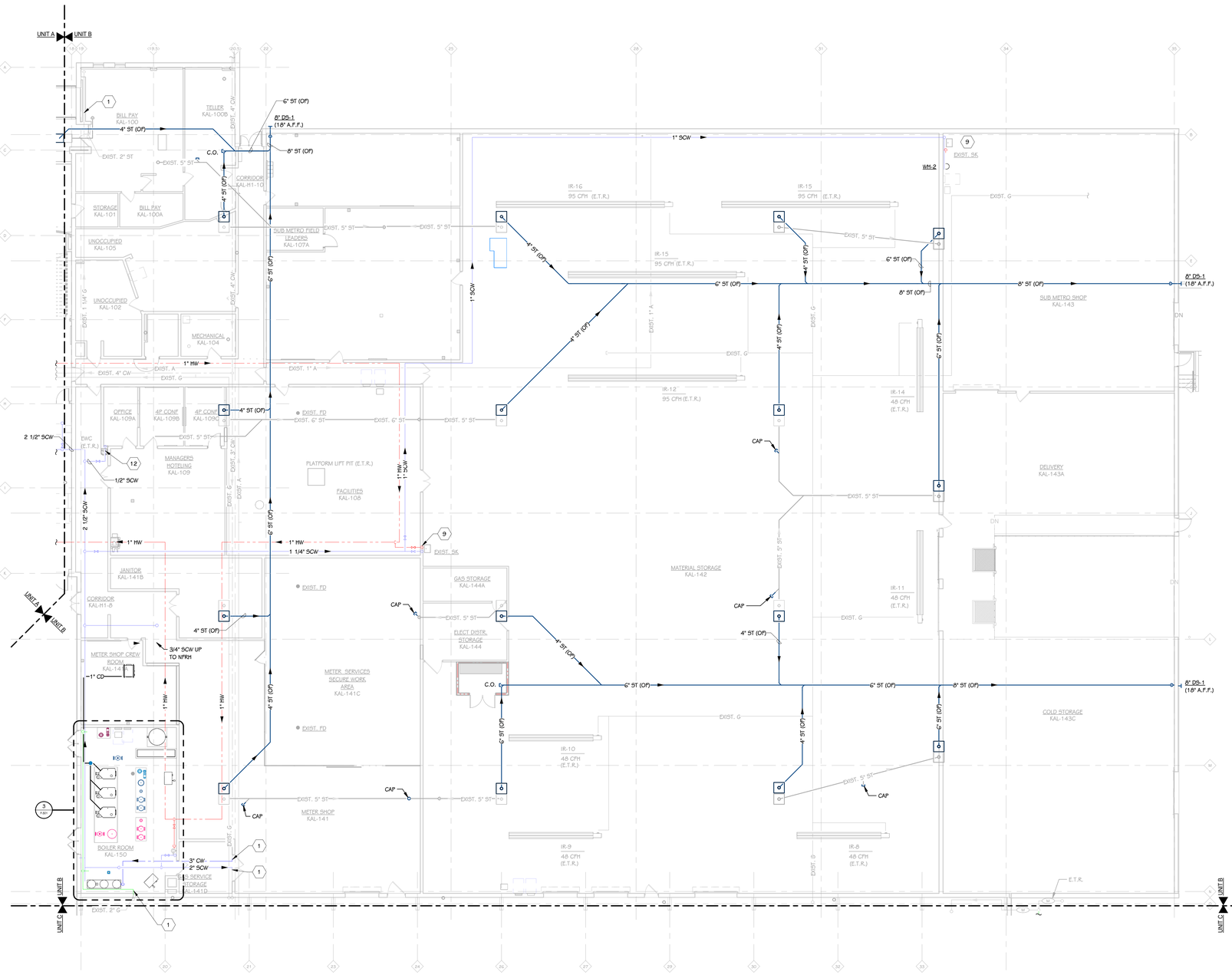
SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	P-101A	D

22-133.010



FIRST FLOOR PLUMBING PLAN - UNIT B
3/32" = 1'-0"

KEYED NOTES - PLUMBING - DOMESTIC

1 NEW CONNECTION POINT.

2 3" SAN UP TO 2" SAN ABOVE SLAB

3 3" SAN UP

4 4" SAN STACK UP

5 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.

6 3" SAN UP TO 1 1/2" V ABOVE SLAB

7 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.

8 1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.

9 ½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.

10 3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.

11 HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.

12 ½" SCW TO EWC.

14 RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.

15 3/4" SCW TO EXISTING WC.

16 1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 12K STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.

17 ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.

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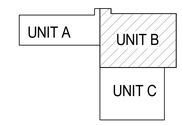
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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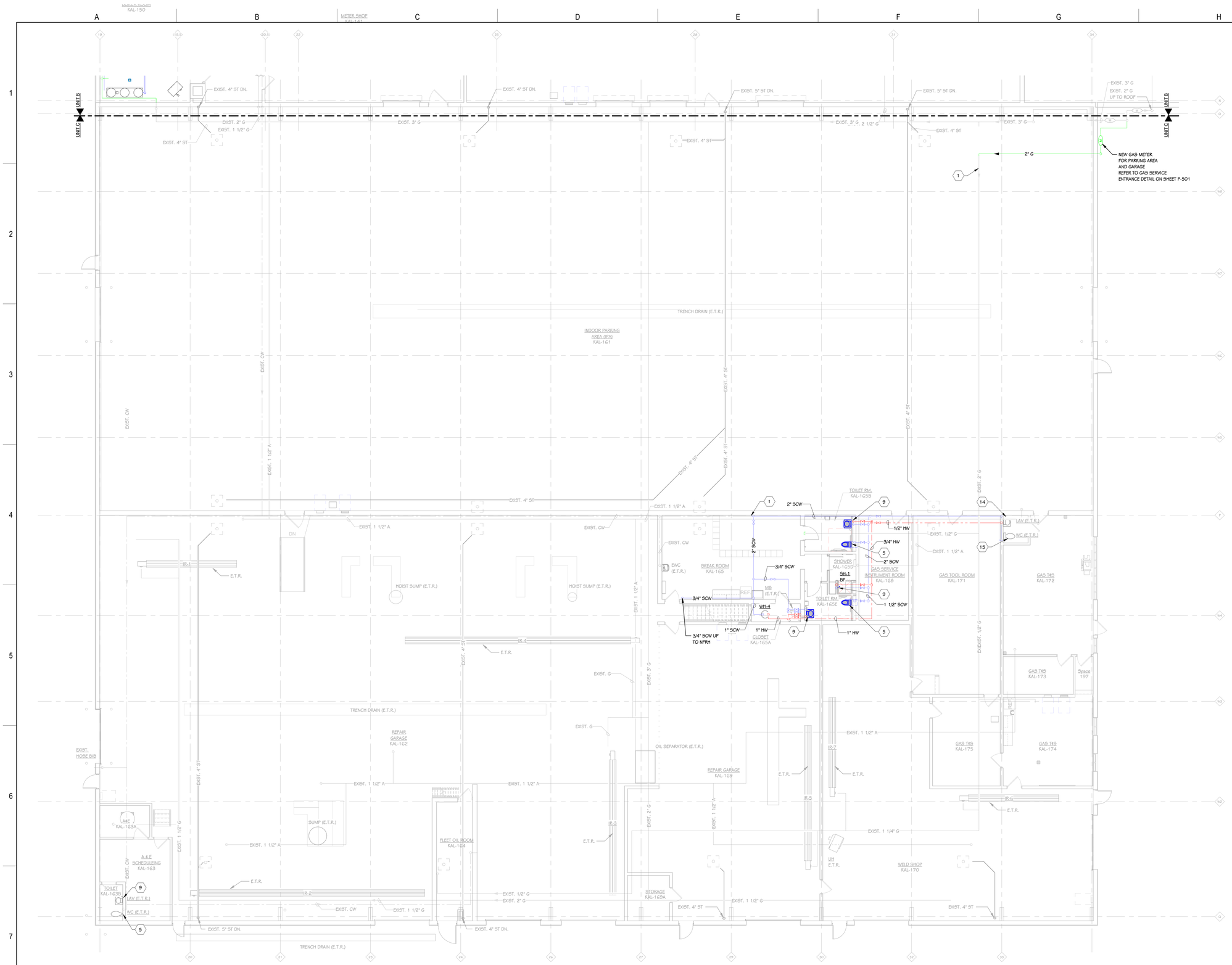
SHEET TITLE: FIRST FLOOR PLUMBING PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-101B
REV: D

22-133.010



KEYED NOTES - PLUMBING - DOMESTIC

1 NEW CONNECTION POINT.

2 3" SAN UP TO 2" SAN ABOVE SLAB

3 3" SAN UP

4 4" SAN STACK UP

5 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.

6 3" SAN UP TO 1 1/2" V ABOVE SLAB

7 1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.

8 1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.

9 ½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.

10 3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.

11 HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.

12 ½" SCW TO EWC.

14 RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.

15 3/4" SCW TO EXISTING WC.

16 1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 12K STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.

17 ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.

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KALAMAZOO SERVICE CENTER

UNIT A
UNIT B
UNIT C

KEY PLAN
SCALE: NO SCALE

FIRST FLOOR PLUMBING PLAN - UNIT C
1/8" = 1'-0"

REV	DATE	DESCRIPTION	JC	CT	BG	SDT	TP
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS | REV | DATE | DR | BY | CHK | APP | CO

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-101C
REV: D

22-133.010

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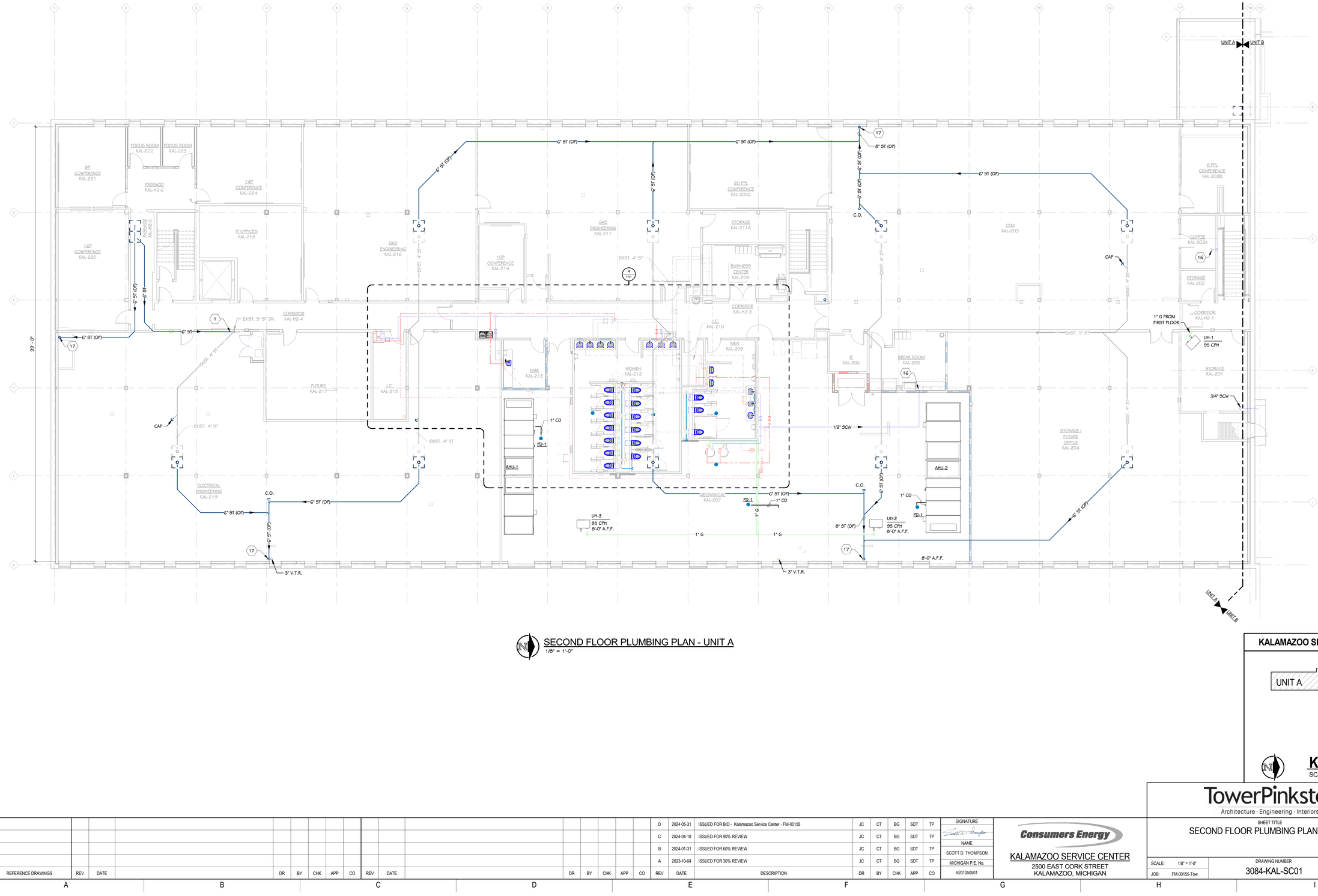
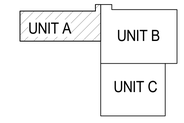
KEYED NOTES - PLUMBING - DOMESTIC		KEYED NOTES - PLUMBING - DOMESTIC	
1	NEW CONNECTION POINT.	10	3/4" SCW, 3/4" HW TO MOP BASIN, 3" WASTE, 2" VENT.
2	3" SAN UP TO 2" SAN ABOVE SLAB	11	HOSE BIB WITH THREADED END AND OPERABLE HANDLE MOUNTED AT 3'-6" A.F.F. AND 4'-0" ON CENTER ALONG WALL.
3	3" SAN UP	12	½" SCW TO EWC.
4	4" SAN STACK UP	14	RECONNECT ½" SCW, ½" HW, TO EXISTING LAV.
5	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.	15	3/4" SCW TO EXISTING WC.
6	3" SAN UP TO 1 1/2" V ABOVE SLAB	16	1/2" SCW TO WALL BOX FOR CONNECTIONS TO COFFEE MACHINE. WALL BOX TO BE OATEY 12K STYLE OR EQUIVALENT LOCATED BELOW COUNTER TOP. COORDINATE FINAL LOCATION WITH INTERIORS.
7	1" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.	17	ROUTE DOWN TO GRADE. TERMINATE WITH DOWNSPOUT LOCATED 18" A.G.
8	1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.		
9	½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.		



SECOND FLOOR PLUMBING PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-102A
REV: D

22-133.010

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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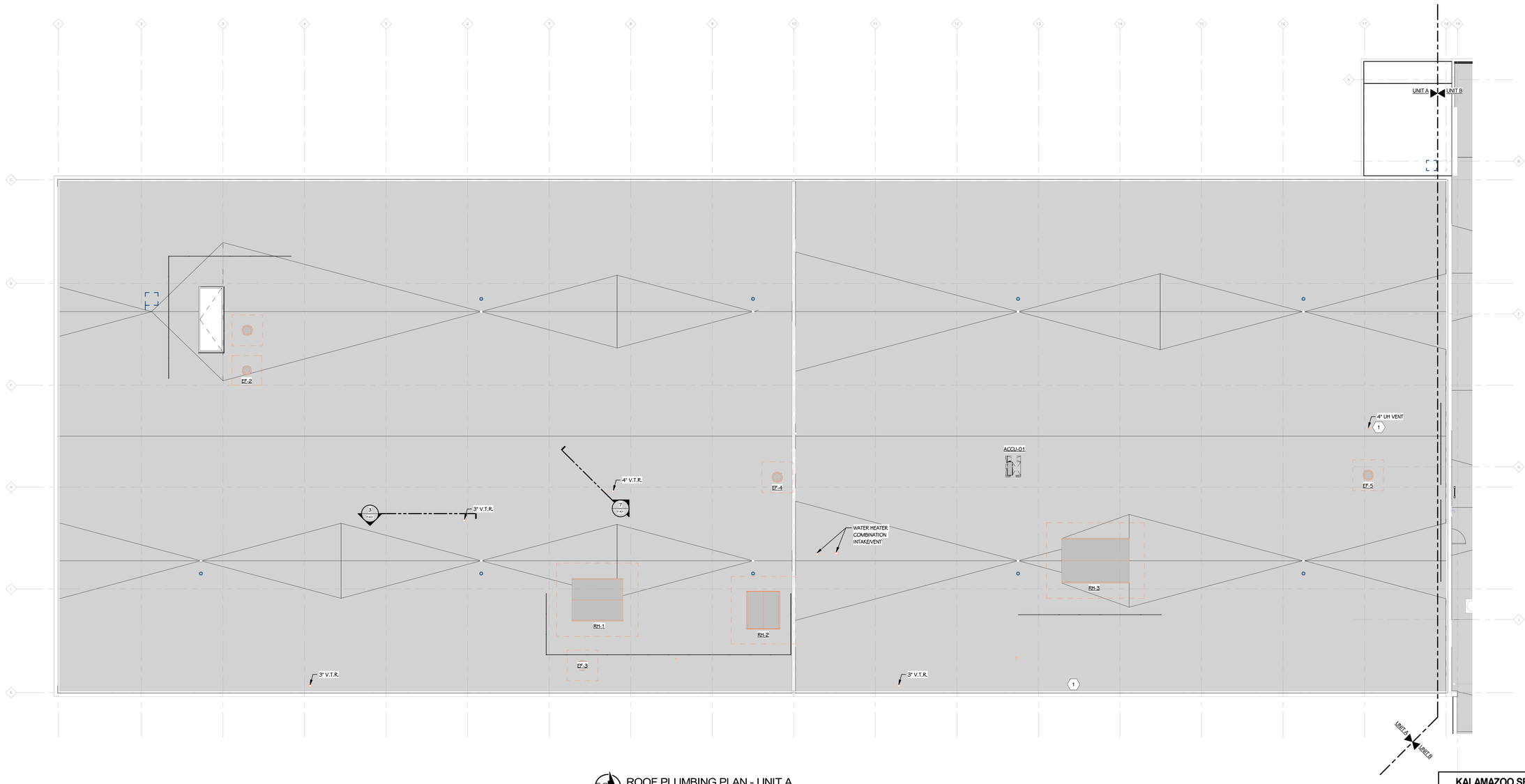
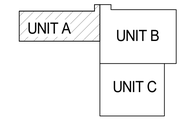


ROOF PLUMBING PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
ROOF PLUMBING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-103A
REV: A

22-133.010

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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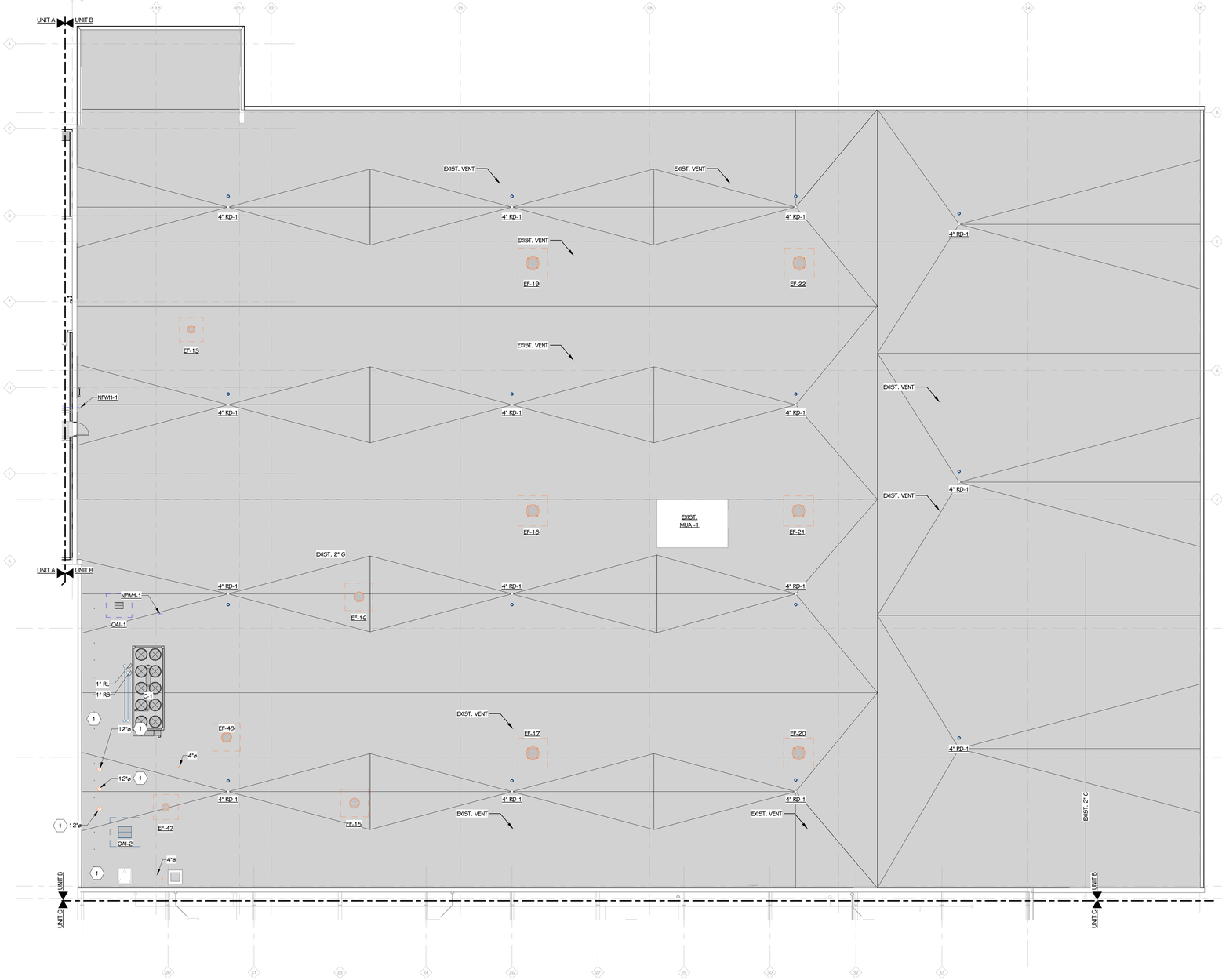

ROOF PLUMBING PLAN - UNIT B
3/32" = 1'-0"

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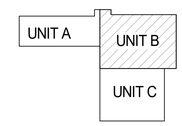
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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SHEET TITLE: ROOF PLUMBING PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-103B
REV: A

22-133.010

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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PLACE HOLDER
FOR 60" x 60" WEATHER HOOD

PLACE HOLDER
FOR 60" x 60" WEATHER HOOD

EF-36
EF-35
EF-33
EXIST. EF-37
EXIST. ACCU
EXIST. EF-31
EXIST. V.T.R.
NFWH-1
RTU-1
RTU-3
EXIST. EF-29
EXIST. V.T.R.
EXIST. V.T.R.
EXIST. V.T.R.
RTU-2
EF-24
EF-25
EF-26
EXIST. V.T.R.
EF-28
EXIST. V.T.R.
NFWH-1
EXIST. ACCU
EXIST. V.T.R.
EXIST. V.T.R.
EXIST. V.T.R.

ROOF PLUMBING PLAN - UNIT C
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

UNIT A
UNIT B
UNIT C

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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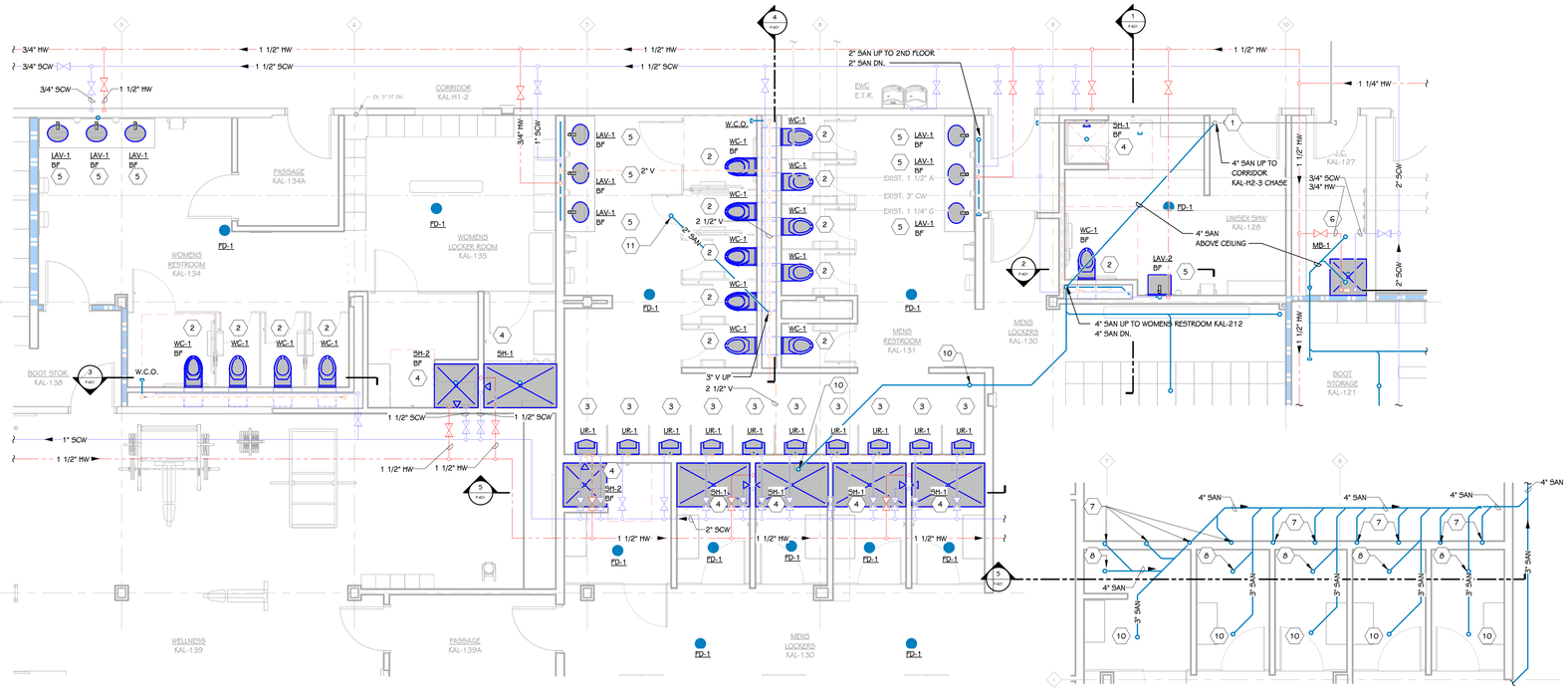
SHEET TITLE
ROOF PLUMBING PLAN - UNIT C

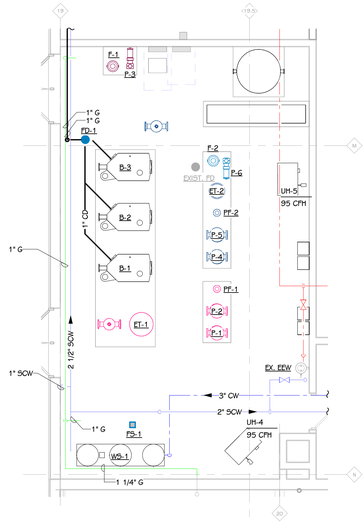
SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	P-103C	A

22-133.010



1 P-301 FIRST FLOOR LOCKERS RESTROOMS / SHOWERS
1/4" = 1'-0"

2 P-301 MENS RESTROOM - 121 - FOUNDATION
1/4" = 1'-0"



3 P-301 ENLARGED PLAN BOILER ROOM 150
3/16" = 1'-0"

KEYED NOTES - PLUMBING - ENLARGED

1 NEW CONNECTION POINT.

2 1 1/4" SCW, 4" WASTE DOWN, 2" VENT UP FROM WC.

3 1 1/4" SCW, 4" WASTE DOWN, 2" VENT UP FROM UR.

4 1" SCW, 3/4" HW, 3" WASTE DOWN, 2" VENT UP FROM SH.

5 ½" SCW, ½" HW, 2" WASTE, 2" VENT TO SINK OR LAV.

6 ¾" SCW, ¾" HW TO MOP BASIN, 3" WASTE, 1½ VENT.

7 4" SAN UP TO UR

8 3" SAN UP TO SHW

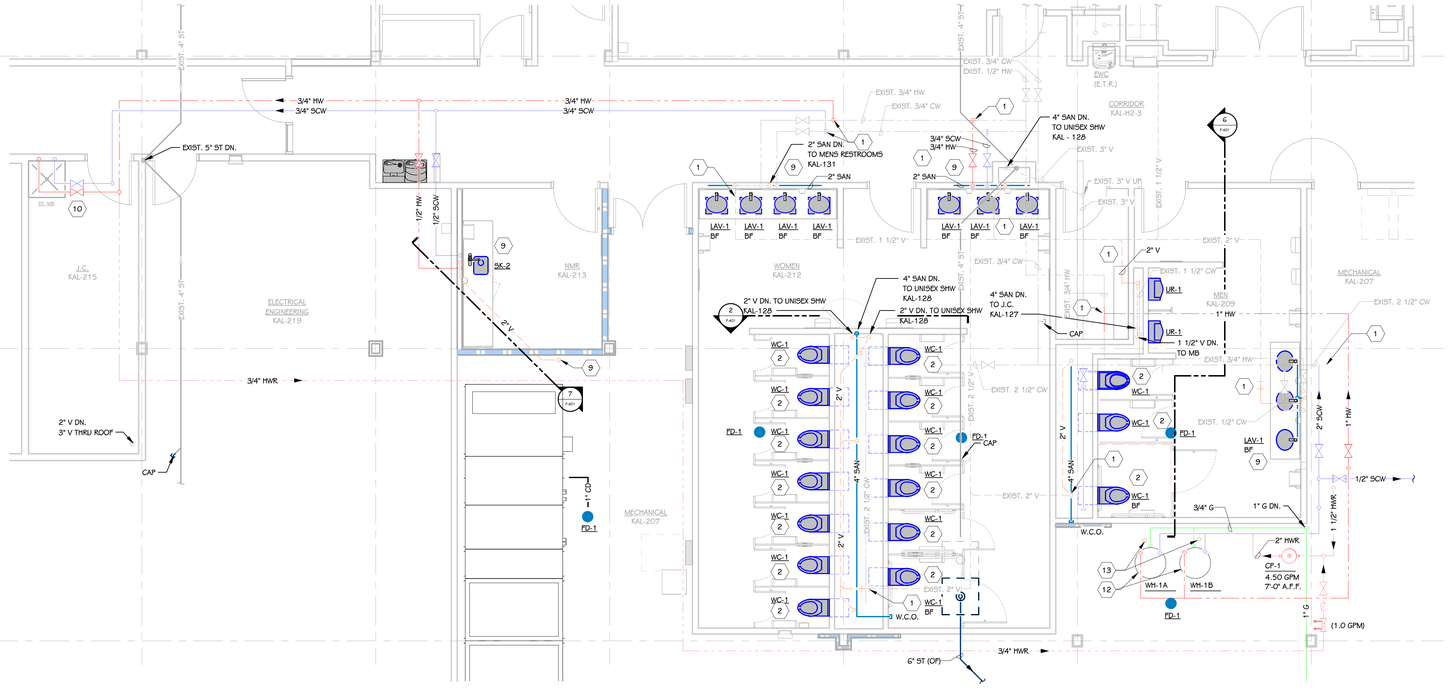
9 3" SAN STACK, 4" V.T.R.

10 3" SAN UP TO FD/FS

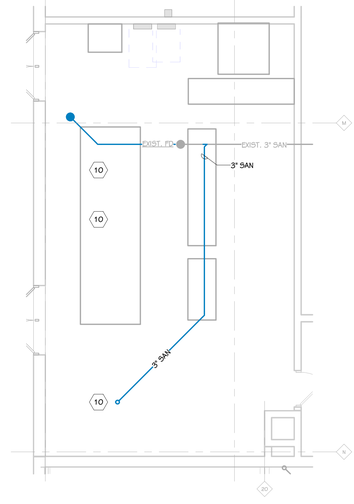
11 2" SAN UP TO SINK

12 1 1/4" SCW, 1 1/4" HW, 3/4" G

13 4" V.T.R. REFER TO WATER HEATER DETAIL ON P-501 FOR VENTING



4 P-301 SECOND FLOOR RESTROOMS
1/4" = 1'-0"



5 P-301 ENLARGED PLAN BOILER ROOM 150 - FOUNDATION
3/16" = 1'-0"

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED PLUMBING PLANS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-301
REV: D

22-133.010

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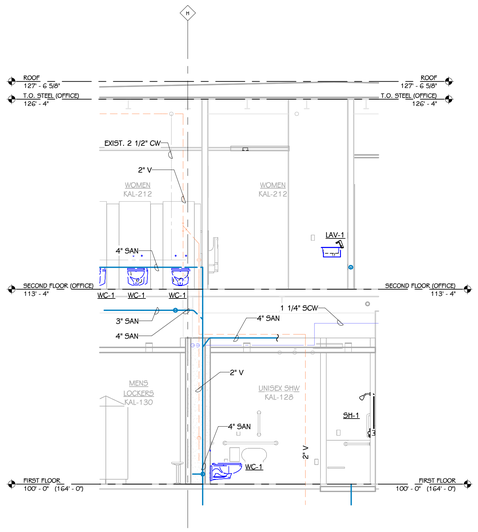
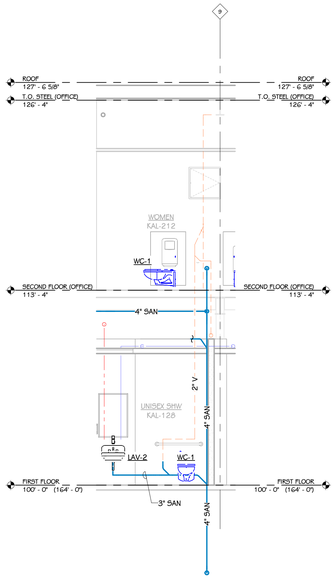
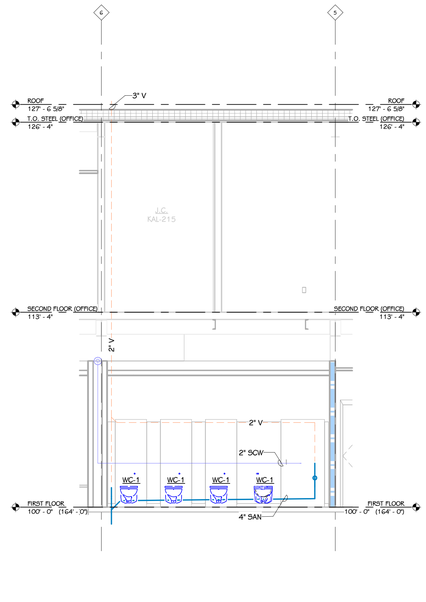


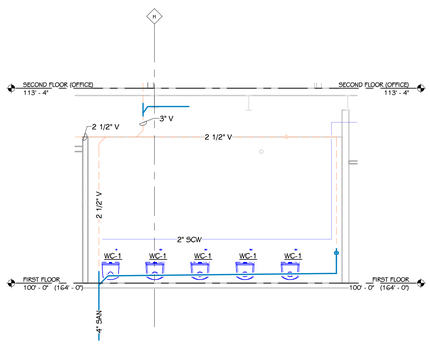
1 P-401 UNISEX SHW - 122 RELIEF VENT
1/4" = 1'-0"



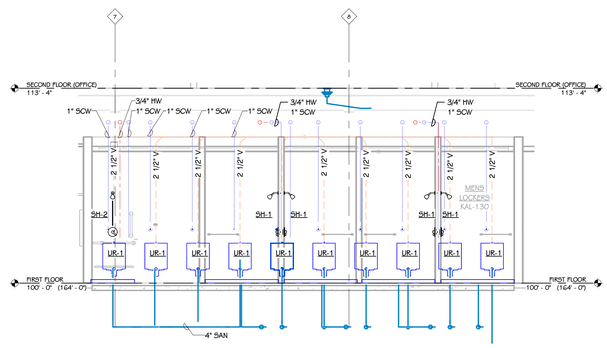
2 P-401 UNISEX SHW - 122 CHASE
1/4" = 1'-0"



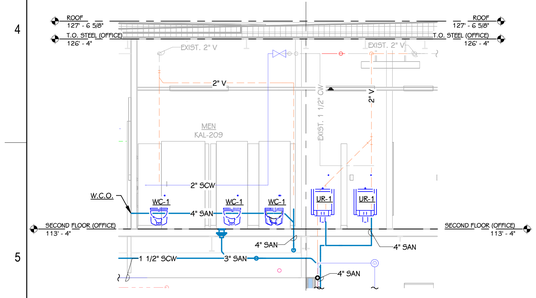
3 P-401 WOMENS RESTROOM -118 CHASE
1/4" = 1'-0"



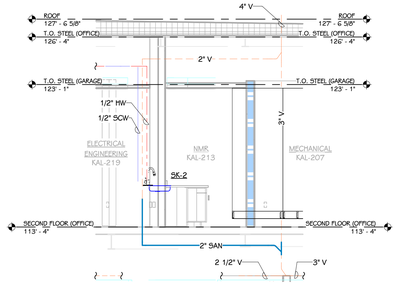
4 P-401 MENS RESTROOM - 121 CHASE
1/4" = 1'-0"



5 P-401 MENS RESTROOM - 121 SHW/UR WALL
1/4" = 1'-0"



6 P-401 SECOND FLOOR MENS ROOM CHASE
1/4" = 1'-0"



7 P-401 NMR - 222 - RISER
1/4" = 1'-0"

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
PLUMBING RISER DIAGRAMS

SCALE: 1/4" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-401
REV: D

22-133.010

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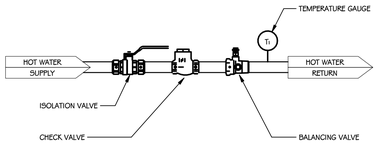
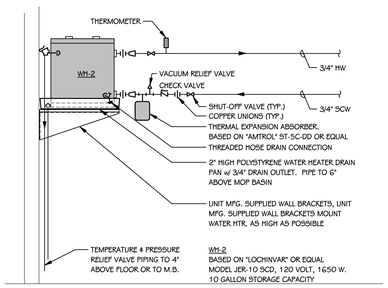
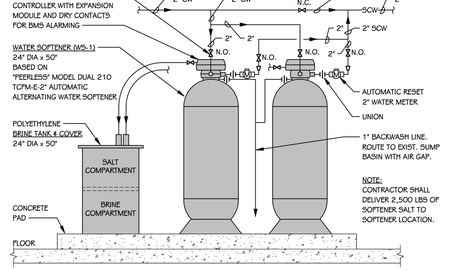


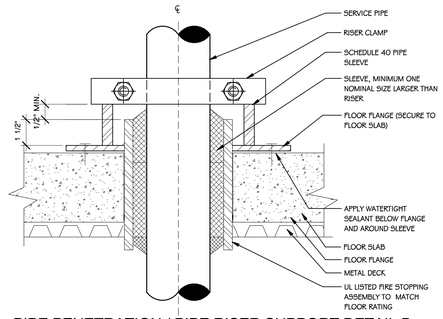
BALANCING VALVE ASSEMBLY DETAIL
SCALE: NONE



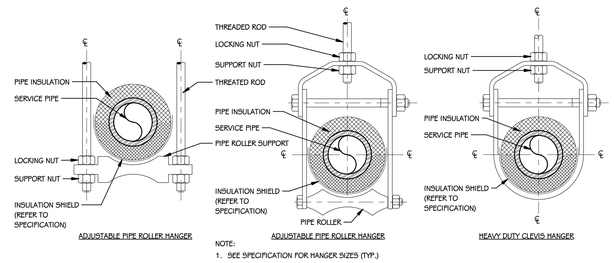
SHELF MOUNTED ELECTRIC WATER HEATER DETAIL (WH-2)
SCALE: NONE



WATER SOFTENER DETAIL - DUPLEX
SCALE: NONE

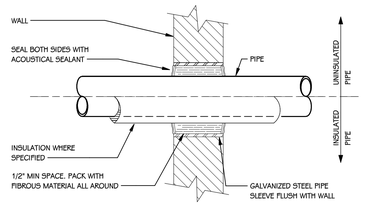


PIPE PENETRATION / PIPE RISER SUPPORT DETAIL B
SCALE: NONE



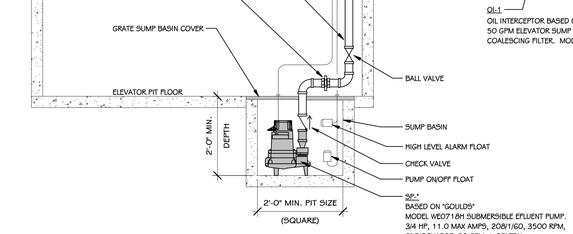
NOTE:
1. SEE SPECIFICATION FOR HANGER SIZES (TYP.)

PIPE HANGER SUPPORT DETAIL A
SCALE: NONE

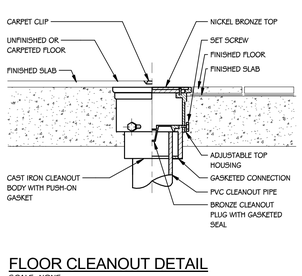


NOTE
1. WHERE PIPING IS EXPOSED TO VIEW PROVIDE WITH ESCUTCHEON.
2. FOR RATED WALLS REFER TO FIRE STOP SPECIFICATIONS.

PENETRATION NOT RATED DETAIL
SCALE: NONE



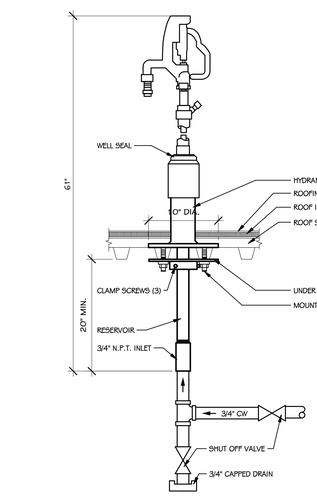
ELEVATOR SUMP PUMP (SP-1) DETAIL - OIL INTERCEPTOR ABOVE GROUND
SCALE: NONE



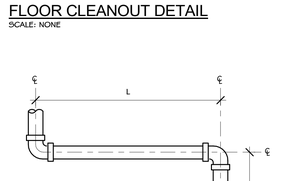
PIPING SLEEVE DETAIL - HORIZONTAL UNDERGROUND
SCALE: NONE

WH-1 & WH-2
WATER HEATER BASED ON "LOCHINVAR" OR EQUAL, MODEL SWA150N, SHIELD GAS WATER HEATER, 96% EFF., 90 GALLON, 150,000 BTUH INPUT, 175 GPH @ 100°F RISE, 1/2" GAS CONNECTION, 1-1/2" WATER CONNECTIONS. 3" VENTS THROUGH ROOF PER MANUFACTURERS RECOMMENDATIONS WITH CONCENTRIC KIT, INCLUDE WITH CONDENSATE NEUTRALIZATION KIT. ELECTRICAL = 115/1/60.

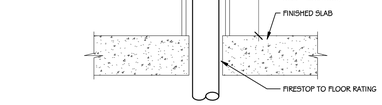
WATER HEATER DETAIL (1A AND 1B) - DOMESTIC
SCALE: NONE



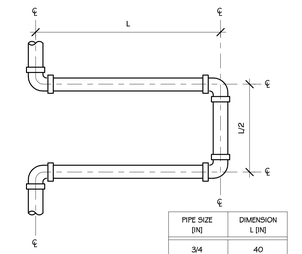
ROOF HYDRANT DETAIL
SCALE: NONE



FLOOR CLEANOUT DETAIL
SCALE: NONE

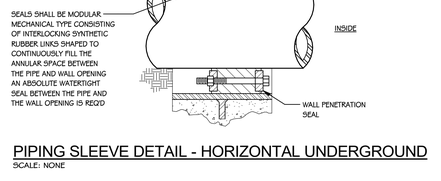


WALL CLEANOUT DETAIL
SCALE: NONE

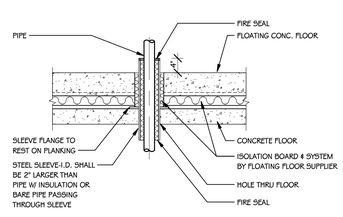


NOTES:
1. LOOP LENGTH DESIGNED FOR A MAXIMUM LINEAL EXPANSION OF 1 1/2"
2. MAXIMUM DISTANCE BETWEEN ANCHORS SHALL BE 100'

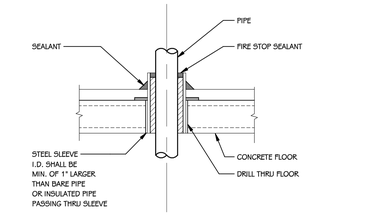
DOMESTIC HOT WATER EXPANSION LOOP DETAIL
SCALE: NONE



PIPING SLEEVE DETAIL - INTERIOR WALL
SCALE: NONE



PIPING SLEEVE DETAIL - FLOATING FLOOR
SCALE: NONE



PIPING SLEEVE DETAIL - THRU FLOOR
SCALE: NONE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
PLUMBING SCHEDULES AND DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-501
REV: D

22-133.010

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PLUMBING FIXTURE SCHEDULE

TAG	BASIS OF DESIGN	TYPE	FINISH	ADA	TS	ACCESSORY	REMARKS
LAV-1	KOHLER - CAXTON 17" OVAL	UNDERMOUNT SINK	WHITE	YES	-	F-1	
LAV-2	KOHLER - SOHO 20"X18"	WALL MOUNTED	WHITE	YES	-	F-1	
MB-1	MUSTEE - 63M	30" x 30" DURASTONE	WHITE	NO	-	F-4	1
SH-1	ZURN AQUA-PANEL Z7500	FLAT WALL MOUNTED KIT	STAINLESS STEEL	NO	-	-	2
SH-2	ZURN AQUA-PANEL Z7500-DV-HW	SHOWER KIT WITH SLIDE BAR, BF	STAINLESS STEEL	YES	-	-	2
SI-1	JAY R. SMITH	SAND INTERCEPTOR			-	-	
SK-1	MUSTEE 19CF UTILATUB	FLOOR MOUNTED	WHITE	YES	-	F-2	
SK-2	KOHLER - VERTICYL 20"x16"	RECTANGULAR UNDERMOUNT	WHITE	YES	-	F-3	
UR-1	ZURN "THE RETROFIT PINT"	WALL MOUNTED, TOP SPUD	WHITE	NO	-	FV-2	
WC-1	KOHLER - KINGSTON	WALL MOUNTED, TOP SPUD	WHITE	YES	TS-1	FV-1	

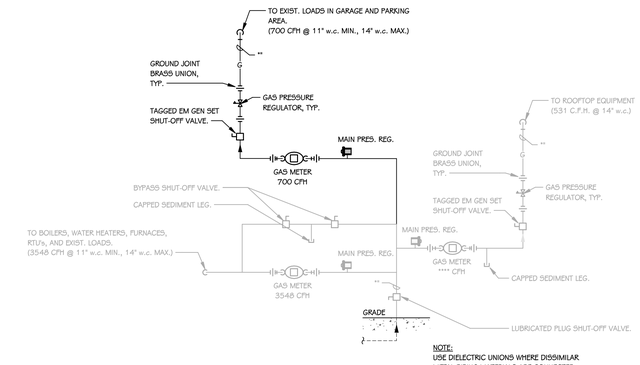
NOTES:
1. PROVIDE WITH HOSE AND HOSE HOLDER, MOP HANGER, BUMPER GUARDS, AND WALL GUARDS.
2. 1.25 GPM SHOWER HEAD FLOW CONTROL

PLUMBING FIXTURE ACCESSORY SCHEDULE

TAG	BASIS-OF-DESIGN	TYPE	FINISH	GPM	TMV	OPERATION	REMARKS
F-1	SLOAN - "OPTIMA" - EAF300 HARDWIRED	DECK MOUNTED	CHROME	0.35	YES	AUTOMATIC	
F-2	KOHLER "TRITON BOWE" - K-6107T20-5AMA	DECK MOUNTED, 2-HANDLE, WRISTBLADES	CHROME	1.5	YES	MANUAL	
F-3	KOHLER "TRITON BOWE" - K-8007T70-4AKL	DECK MOUNTED, GOOSENECK, 2-HANDLE, LEVERS	CHROME	0.5	YES	MANUAL	
F-4	KOHLER "TRITON BOWE" - K-8377T60-4A	WALL MOUNTED SERVICE FAUCET	CHROME	1.5	YES	MANUAL	
FV-1	SLOAN ROYAL 111 SFSM-1.28-TMO-LT	EXPOSED, TOP SPUD,1.28 GAL	CHROME	1.28	-	AUTOMATIC	
FV-2	SLOAN ROYAL 186 SFSM-0.125-TMO-LT	EXPOSED, TOP SPUD, 0.13 GAL	CHROME	0.125	-	AUTOMATIC	
TS-1	CENTOCO 500STSCC	ELONGATED, CLOSED BACK, OPEN FRONT	WHITE	-	-	MANUAL	

NATURAL GAS LOAD SCHEDULE - TOTAL BUILDING

LOCATION	MARK	CFH	PRESS. RANGE (IN. W.C.)	PHASE CREATED	REMARKS
BOILER ROOM 150	B-1	786	4"-14"	NEW CONSTRUCTION	
BOILER ROOM 150	B-2	786	4"-14"	NEW CONSTRUCTION	
BOILER ROOM 150	B-3	786	4"-14"	NEW CONSTRUCTION	
BOILER ROOM 150	UH-4	95	7"-14"	NEW CONSTRUCTION	1
BOILER ROOM 150	UH-5	95	7"-14"	NEW CONSTRUCTION	1
GARAGE 162	IR-1	48	7"-14"	EXISTING	
GARAGE 162	IR-2	119	7"-14"	EXISTING	
GARAGE 162	IR-3	95	7"-14"	EXISTING	
GARAGE 162	IR-4	95	7"-14"	EXISTING	
GARAGE 162	IR-5	95	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-10	48	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-11	48	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-12	95	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-13	95	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-14	48	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-15	95	7"-14"	EXISTING	
MATERIAL STORAGE 142	IR-16	95	7"-14"	EXISTING	
MECHANICAL ROOM 207	UH-2	95	7"-14"	NEW CONSTRUCTION	1
MECHANICAL ROOM 207	UH-3	95	7"-14"	NEW CONSTRUCTION	1
MECHANICAL ROOM 207	WH-1A	143	4"-14"	NEW CONSTRUCTION	
MECHANICAL ROOM 207	WH-1B	143	4"-14"	NEW CONSTRUCTION	
STORAGE 201	UH-1	95	7"-14"	NEW CONSTRUCTION	1
UNIT C ROOF	RTU-1	235	7"-14"	NEW CONSTRUCTION	
UNIT C ROOF	RTU-2	235	7"-14"	NEW CONSTRUCTION	
UNIT C ROOF	RTU-3	116	7"-14"	NEW CONSTRUCTION	
WELD SHOP 170	EXIST. UH	48	7"-14"	EXISTING	
WELD SHOP 170	IR-6	48	7"-14"	EXISTING	
WELD SHOP 170	IR-7	48	7"-14"	EXISTING	
WELD SHOP 170	IR-8	48	7"-14"	EXISTING	
WELD SHOP 170	IR-9	48	7"-14"	EXISTING	
		4919			



GAS SERVICE PIPING DETAIL
SCALE: NONE

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SIGNATURE
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MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
PLUMBING SCHEDULES AND DETAILS

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: P-502
REV: D

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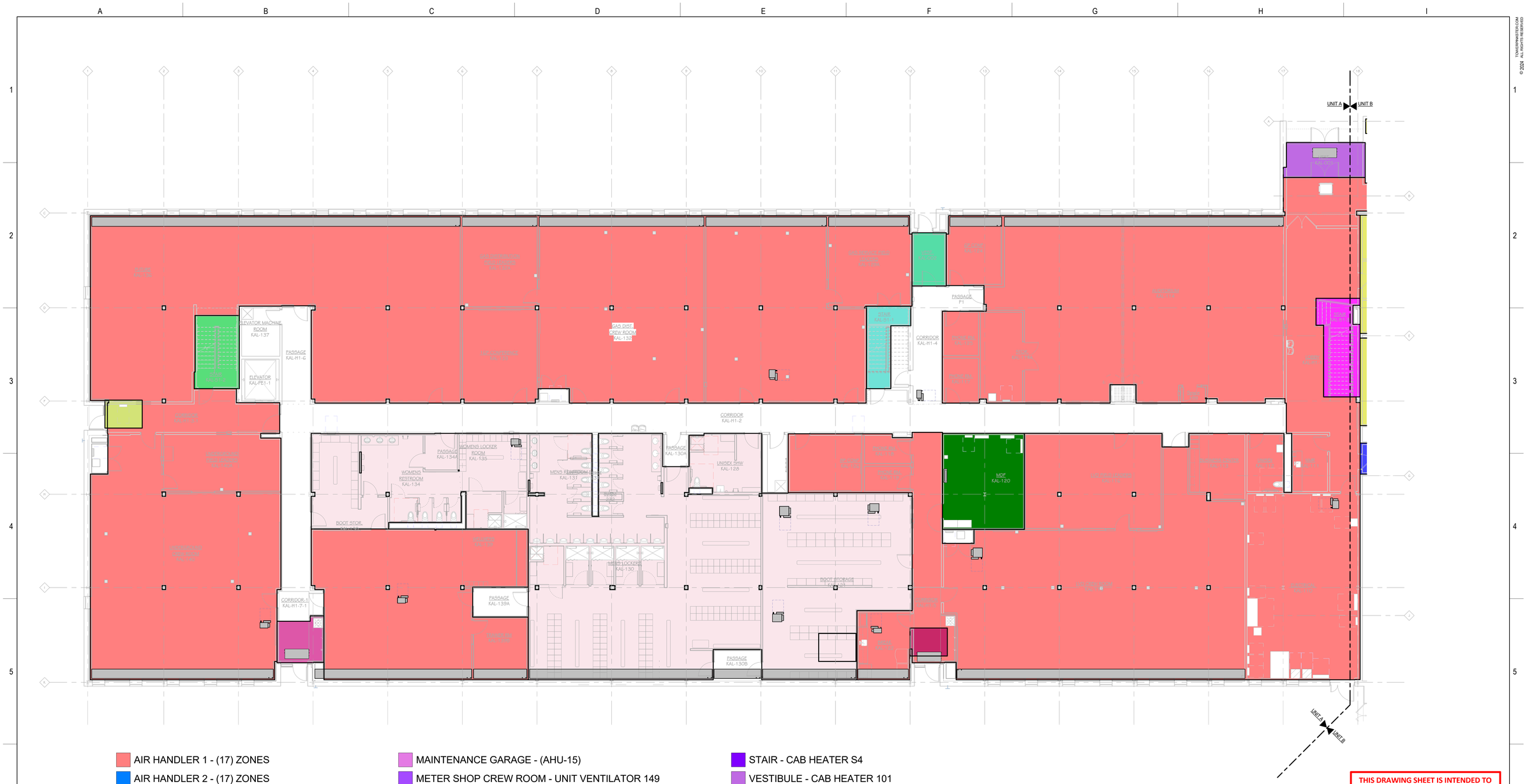
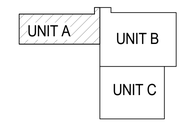


- AIR HANDLER 1 - (17) ZONES
- AIR HANDLER 2 - (17) ZONES
- AIR HANDLER 3 - HEAT RECOVERY UNIT - LOCKER ROOM - (5) ZONES
- AIR HANDLER 11 - 4 ZONES
- AIR HANDLER 13 - 2 ZONES
- AIR HANDLER 14 - 4 ZONES
- DEDICATED COOLING (MDF) - 5 TON MINI SPLIT
- INDOOR PARKING - (AHU-16)
- MAINTENANCE GARAGE - (AHU-15)
- METER SHOP CREW ROOM - UNIT VENTILATOR 149
- RTU-1
- RTU-2
- RTU-3
- SHOP - DOAS UNIT WITH IRH
- STAIR - CAB HEATER S1
- STAIR - CAB HEATER S2
- STAIR - CAB HEATER S3
- STAIR - CAB HEATER S4
- VESTIBULE - CAB HEATER 101
- VESTIBULE - CAB HEATER 107
- VESTIBULE - CAB HEATER C3
- VESTIBULE - CAB HEATER C4
- VESTIBULE - CAB HEATER C5

FIRST FLOOR HVAC ZONING PLAN - UNIT A
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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SHEET TITLE
FIRST FLOOR HVAC ZONING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MZ-101A
REV: D

22-133.010

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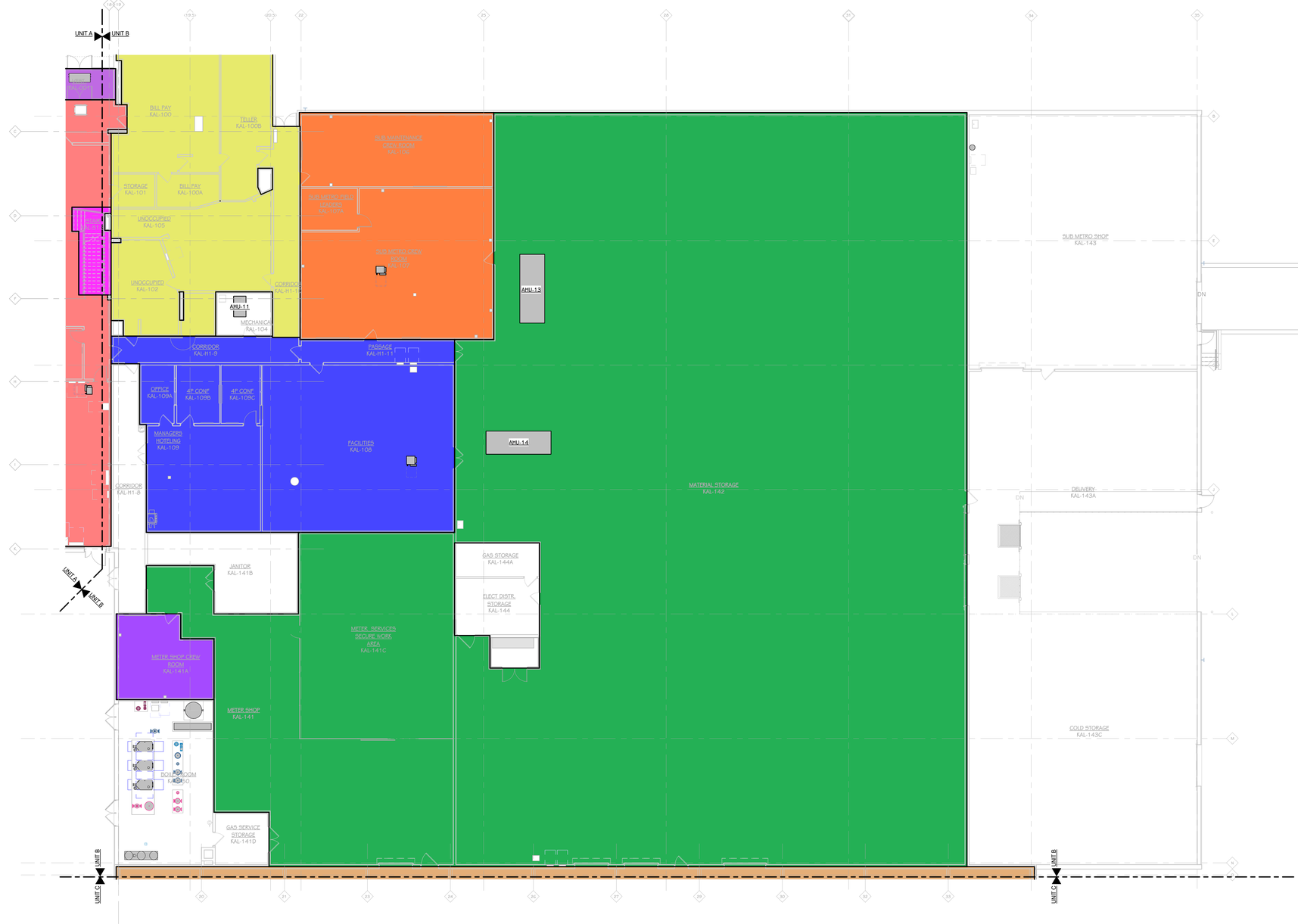

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- MAINTENANCE GARAGE - (AHU-15)
- METER SHOP CREW ROOM - UNIT VENTILATOR 149
- RTU-1
- RTU-2
- RTU-3
- SHOP - DOAS UNIT WITH IRH
- STAIR - CAB HEATER S1
- STAIR - CAB HEATER S2
- STAIR - CAB HEATER S3
- STAIR - CAB HEATER S4
- VESTIBULE - CAB HEATER 101
- VESTIBULE - CAB HEATER 107
- VESTIBULE - CAB HEATER C3
- VESTIBULE - CAB HEATER C4
- VESTIBULE - CAB HEATER C5

FIRST FLOOR HVAC ZONING PLAN - UNIT B
3/32" = 1'-0"

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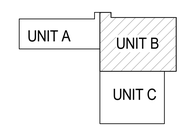
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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SHEET TITLE
FIRST FLOOR HVAC ZONING PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MZ-101B
REV: D

22-133.010

- AIR HANDLER 1 - (17) ZONES
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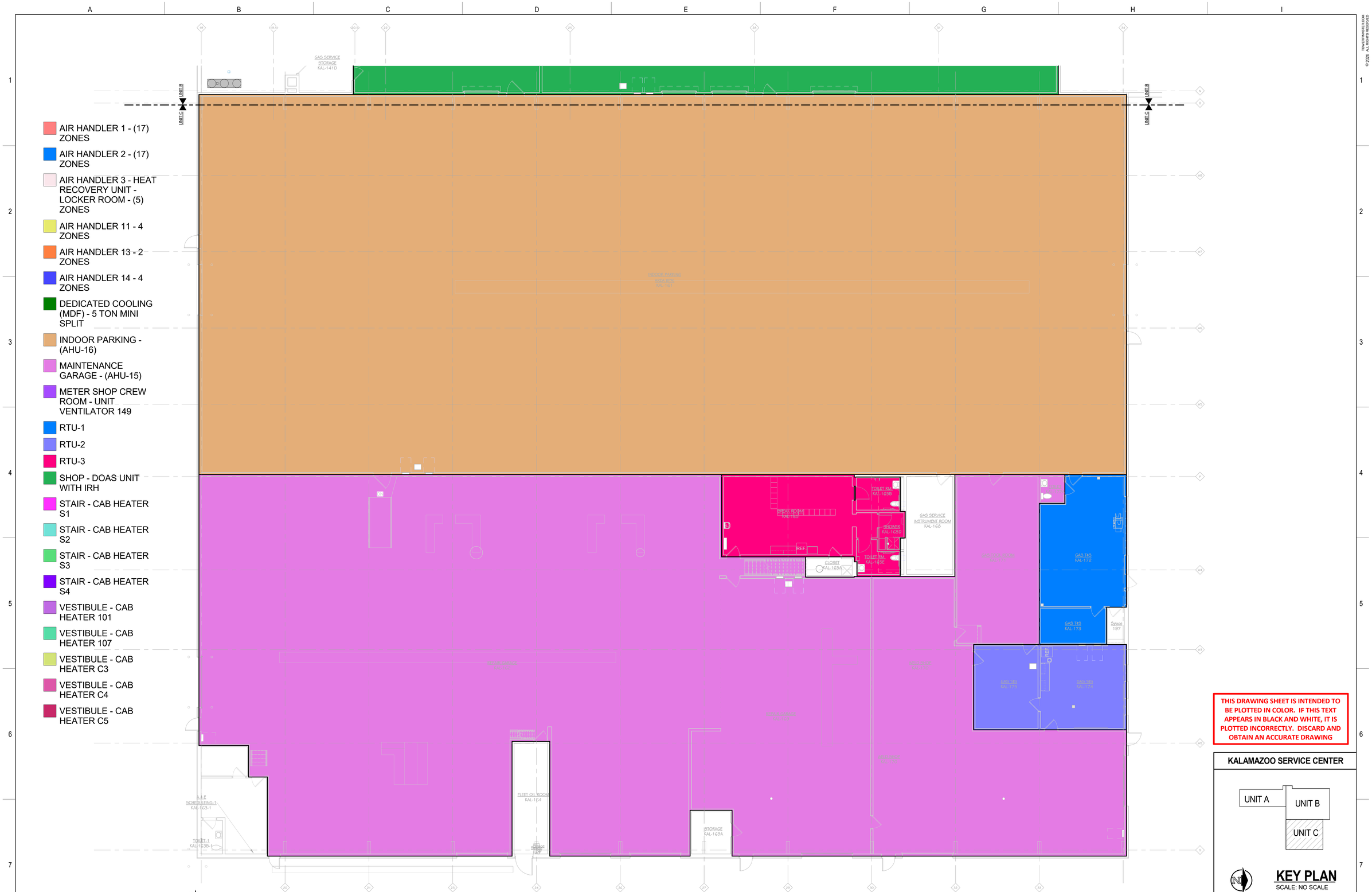
- VESTIBULE - CAB HEATER C4
- VESTIBULE - CAB HEATER C5



FIRST FLOOR HVAC ZONING PLAN - UNIT C
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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SHEET TITLE
FIRST FLOOR HVAC ZONING PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: MZ-101C
REV: D

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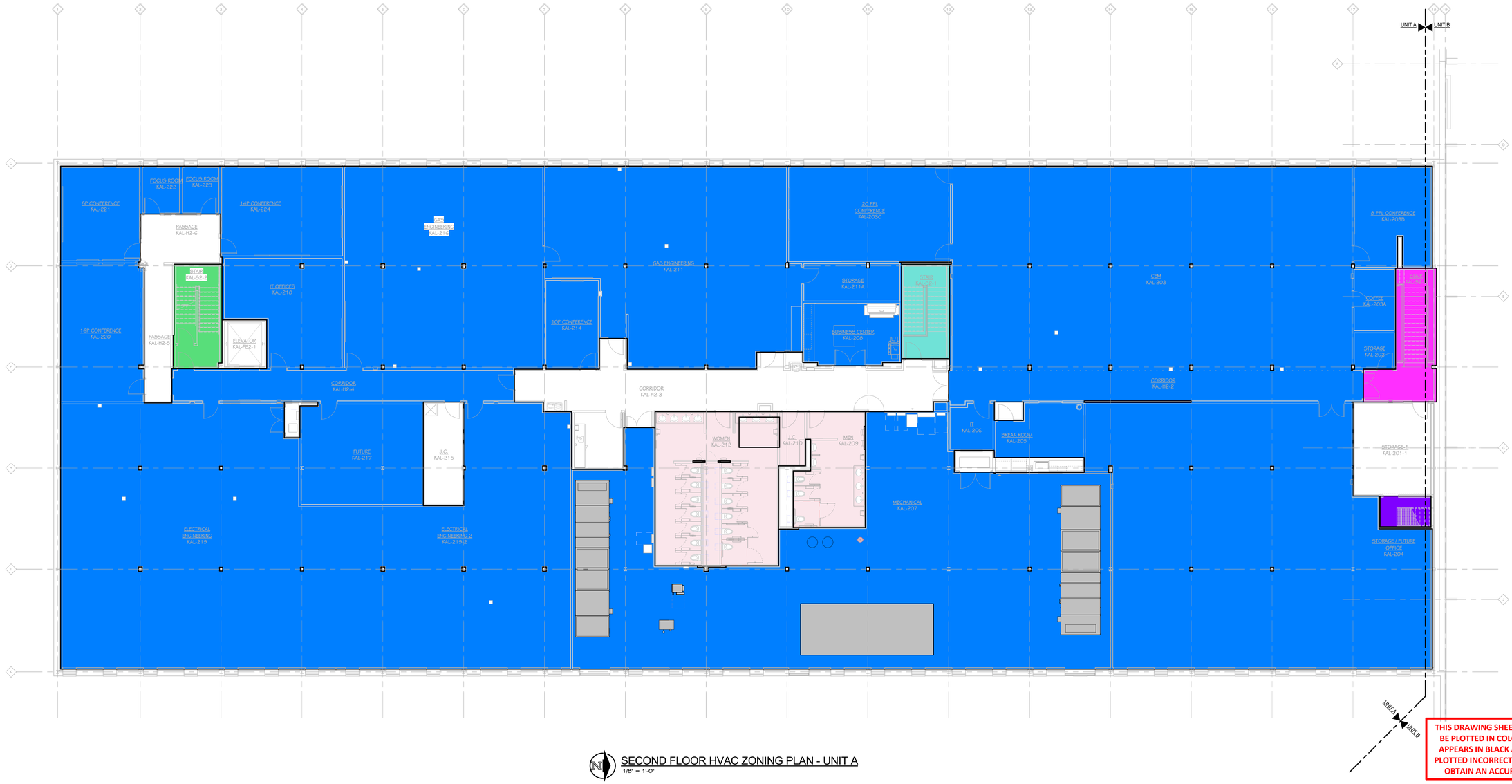

SECOND FLOOR HVAC ZONING PLAN - UNIT A
1/8" = 1'-0"

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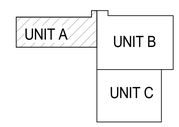
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SIGNATURE
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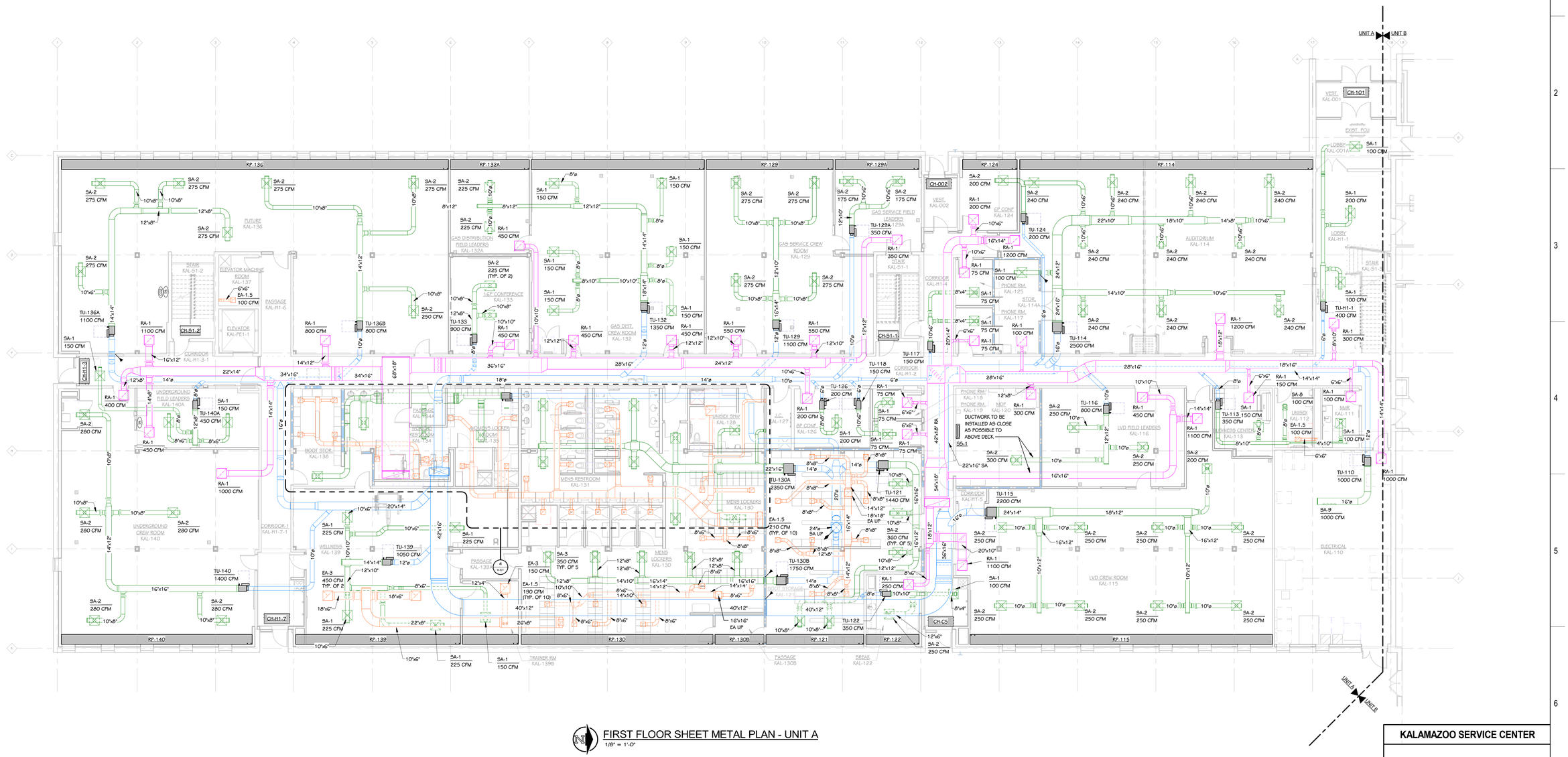
SHEET TITLE
SECOND FLOOR HVAC ZONING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	MZ-102A	D

22-133.010

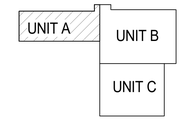
KEYED NOTES - MECHANICAL - SHEET METAL	
1	NEW CONNECTION POINT.
2	PROVIDE RAC, BASED ON PRICE, OR EQUIVALENT.
3	ROUTE TO ROOF HOOD
4	REFER TO AIR INTAKE LOUVER DETAIL
5	REFER TO UNIT HEATER DETAIL - GAS FIRED ON SHEET M 502.
6	ROUTE AND SIZE COMBUSTION AIR AND VENT DUCT PER MANUFACTURER'S RECOMMENDATION.

KEYED NOTES - MECHANICAL - SHEET METAL	
8	REFER TO MECHANICAL ROOM EXHAUST FAN DETAIL.
9	REFER TO ROOF EXHAUSTER - UPBLAST DETAIL.
10	MAINTAIN CLEARANCE ZONE IN FRONT OF AHU.
11	PROVIDE FIELD-FABRICATED 60"x60" DOUBLEWALL SHEET METAL PLENUM WITH BELLMOUTH TAKEOFFS AT UNIT DISCHARGE.
12	ENSURE 3 FEET OF STRAIGHT DUCT ON EITHER SIDE OF AIRFLOW MEASUREMENT STATION.



FIRST FLOOR SHEET METAL PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
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REFERENCE DRAWINGS

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SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-101A
REV: D

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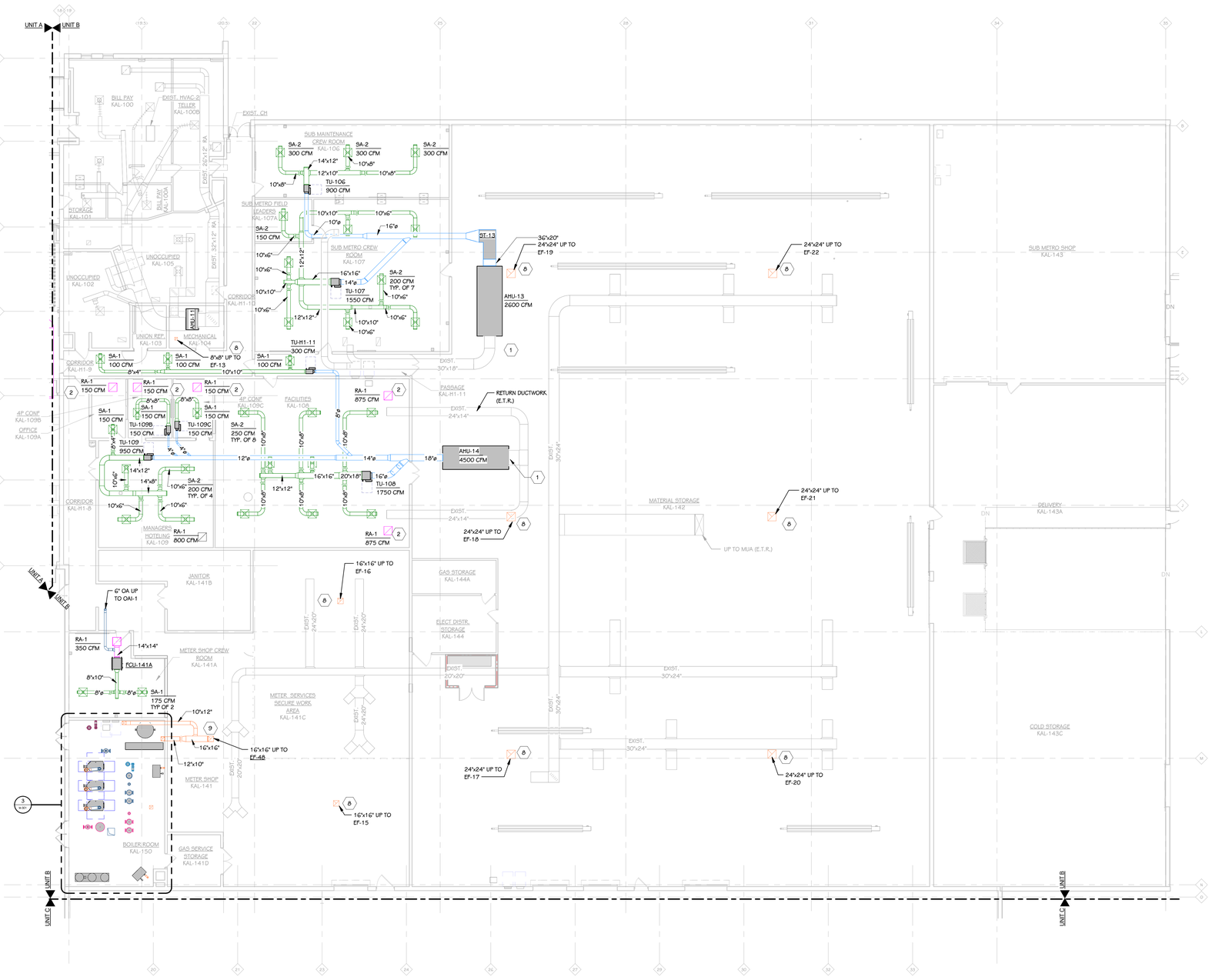

FIRST FLOOR SHEET METAL PLAN - UNIT B
3/32" = 1'-0"

KEYED NOTES - MECHANICAL - SHEET METAL

1 NEW CONNECTION POINT.

2 PROVIDE RAC, BASED ON PRICE, OR EQUIVALENT.

3 ROUTE TO ROOF HOOD

4 REFER TO AIR INTAKE LOUVER DETAIL

5 REFER TO UNIT HEATER DETAIL - GAS FIRED ON SHEET M 502.

6 ROUTE AND SIZE COMBUSTION AIR AND VENT DUCT PER MANUFACTURER'S RECOMMENDATION.

8 REFER TO MECHANICAL ROOM EXHAUST FAN DETAIL.

9 REFER TO ROOF EXHAUSTER - UPBLAST DETAIL.

10 MAINTAIN CLEARANCE ZONE IN FRONT OF AHU.

11 PROVIDE FIELD-FABRICATED 60"x60" DOUBLEWALL SHEET METAL PLENUM WITH BELLMOUTH TAKEOFFS AT UNIT DISCHARGE.

12 ENSURE 3 FEET OF STRAIGHT DUCT ON EITHER SIDE OF AIRFLOW MEASUREMENT STATION.

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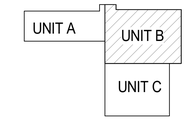

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

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SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-101B
REV: D

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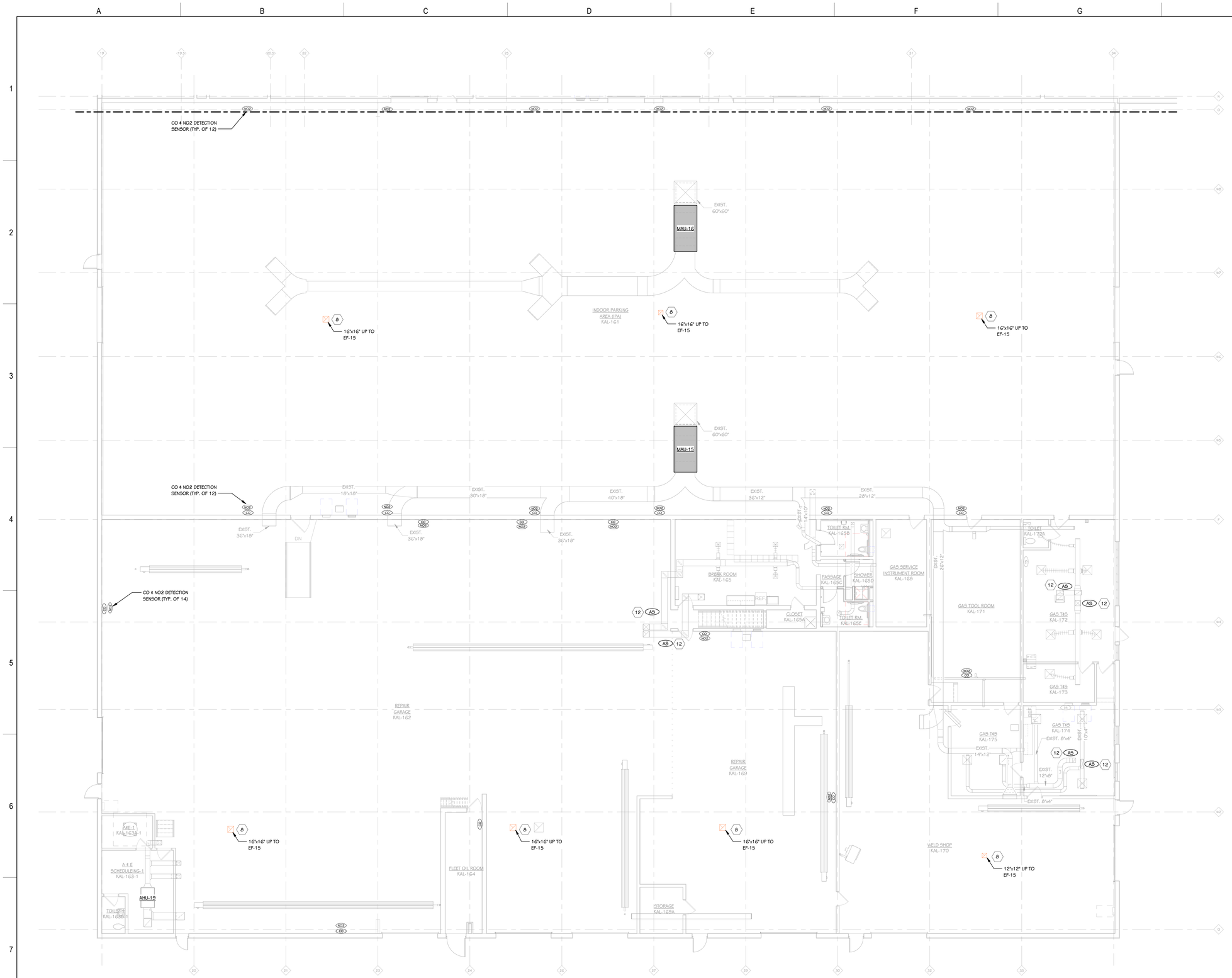

FIRST FLOOR SHEET METAL PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - SHEET METAL

1 NEW CONNECTION POINT.

2 PROVIDE RAC, BASED ON PRICE, OR EQUIVALENT.

3 ROUTE TO ROOF HOOD

4 REFER TO AIR INTAKE LOUVER DETAIL

5 REFER TO UNIT HEATER DETAIL - GAS FIRED ON SHEET M 502.

6 ROUTE AND SIZE COMBUSTION AIR AND VENT DUCT PER MANUFACTURER'S RECOMMENDATION.

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10 MAINTAIN CLEARANCE ZONE IN FRONT OF AHU.

11 PROVIDE FIELD-FABRICATED 60"x60" DOUBLEWALL SHEET METAL PLENUM WITH BELLMOUTH TAKEOFFS AT UNIT DISCHARGE.

12 ENSURE 3 FEET OF STRAIGHT DUCT ON EITHER SIDE OF AIRFLOW MEASUREMENT STATION.

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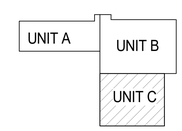

KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

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6201050501

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SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT C

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-101C	D

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KEYED NOTES - MECHANICAL - SHEET METAL

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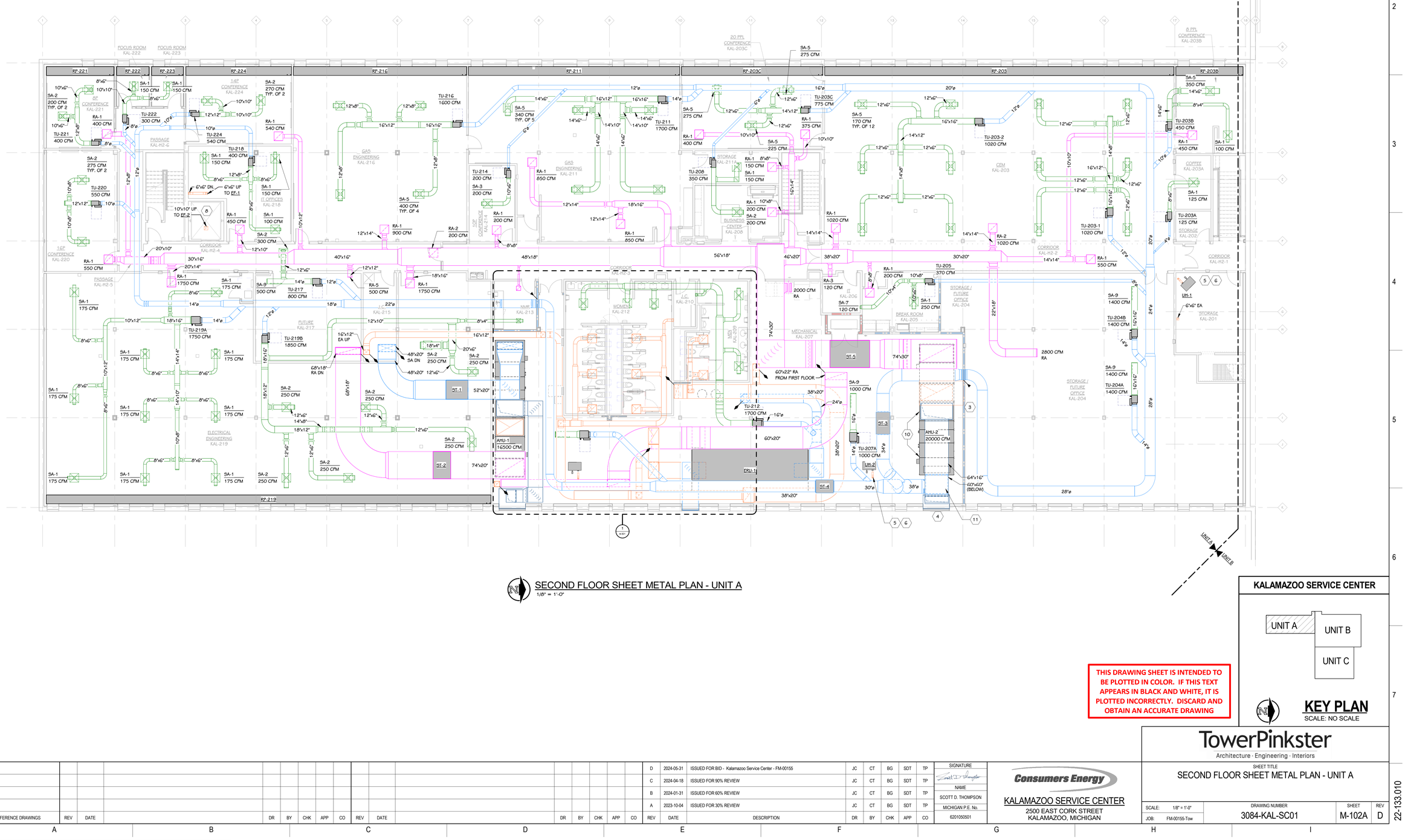
UNIT A | UNIT B



SECOND FLOOR SHEET METAL PLAN - UNIT A
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

KEY PLAN
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SHEET TITLE
SECOND FLOOR SHEET METAL PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-102A
REV: D

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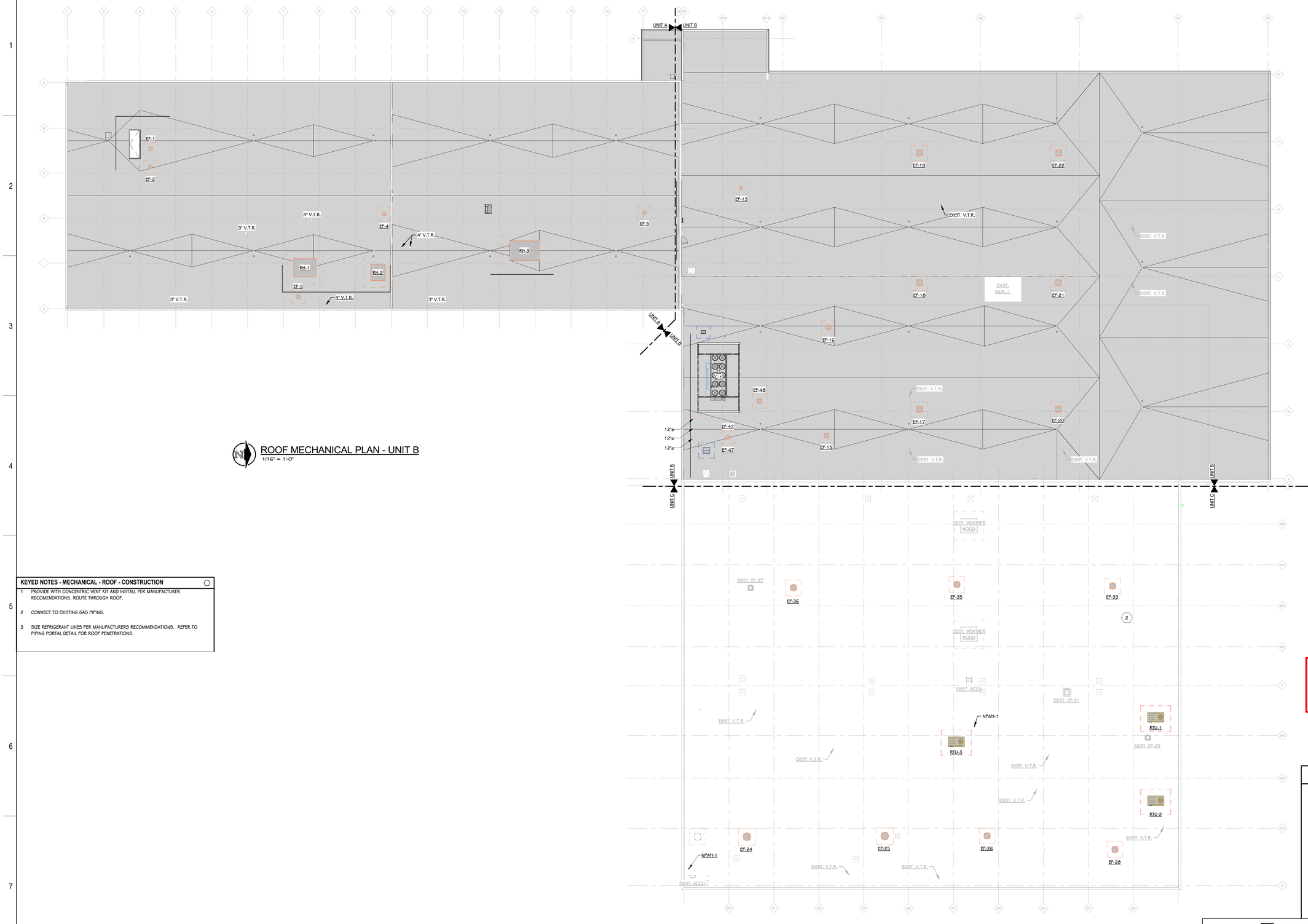

ROOF MECHANICAL PLAN - UNIT B

1/16" = 1'-0"

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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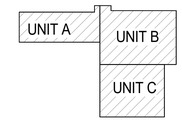

KEY PLAN

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SHEET TITLE
ROOF MECHANICAL PLAN - OVERALL

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-103
REV: D

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KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

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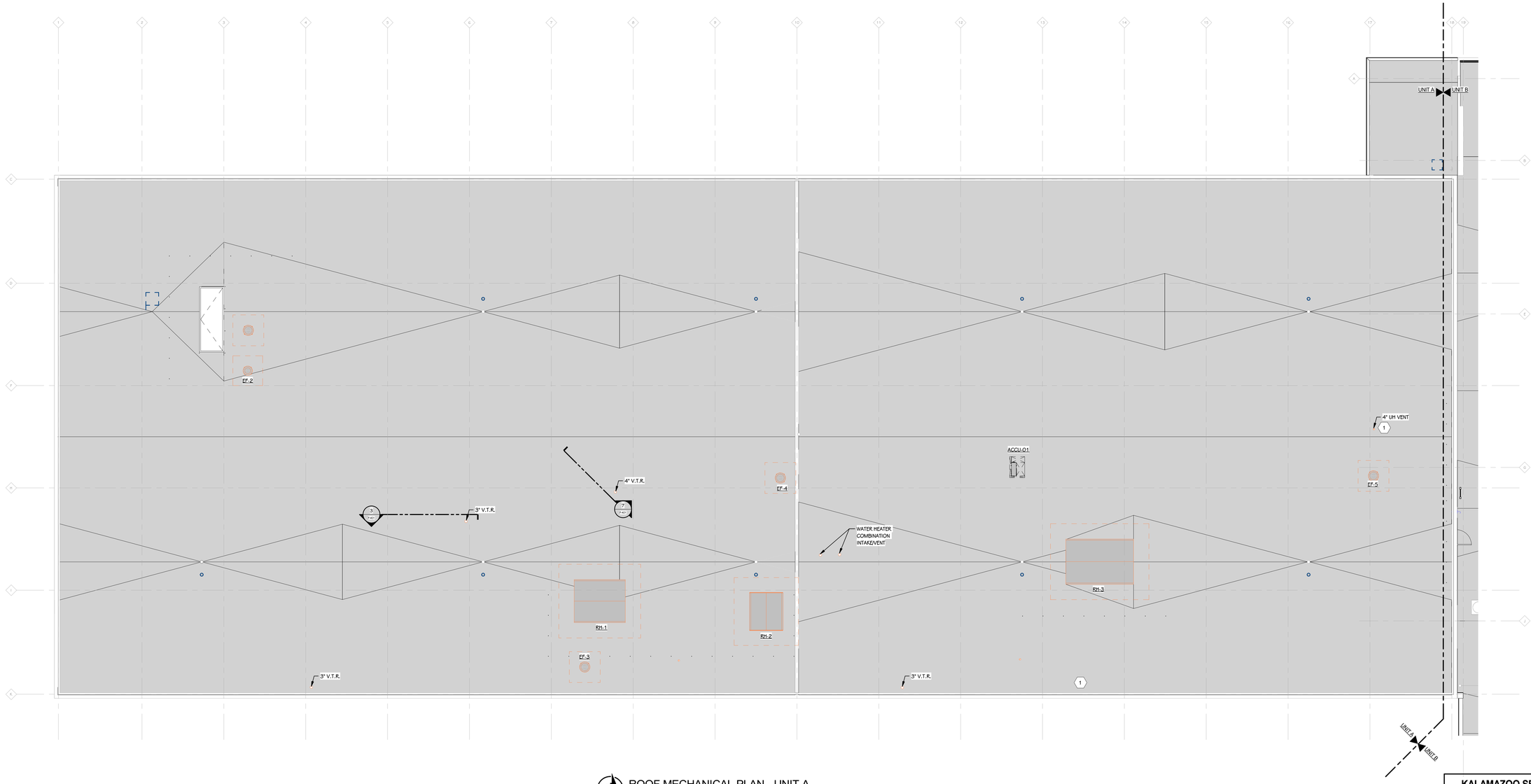
2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.



ROOF MECHANICAL PLAN - UNIT A
1/8" = 1'-0"

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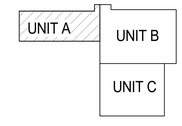

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SHEET TITLE
ROOF MECHANICAL PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-103A
REV: D

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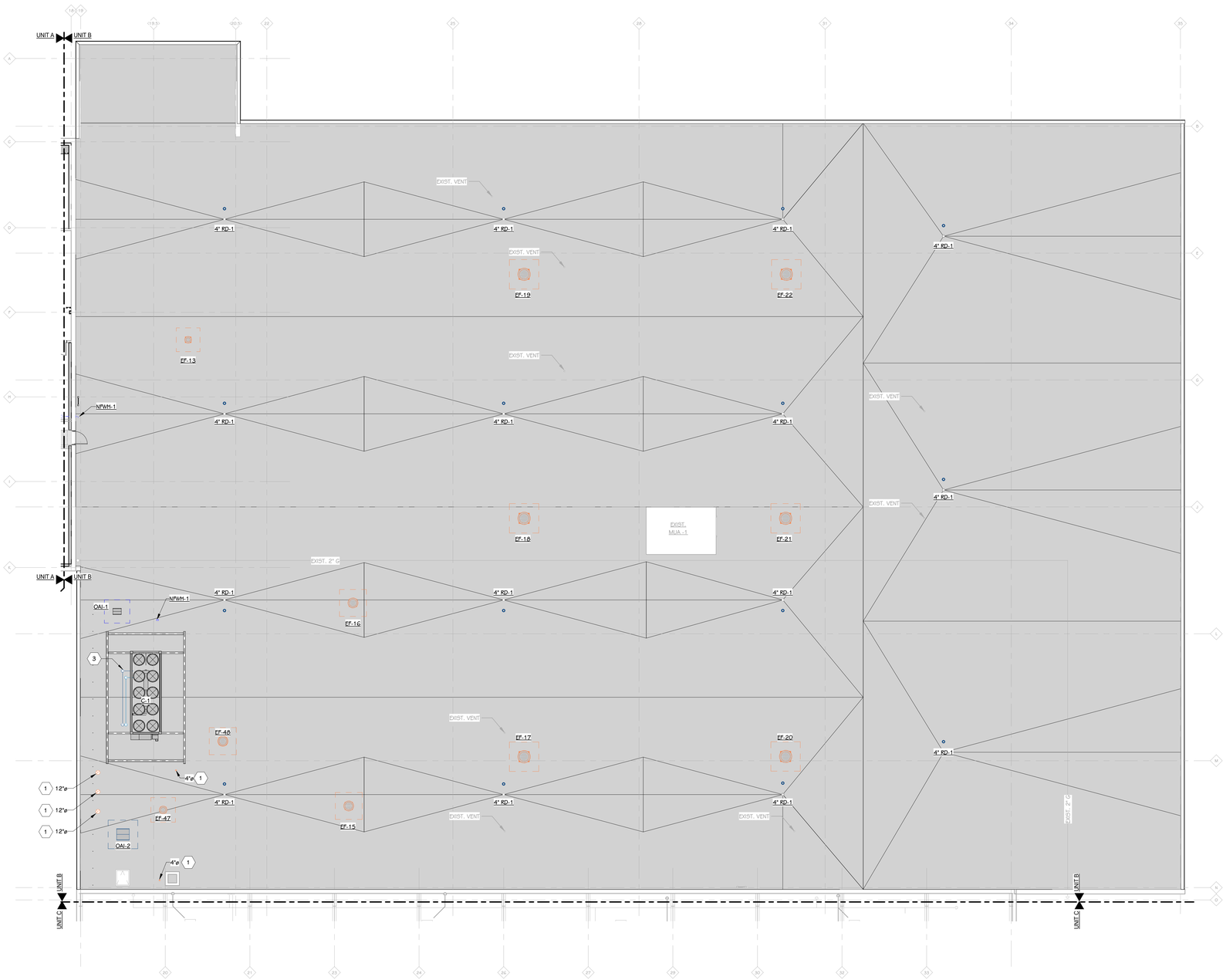

ROOF MECHANICAL PLAN - UNIT B
3/32" = 1'-0"

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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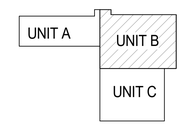

KEY PLAN
SCALE: NO SCALE

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SHEET TITLE: ROOF MECHANICAL PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-103B
REV: D

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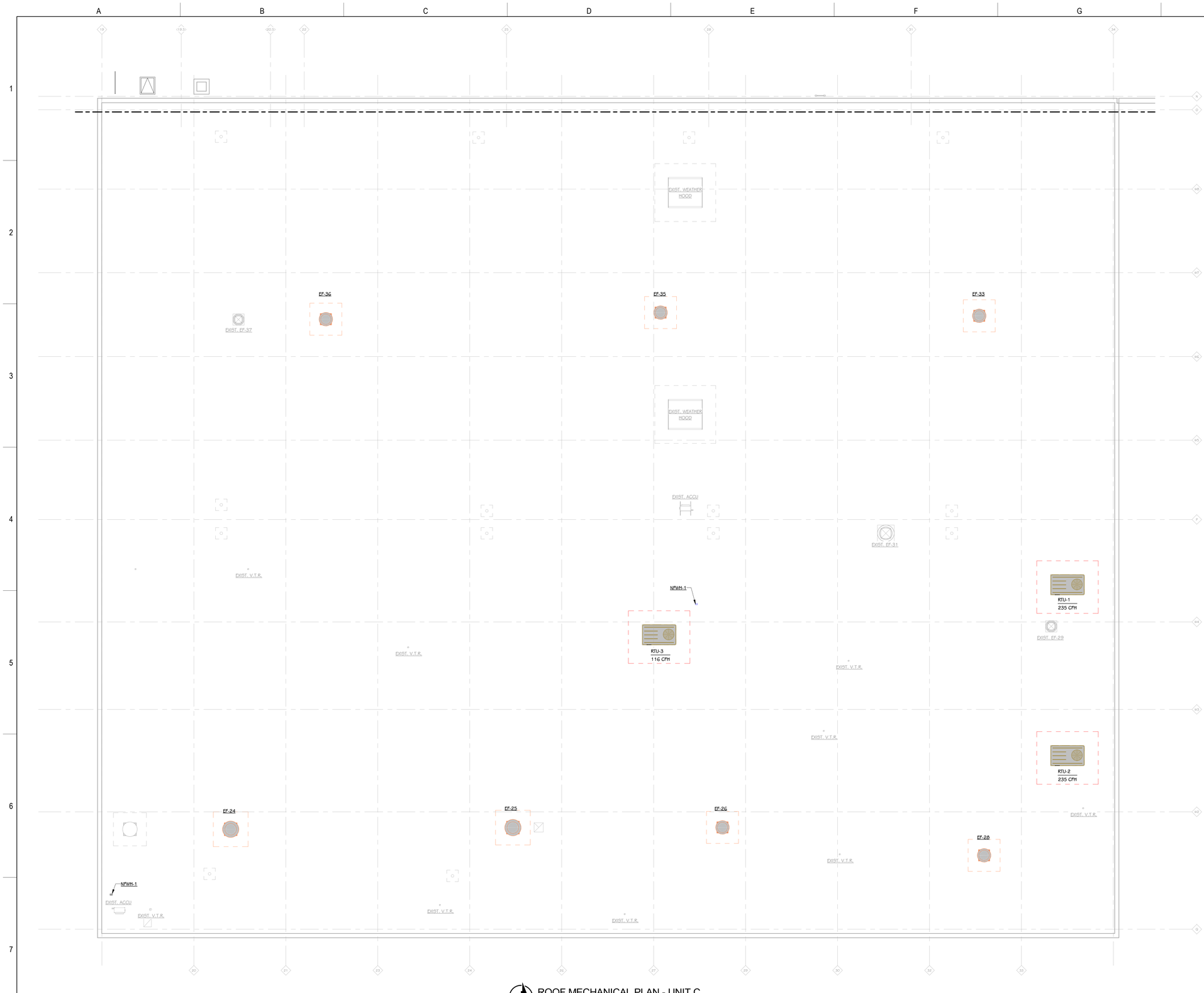

ROOF MECHANICAL PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1 PROVIDE WITH CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER RECOMENDATIONS. ROUTE THROUGH ROOF.

2 CONNECT TO EXISTING GAS PIPING.

3 SIZE REFRIGERANT LINES PER MANUFACTURERS RECOMMENDATIONS. REFER TO PIPING PORTAL DETAIL FOR ROOF PENETRATIONS.

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KALAMAZOO SERVICE CENTER

UNIT A
UNIT B
UNIT C

KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ROOF MECHANICAL PLAN - UNIT C

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-103C	D

22-133.010

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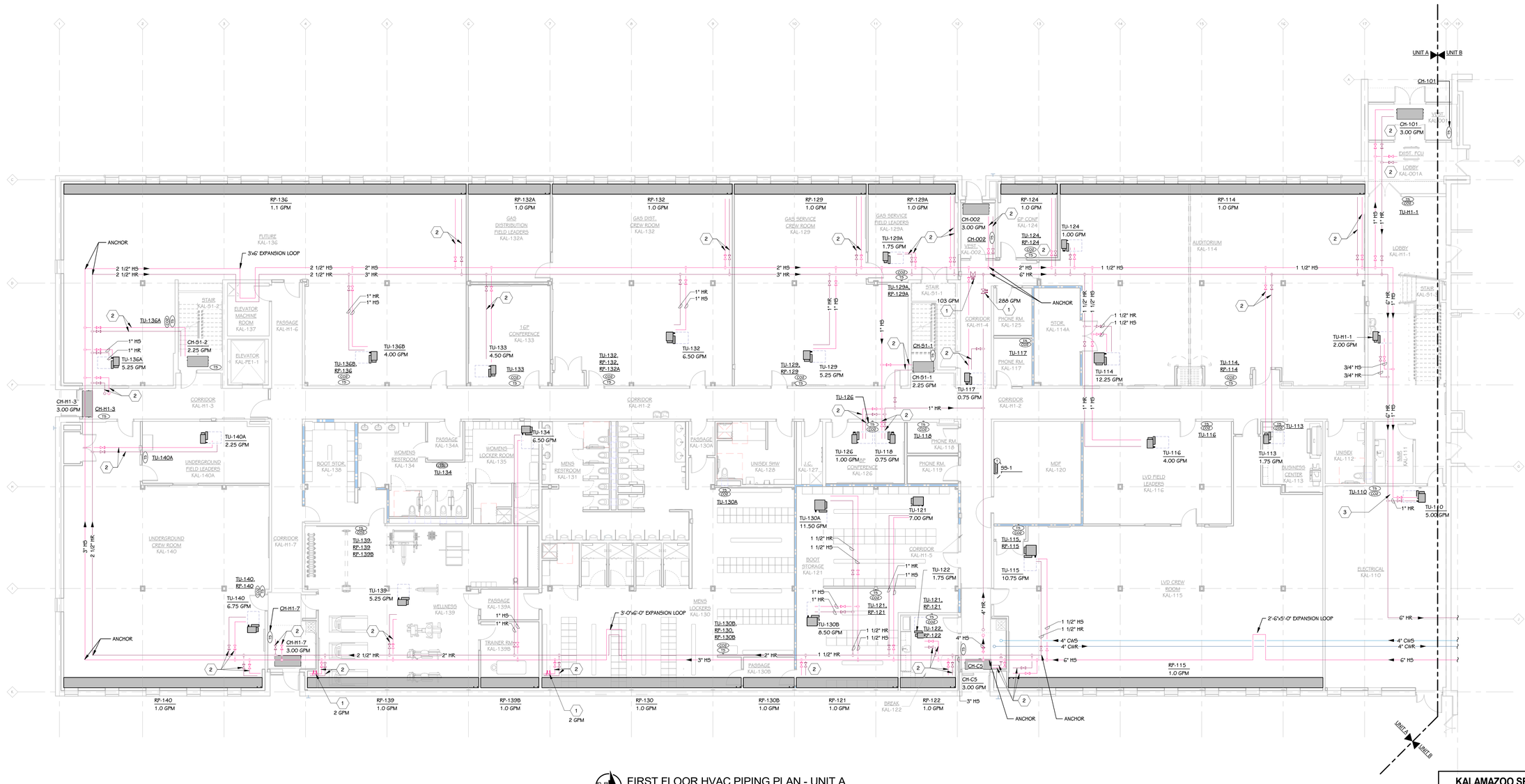
KEYED NOTES - MECHANICAL - HVAC PIPING

1 BALANCE VALVE TO LISTED GPM.

2 3/4" HS, 3/4" HR.

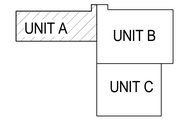
3 END OF MAIN BYPASS. REFER TO MINIMUM # TEMP PIC VALVE DETAIL.



FIRST FLOOR HVAC PIPING PLAN - UNIT A

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

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MICHIGAN P.E. No. 6201050501

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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-201A	D

22-133.010

KEYED NOTES - MECHANICAL - HVAC PIPING

1 BALANCE VALVE TO LISTED GPM.

2 3/4" HS, 3/4" HR.

3 END OF MAIN BYPASS. REFER TO MINIMUM # TEMP PIC VALVE DETAIL.

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FIRST FLOOR HVAC PIPING PLAN - UNIT B
3/32" = 1'-0"

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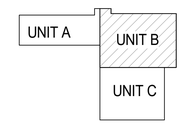
KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
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REFERENCE DRAWINGS

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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT B

SCALE: 3/32" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-201B
REV: D

22-133.010

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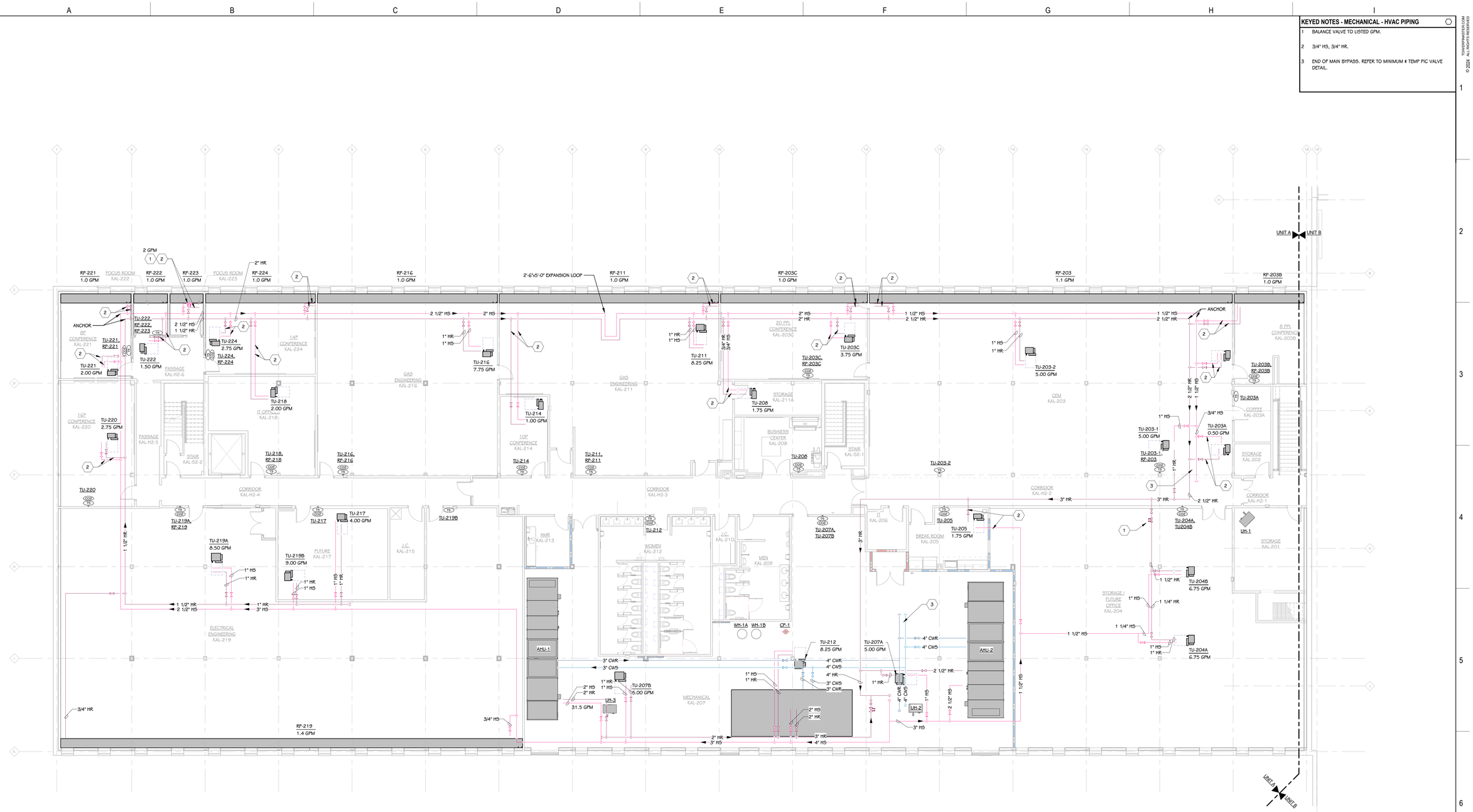
KEYED NOTES - MECHANICAL - HVAC PIPING

1 BALANCE VALVE TO LISTED GPM.

2 3/4" HS, 3/4" HR.

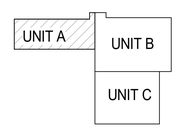
3 END OF MAIN BYPASS. REFER TO MINIMUM # TEMP PIC VALVE DETAIL.



SECOND FLOOR HVAC PIPING PLAN - UNIT A

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN

SCALE: NO SCALE

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REFERENCE DRAWINGS

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MICHIGAN P.E. No.: 6201050501

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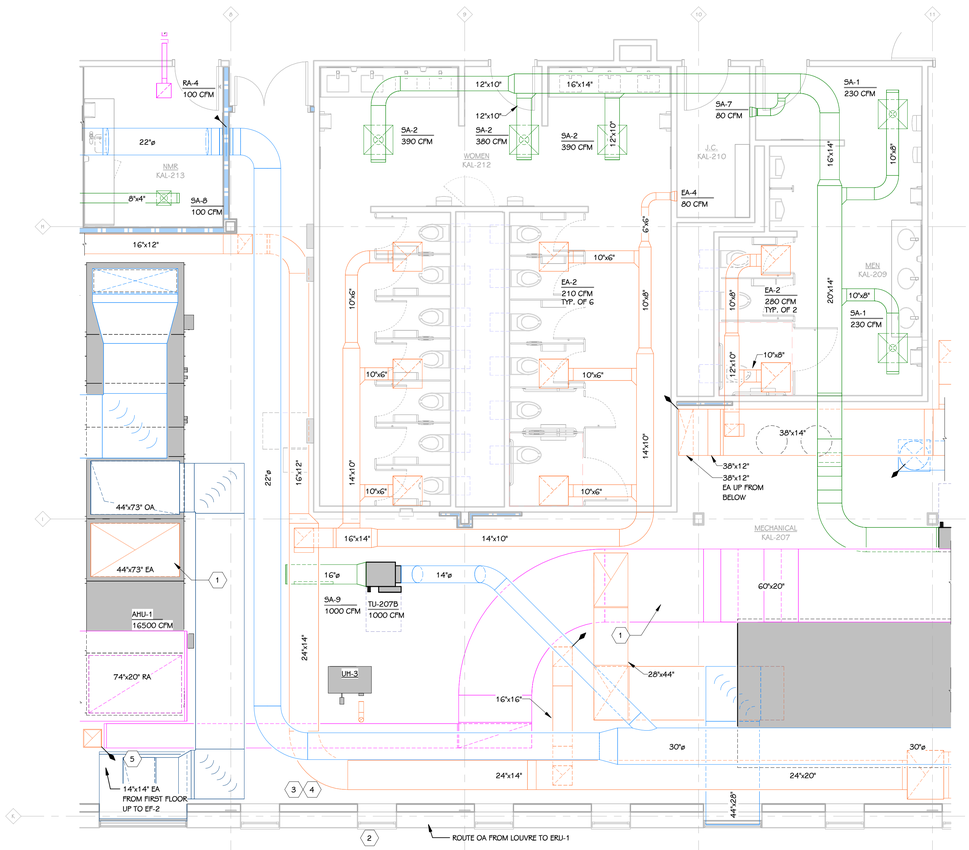
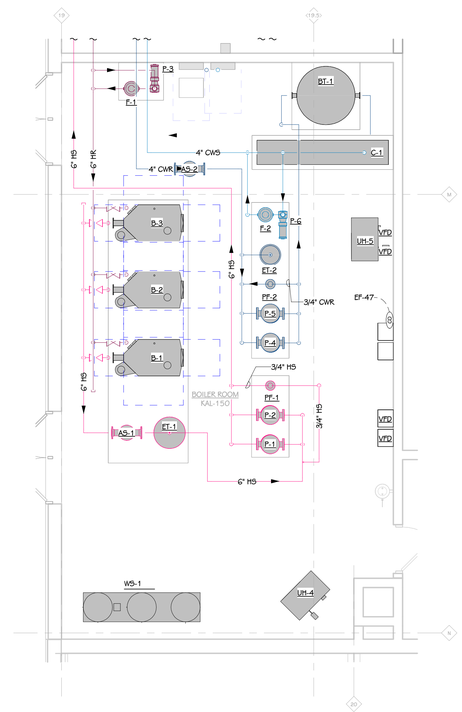
SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-202A
REV: D

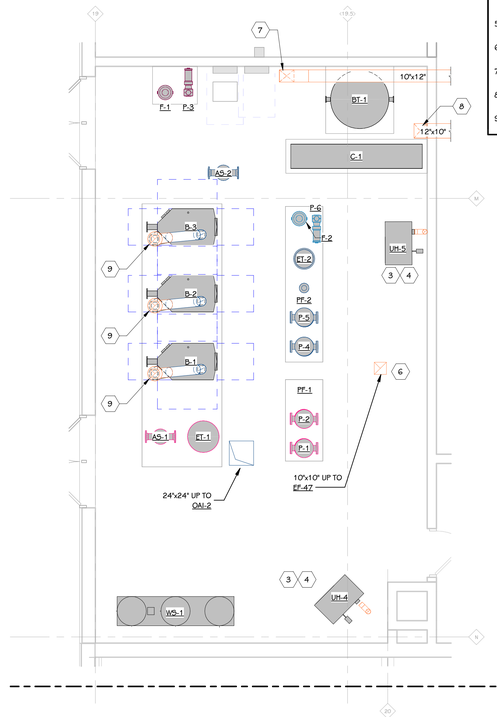
22-133.010



1 M-301 ENLARGED PLAN - SECOND FLOOR RESTROOMS - UNIT A
1/4" = 1'-0"



2 M-301 ENLARGED HVAC PIPING PLAN - BOILER ROOM 150
1/4" = 1'-0"



3 M-301 ENLARGED SHEET METAL PLAN - BOILER ROOM 150
1/4" = 1'-0"

KEYED NOTES - MECHANICAL - ENLARGED

1 <vanes>
2 REFER TO AIR INTAKE LOUVER DETAIL.
3 REFER TO UNIT HEATER DETAIL - GAS FIRED ON SHEET M 502.
4 ROUTE AND SIZE COMBUSTION AIR AND VENT DUCT THROUGH ROOF PER MANUFACTURER'S RECOMMENDATION.
5 REFER TO ROOF EXHAUSTER DETAIL.
6 REFER TO MECHANICAL ROOM EXHAUST FAN DETAIL.
7 12"x10" EA DOWN. CAP WITH BIRDSCREEN 8' A.F.F. FOR REFRIGERANT PURGE.
8 12"x10" EA DOWN. CAP WITH BIRDSCREEN 9'-0" A.F.F. FOR REFRIGERANT PURGE.
9 PROVIDE CONCENTRIC VENT AND INSTALL THROUGH ROOF PER MANUFACTURER'S RECOMMENDATION. REFER TO BOILER DETAIL.

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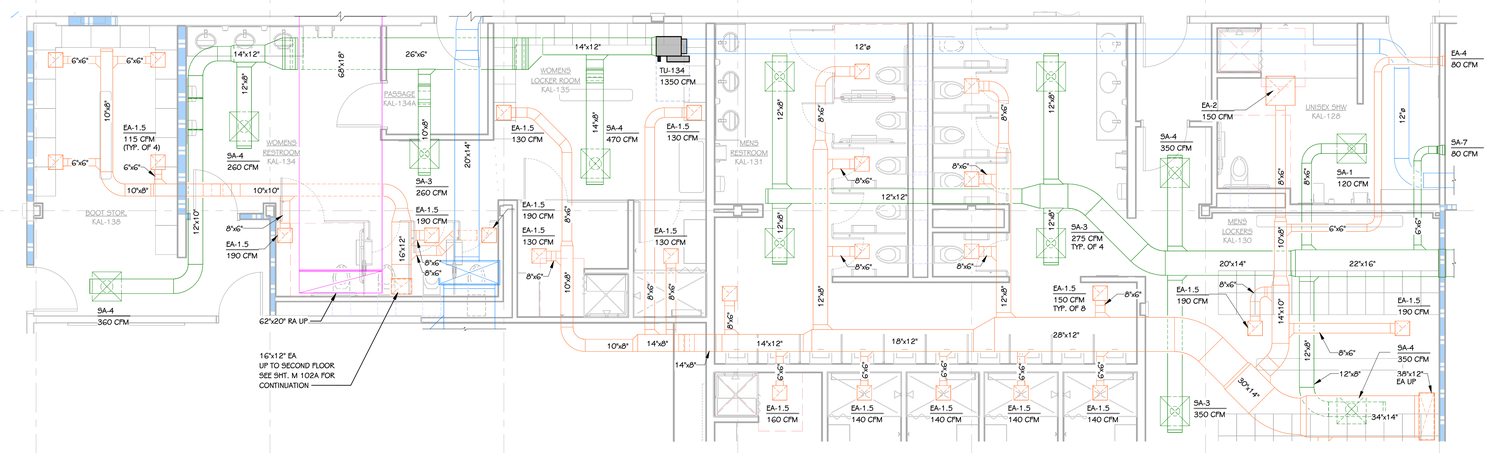

4 M-301 ENLARGED PLAN - FIRST FLOOR RESTROOMS - UNIT A
1/4" = 1'-0"

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REFERENCE DRAWINGS

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MICHIGAN P.E. No.: 6201050501

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED MECHANICAL ROOM PLAN

SCALE:	1/4" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-301	D

22-133.010

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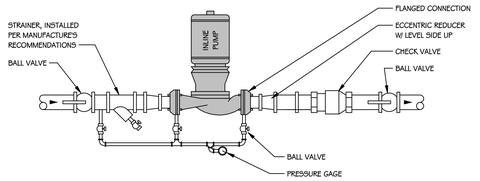
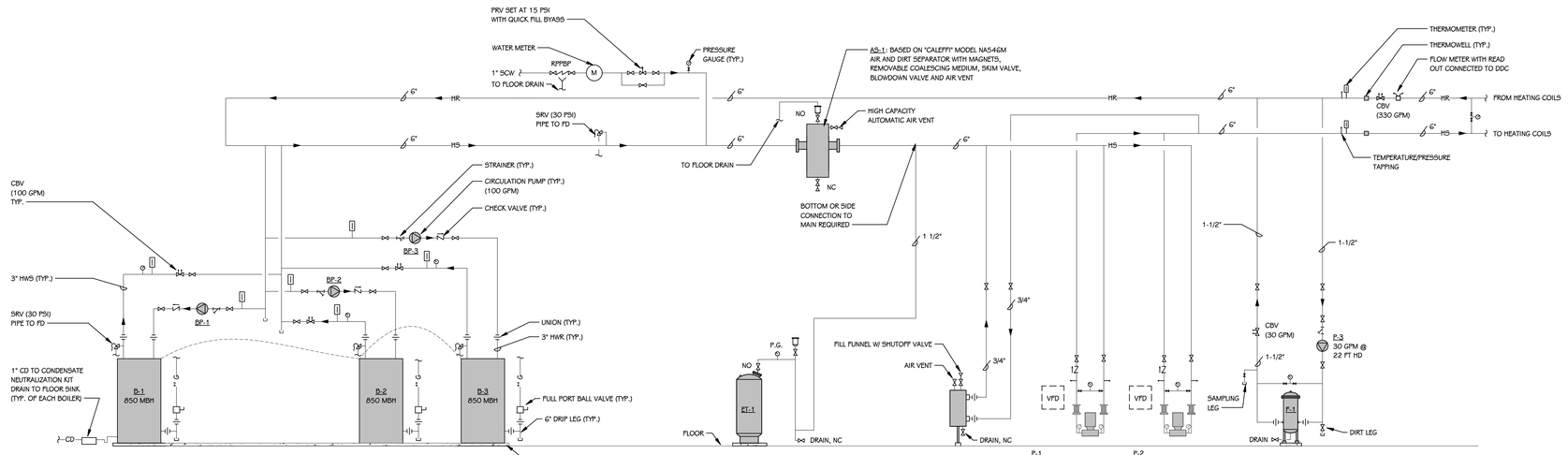


PUMP - INLINE PIPING DETAIL
SCALE: NONE



HEATING WATER SYSTEM SCHEMATIC
SCALE: NONE

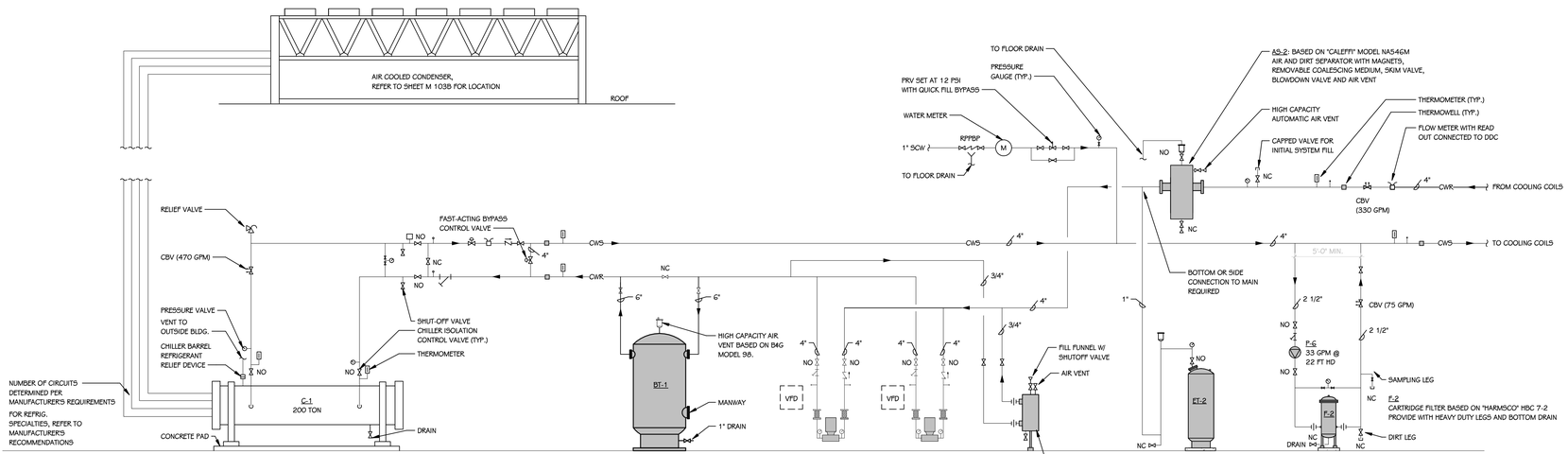
FT-1
BASED ON "BELL AND GOSSETT" MODEL D200 FULL ACCEPTANCE PRE-CHARGED BLADDER TANK WITH SIGHT GLASS.
TANK VOLUME = 115 GAL. ACCEPTANCE VOLUME = 93 GAL.
REQ'D TANK VOLUME = 96 GAL. REQ'D ACCEPTANCE VOLUME = 49 GAL.
24" DIA x 66" TALL
FIELD CHARGE TO SYSTEM FILL PRESSURE

PF-1 CHEMICAL POT FEEDER WITH FLOOR STAND

P-1
PRIMARY, VARIABLE SPEED
300 GPM @ 50 FT HD
(REFER TO IN-LINE PUMP DETAILS)

P-2
STANDBY, VARIABLE SPEED
300 GPM @ 50 FT HD
(REFER TO IN-LINE PUMP DETAILS)

F-1
CARTRIDGE FILTER BASED ON "HARMSCO" HBC 5-2
PROVIDE WITH HEAVY DUTY LEGS AND BOTTOM DRAIN



CHILLED WATER SYSTEM SCHEMATIC
SCALE: NONE

BT-1:
ASME RATED BUFFER TANK, "KILES STEEL TANK" OR EQUAL MODEL CBT-48-141
TANK CAPACITY = 1,000 GALLONS
5" INLET x 6" OUTLET CONNECTIONS
48" DIA x 145" TALL TANK
WEIGHT = 1,957 LBS

P-4
PRIMARY, VARIABLE SPEED
330 GPM @ 65 FT HD
(REFER TO IN-LINE PUMP DETAILS)

P-5
STANDBY, VARIABLE SPEED
330 GPM @ 65 FT HD
(REFER TO IN-LINE PUMP DETAILS)

ET-2
BASED ON "BELL AND GOSSETT" MODEL D40 FULL ACCEPTANCE PRE-CHARGED DIAPHRAGM TANK WITH SIGHT GLASS.
TANK VOLUME = 25 GAL. ACCEPTANCE VOLUME = 20.2 GAL.
REQ'D TANK VOLUME = 15.5 GAL. REQ'D ACCEPTANCE VOLUME = 5.2 GAL.
16" DIA x 33" TALL
FIELD CHARGE TO SYSTEM FILL PRESSURE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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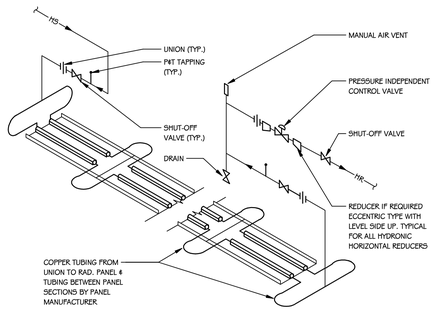
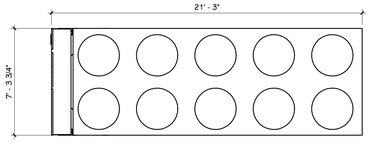
SHEET TITLE
HVAC PIPING SCHEMATICS

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-401
REV: D

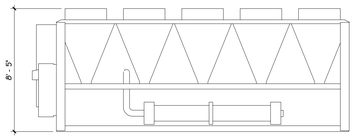
22-133.010



RADIANT CEILING PANEL PIPING DETAIL - LINEAR (PICV)
SCALE: NONE



PLAN



ELEVATION

AIR-COOLED CHILLER (C-1)

OVERALL UNIT ACOUSTIC REQUIREMENTS								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
100% LOAD	63	75	79	90	88	87	82	73
50% LOAD	56	65	77	80	78	74	66	67

TYPE: 140 TON NOMINAL AIR-COOLED VARIABLE-SPEED ROTARY SCREW CHILLER WITH REMOTE EVAPORATOR BARREL
BASED ON: "CARRIER" - MODEL 30XV140H
WEIGHT: 13,053 LB
REFRIGERANT: R-513A, CIRCUIT A 127 LB CHARGE, CIRCUIT B 132 LB CHARGE

EVAPORATOR: TWO-CIRCUIT WITH SHELL AND TUBE HEAT EXCHANGER
CAPACITY: 140 TONS (DESIGN CONDITIONS)
147.7 TONS (AHRI RATED)

kW/TON: 100%: 1.25 (DESIGN CONDITIONS)
100%: 1.06 (AHRI RATED)

IPLV: 20.05 EER (DESIGN CONDITIONS)
NPLV: 11.35 EER (AHRI RATED)

54°F EWT, 44°F LWT, 353.3 GPM, 16.7 FT WPD.
30% PROPYLENE GLYCOL MIXTURE

CONDENSER: ALUMINUM ALLOY MICROCHANNEL COILS, LOW-NOISE POLYMER AXIAL FANS VARIABLE SPEED DIRECT DRIVE MOTORS
FANS: 10
COMPRESSORS: 2 VARIABLE SPEED SCREWS
ENTERING AIR TEMPERATURE: 95°F DB

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH NON-FUSED DISCONNECT W/ LOCKING HANDLE, VARIABLE SPEED DRIVE, 460/3/60, 246.1 kW, 378 MCA, 500 MOCP.

OPTIONS: PROVIDE WITH NEOPRENE VIBRATION ISOLATORS, WATER BOX HEATERS, FLOW SWITCH, WIRE/LOUVERED ENCLOSURE PANELS, BAS TEMPERATURE RESET CONTROL, BACNET COMMUNICATIONS INTERFACE, OWNER STARTUP/TRAINING, AND 66-MONTH FACTORY WARRANTY ON ALL PARTS AND LABOR, INCLUDING REFRIGERANT.

TERMINAL UNITS — BASED ON PRICE

MARK	MAX CFM	TYPE	NC (MAX)	SP DROP (MAX)	INLET SIZE	REHEAT COIL				MIN CFM		REMARKS
						MBH	TR	W.P.D.	GPM	CLG	HTG	
TU-106	900	SDV	25	0.4"	10	43.9	45	5' MAX	4.50	450	300	1,2
TU-107	1,550	SDV	25	0.4"	14	75.7	45	5' MAX	7.50	775	517	1,2
TU-108	1,750	SDV	25	0.4"	16	85.4	45	5' MAX	8.50	875	583	1,2
TU-109	950	SDV	25	0.4"	10	46.4	45	5' MAX	4.75	475	317	1,2
TU-109B	150	SDV	25	0.4"	04	7.3	45	5' MAX	0.75	75	50	1,2
TU-109C	150	SDV	25	0.4"	04	7.3	45	5' MAX	0.75	75	50	1,2
TU-110	1,000	SDV	25	0.4"	12	48.8	45	5' MAX	5.00	500	333	1,2
TU-113	350	SDV	25	0.4"	07	17.1	45	5' MAX	1.75	175	117	1,2
TU-114	2,500	SDV	25	0.4"	16	122.1	45	5' MAX	12.25	1250	833	1,2
TU-115	2,200	SDV	25	0.4"	16	107.4	45	5' MAX	10.75	1100	733	1,2
TU-116	800	SDV	25	0.4"	10	39.1	45	5' MAX	4.00	400	267	1,2
TU-117	150	SDV	25	0.4"	05	7.3	45	5' MAX	0.75	75	50	1,2
TU-118	150	SDV	25	0.4"	05	7.3	45	5' MAX	0.75	75	50	1,2
TU-121	1,440	SDV	25	0.4"	14	70.3	45	5' MAX	7.00	720	480	1,2
TU-122	350	SDV	25	0.4"	06	17.1	45	5' MAX	1.75	175	117	1,2
TU-124	200	SDV	25	0.4"	05	9.8	45	5' MAX	1.00	100	67	1,2
TU-126	200	SDV	25	0.4"	05	9.8	45	5' MAX	1.00	100	67	1,2
TU-129	1,100	SDV	25	0.4"	12	53.7	45	5' MAX	5.25	550	367	1,2
TU-129A	350	SDV	25	0.4"	07	17.1	45	5' MAX	1.75	175	117	1,2
TU-130A	2,350	SDV	25	0.4"	16	114.7	45	5' MAX	11.50	1175	783	1,2
TU-130B	1,750	SDV	25	0.4"	14	85.4	45	5' MAX	8.50	875	583	1,2
TU-132	1,350	SDV	25	0.4"	12	65.9	45	5' MAX	6.50	675	450	1,2
TU-133	900	SDV	25	0.4"	08	43.9	45	5' MAX	4.50	450	300	1,2
TU-134	1,350	SDV	25	0.4"	12	65.9	45	5' MAX	6.50	675	450	1,2
TU-136A	1,100	SDV	25	0.4"	10	53.7	45	5' MAX	5.25	550	367	1,2
TU-136B	800	SDV	25	0.4"	10	39.1	45	5' MAX	4.00	400	267	1,2
TU-139	1,050	SDV	25	0.4"	10	51.3	45	5' MAX	5.25	525	350	1,2
TU-140	1,400	SDV	25	0.4"	10	68.4	45	5' MAX	6.75	700	467	1,2
TU-140A	450	SDV	25	0.4"	08	22.0	45	5' MAX	2.25	225	150	1,2
TU-203-1	1,020	SDV	25	0.4"	12	49.8	45	5' MAX	5.00	510	340	1,2
TU-203-2	1,020	SDV	25	0.4"	12	49.8	45	5' MAX	5.00	510	340	1,2
TU-203A	125	SDV	25	0.4"	04	6.1	45	5' MAX	0.50	63	42	1,2
TU-203B	450	SDV	25	0.4"	07	22.0	45	5' MAX	2.25	225	150	1,2
TU-203C	775	SDV	25	0.4"	10	37.8	45	5' MAX	3.75	388	258	1,2
TU-204A	1,400	SDV	25	0.4"	12	68.4	45	5' MAX	6.75	700	467	1,2
TU-204B	1,400	SDV	25	0.4"	12	68.4	45	5' MAX	6.75	700	467	1,2
TU-205	370	SDV	25	0.4"	07	18.1	45	5' MAX	1.75	185	123	1,2
TU-207A	1,000	SDV	25	0.4"	14	48.8	45	5' MAX	5.00	500	333	1,2
TU-207B	1,000	SDV	25	0.4"	14	48.8	45	5' MAX	5.00	500	333	1,2
TU-208	350	SDV	25	0.4"	05	17.1	45	5' MAX	1.75	175	117	1,2
TU-211	1,700	SDV	25	0.4"	12	83.0	45	5' MAX	8.25	850	567	1,2
TU-212	1,700	SDV	25	0.4"	14	83.0	45	5' MAX	8.25	850	567	1,2
TU-214	200	SDV	25	0.4"	05	9.8	45	5' MAX	1.00	100	67	1,2
TU-216	1,600	SDV	25	0.4"	10	78.1	45	5' MAX	7.75	800	533	1,2
TU-217	800	SDV	25	0.4"	12	39.1	45	5' MAX	4.00	400	267	1,2
TU-218	400	SDV	25	0.4"	08	19.5	45	5' MAX	2.00	200	133	1,2
TU-219A	1,750	SDV	25	0.4"	14	85.4	45	5' MAX	8.50	875	583	1,2
TU-219B	1,850	SDV	25	0.4"	12	90.3	45	5' MAX	9.00	925	617	1,2
TU-220	550	SDV	25	0.4"	08	26.9	45	5' MAX	2.75	275	183	1,2
TU-221	400	SDV	25	0.4"	07	19.5	45	5' MAX	2.00	200	133	1,2
TU-222	300	SDV	25	0.4"	06	14.6	45	5' MAX	1.50	150	100	1,2
TU-224	540	SDV	25	0.4"	08	26.4	45	5' MAX	2.75	270	180	1,2
TU-H1-1	400	SDV	25	0.4"	06	19.5	45	5' MAX	2.00	200	133	1,2
TU-H1-11	300	SDV	25	0.4"	06	8.1	25	5' MAX	0.75	150	100	1,2
Grand total: 54						2441.6						

NOTES:
1. FUEL TYPE: NATURAL GAS.
2. 2-WAY VALVE.

UNIT HEATER - GAS FIRED — BASED ON MODINE

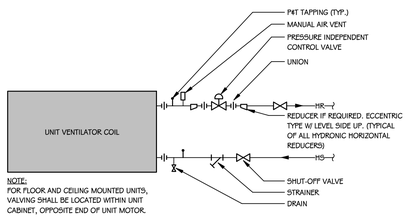
MARK	MODEL	TYPE	AIRFLOW	HEAT CAPACITY		FLOW (CFH)	PRESS. (IN. W.C.)	HP	VOLTAGE	RPM	REMARKS
				INPUT (MBH)	OUTPUT (MBH)						
UH-1	HD-100	POWER VENTED	1,490	100	83	95	7"-14"	1/6	115/1	1050	1
UH-2	HD-100	POWER VENTED	1,490	100	83	95	7"-14"	1/6	115/1	1050	1
UH-3	HD-100	POWER VENTED	1,490	100	83	95	7"-14"	1/6	115/1	1050	1
UH-4	HD-100	POWER VENTED	1,490	100	83	95	7"-14"	1/6	115/1	1050	1
UH-5	HD-100	POWER VENTED	1,490	100	83	95	7"-14"	1/6	115/1	1050	1

NOTES:
1. ~~HEATING CAPACITY BASED ON 70°F EAT, 180°F EWT, 110°F LWT, W/ BOX AT MAXIMUM FLOW.~~
2. 2-WAY VALVE.

OUTDOOR AIR INTAKE / RELIEF HOODS — BASED ON GREENHECK

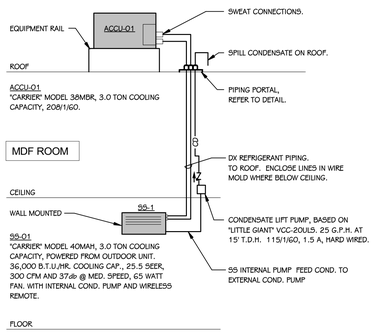
MARK	MODEL	THROAT SIZE	HOOD SIZE	CURB HEIGHT	AIR FLOW (CFM)	MAX APD (IN WC)	CONTROL DAMPER	REMARKS
OAI-1	FGI	8"x8"	22"x27"	1' - 0"	100	0.05	No	1
OAI-2	FGI	20"x20"	37"x39"	1' - 0"	1,610	0.05	No	1
RH-1	FGR	72"x88"	123"x110"	1' - 6"	20,000	0.05	No	1
RH-2	FGR	48"x66"	79"x87"	1' - 6"	10,000	0.05	No	1
RH-3	FGR	66"x120"	106"x159"	1' - 6"	25,000	0.05	No	1

NOTES:
1. CONTROL DAMPER PROVIDED BY TCC.



NOTE:
FOR FLOOR AND CEILING MOUNTED UNITS, VALVING SHALL BE LOCATED WITHIN UNIT CABINET, OPPOSITE END OF UNIT MOTOR.

UNIT VENTILATOR PIPING DETAIL (PICV)
SCALE: NONE



SPLIT SYSTEM UNIT PIPING DETAIL - WALL MOUNT
SCALE: NONE

RADIANT CEILING PANEL - HOT WATER — BASED ON AIRTITE

MARK	MODEL	WIDTH	LENGTH	GPM	BTU/FT	EWT	TYPE	PANEL SURFACE	REMARKS
RP-114	AXO	24"	59' - 10"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-115	AXO	24"	61' - 9"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-121	AXO	24"	19' - 11 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-122	AXO	24"	10' - 10"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-124	AXO	24"	11' - 1"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-129	AXO	24"	25' - 10 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-129A	AXO	24"	17' - 1"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-130	AXO	24"	39' - 2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-130B	AXO	24"	10' - 0"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-132	AXO	24"	35' - 4"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-132A	AXO	24"	16' - 1"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-136	AXO	24"	79" - 0"	1.1	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-139	AXO	24"	33' - 7 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-139B	AXO	24"	11' - 5"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-140	AXO	24"	38' - 11 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-203	AXO	24"	79" - 1"	1.1	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-203B	AXO	24"	15' - 2 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-203C	AXO	24"	32' - 0"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-211	AXO	24"	47' - 10"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-216	AXO	24"	39' - 3"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-219	AXO	24"	100' - 8"	1.4	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-221	AXO	24"	15' - 3 1/2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-222	AXO	24"	7' - 4"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-223	AXO	24"	7' - 2"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3
RP-224	AXO	24"	23' - 11"	1.0	136	140	CEILING	FLUTED ALUMINUM	1,2,3

NOTES:
1 BASED ON 130°F EWT, 110°F LWT, AND 60° F EAT.
2 2-WAY VALVE.
3 VERIFY ALL LENGTHS IN FIELD.

PUMPS — BASED ON BELL & GOSSET

MARK	MODEL	FLOW RATE (GPM)	HEAD (FT)	PEIcI	MOTOR DATA					SYSTEM	LOCATION	REMARKS
					HP	BHP	RPM	VOLTAGE	PHASE			
CP-1	ALPHA 15-58	5	15	-	0.05	0.04	3000	120	1	DOMESTIC HOT WATER	MECHANICAL ROOM 207	1,2
P-1	40959 VL5E	300	50	0.46	7.5	5.1	1800	460	3	HEATING HOT WATER	BOILER ROOM 150	
P-2	40959 VL5E	300	50	0.46	7.5	5.1	1800	460	3	HEATING HOT WATER	BOILER ROOM 150	
P-3	MAGNA3 40-80 GF	30	22	-	0.38	0.31	3800	120	1	HEATING HOT WATER	BOILER ROOM 150	
P-4	40959 VL5E	350	65	0.45	10	7.63	1800	460	3	CHILLED WATER	BOILER ROOM 150	
P-5	40959 VL5E	350	65	0.45	10	7.63	18000	460	3	CHILLED WATER	BOILER ROOM 150	
P-6	MAGNA3 40-80 GF	33	22	-	0.38	0.33	3800	120	1	CHILLED WATER	BOILER ROOM 150	

NOTES:
1. WET ROTOR PUMP WITH INTEGRATED VARIABLE FREQUENCY DRIVE AND BMS COMMUNICATIONS. ALL AVAILABLE POINTS SHALL BE REVEALED TO THE BMS.
2. LEAD-FREE BRONZE CIRCULATOR

GRILLES, REGISTERS, & DIFFUSERS — BASED ON PRICE

MARK	PANEL SIZE	FACE SIZE	NECK SIZE	MODEL	CFM RANGE	VCD	THROW	MATERIAL	FINISH	INSTALLATION	REMARKS
SA-1	24x24	-	6" Ø	A5CDA	120-200	NO	2-3-6	ALUMINUM	WHITE	LAY-IN	
SA-2	24x24	-	8" Ø	A5CDA	175-315	NO	3-5-8	ALUMINUM	WHITE	LAY-IN	
SA-3	24x24	-	8" Ø	A5CDA	175-315	YES	3-5-8	ALUMINUM	WHITE	SURFACE	1
SA-4	24x24	-	10" Ø	A5CDA	210-490	YES	4-6-10	ALUMINUM	WHITE	SURFACE	1
SA-5	24x24	-	10" Ø	A5CDA	210-490	NO	4-6-10	ALUMINUM	WHITE	LAY-IN	
SA-7	-	10"x8"	8"x6"	610	66-176	YES	3-4-8	ALUMINUM	CLR ANODIZED	SURFACE	
SA-8	12x12	-	6" Ø	A5CDA	75-125	NO	5-10-20	ALUMINUM	WHITE	LAY-IN	
SA-9	-	34"x10"	32"x8"	9DGE	500-1200	YES	24-36-54	ALUMINUM	CLR ANODIZED	DUCT	
RA-1	24"x24"	-	-	80	500 - 2000	NO	-	ALUMINUM	WHITE	LAY-IN	
RA-2	24"x24"	-	-	80	500 - 2000	YES	-	ALUMINUM	WHITE	LAY-IN	
RA-3	-	10"x4"	10"x4"	80	500 - 2000	NO	-	ALUMINUM	WHITE	SURFACE	1
RA-4	12"x12"	-	-	80	0 - 500	NO	-	ALUMINUM	WHITE	SURFACE	1
RA-5	-	12"x12"	12"x12"	80	350 - 950	NO	-	ALUMINUM	WHITE	DUCT	
EA-1.5	12"x12"	-	12"x12"	80	0-500	YES	-	ALUMINUM	WHITE	SURFACE	
EA-2	24"x24"	-	24"x24"	80	0-500	YES	-	ALUMINUM	WHITE	SURFACE	
EA-3	24"x24"	-	24"x24"	80	0-500	NO	-	ALUMINUM	WHITE	LAY-IN	
EA-4	-	10"x8"	8"x6"	635	66-176	YES	-	ALUMINUM	CLR ANODIZED	SURFACE	

NOTES:
1 CONCEALED PLASTER FRAME

EXHAUST FANS — BASED ON GREENHECK

MARK	MODEL	TYPE	AIR FLOW (CFM)	ESP (IN WC)	SONES	MOTOR DATA						REMARKS
						EC MOTOR	NOMINAL HP	BRAKE HP	RPM	VOLTAGE	PHASE	
EF-1	G-097-B	DOWNBLAST	100	0.51	4.7	No	0.25	0	1138	115	1	
EF-2	G-080-D	DOWNBLAST	267	0.44	7.5	No	0.05	0	1550	115	1	1, 3
EF-3	G-100-VG	DOWNBLAST	750	0.64	7.1	Yes	0.25	0	1383	115	1	1,2,3
EF-4	G-097-B	DOWNBLAST	100	0.51	4.7	No	0.25	0	1140	115	1	1,3
EF-5	G-097-B	DOWNBLAST	100	0.51	4.7	No	0.25	0	1138	115	1	1,3
EF-13	G-060-VG	DOWNBLAST	75	0.35	3.8	Yes	0.07	0	1610	115	1	1,2,3
EF-15	G-140-VG	DOWNBLAST	1263	0.37	7	Yes	0.75	0	925	115	1	1,2,3
EF-16	G-140-VG	DOWNBLAST	1400	0.37	7.5	Yes	0.75	0	977	115	1	1,2,3
EF-17	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-18	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-19	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-20	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-21	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-22	G-180-VG	DOWNBLAST	2112	0.42	7.4	Yes	0.75	0	738	115	1	1,2,3
EF-24	G-240-VG	DOWNBLAST	4553	0.38	10	Yes	2.00	0	618	208	1	1,2,3
EF-25	G-240-VG	DOWNBLAST	4553	0.38	10	Yes	2.00	0	618	208	1	1,2,3
EF-26	G-180-VG	DOWNBLAST	2150	0.43	7.5	Yes	0.75	0	746	115	1	1,2,3
EF-28	G-180-VG	DOWNBLAST	2244	0.44	7.7	Yes	0.75	0	766	115	1	1,2,3
EF-33	G-200-VG	DOWNBLAST	4166	0.84	15	Yes	2.00	0	1016	208	1	1,2,3
EF-35	G-200-VG	DOWNBLAST	4166	0.84	15	Yes	2.00	0	1016	208	1	1,2,3
EF-36	G-200-VG	DOWNBLAST	3031	0.49	9.6	Yes	1.00	0	759	115	1	1,2,3
EF-47	G-090-D	DOWNBLAST	450	0.45	6.6	No	0.08	0	1300	115	1	1, 3
EF-48	CUBE-140	UPBLAST	1610	0.58	10.8	No	0.00	0	1188	115	1	1,3

NOTES:
1. INTERLOCK EXHAUST FAN WITH ASSOCIATED DAMPER.
2. PROVIDE WITH EC MOTOR FOR BALANCING.
3. PROVIDE WITH THERMALLY ISOLATED MOTORIZED DAMPER.

SOUND TRAP SCHEDULE — BASED ON PRICE

MARK	CFM	MODEL	TYPE	DIMENSIONS			P.D.	VELOCITY (FPM)	DUCT SERVICE	MINIMUM REQUIRED LOSS (dB)							REMARKS
				HEIGHT	WIDTH	LENGTH				63 OCT.	125 OCT.	250 OCT.	500 OCT.	1K OCT.	2K OCT.	4K OCT.	
ST-1	16,500	RHGD/1C	RECTANGULAR	20"	52"	60"	0.27	2285	SUPPLY	4	6	12	27	34	27	15	
ST-2	16,500	RL48/1E	RECTANGULAR	20"	74"	48"	0.17	1605	RETURN	53	33	44	44	41	34	27	
ST-3	10,290	C960/34E	CIRCULAR	32"	32"	60"	0.23	1623	SUPPLY	8	13	21	29	32	18	14	
ST-4	9,290	C548/30D	CIRCULAR	30"	30"	48"	0.12	1108	SUPPLY	9	14	23	31	36	35	23	
ST-5	20,000	RM108/1E	RECTANGULAR	30"	74"	108"	0.29	1000	RETURN	13	21	31	53	52	55	47	
ST-13	2,600	ERM72WF	ELBOW	12"	22"	60"	0.14	1418	SUPPLY	7	11	17	23	28	27	23	

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO
	D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
	C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
	B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
	A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-501
REV: D

22-133.010

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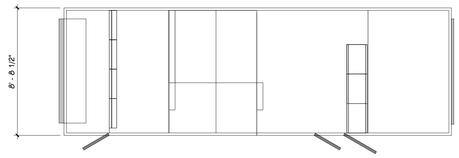
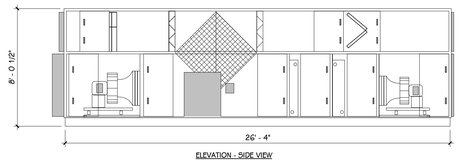


PLAN - TOP VIEW



ELEVATION - SIDE VIEW

INDOOR VAV AIR HANDLING UNIT

ERU-1: ENERGY RECOVERY UNIT

AREA SERVED: FIRST FLOOR LOCKER ROOM AND SECOND FLOOR RESTROOMS
TYPE: INDOOR VAV ENERGY RECOVERY UNIT, 10,000 CFM, BASED ON VALENT "VXE" SERIES
OUTSIDE AIR: 10,000 CFM .
WEIGHT: 10,600 LB
UNIT MOUNTING: FLOOR MOUNTED ON HOUSEKEEPING PAD.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
RETURN IN	77	85	92	85	80	80	76	71
SUPPLY	88	86	98	96	97	91	91	84
OA IN	88	85	96	90	87	85	84	78
EXHAUST OUT	83	89	93	95	91	91	88	77

RETURN FAN ARRAY: 10,000 CFM TOTAL, 2 FANS w/ 17.7" WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT 6250 CFM, 2.5" TSP, 1" ESP, 7.5 HP, 9 TOTAL BHP, 460/3/60, 1,800 RPM, 60 Hz, DIRECT DRIVE, 1 VARIABLE FREQUENCY DRIVES FURNISHED BY TEMPERATURE CONTROLS. PROVIDE WITH FAN INLET AIR MEASUREING DEVICES BY MANUFACTURER. 9.5 FLA, 33.6 MCA, 50 MOP

FILTERS: PREFILTER ** PLEATED **% EFFICIENCY MERV-*, HIGH EFFICIENCY *** RIGID CARTRIDGE **% EFFICIENCY MERV-**, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

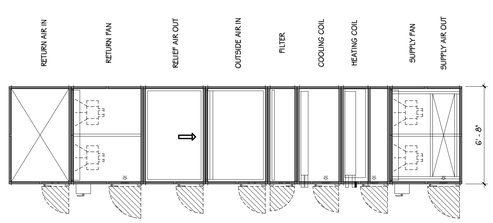
HEATING SECTION: 47.1 GPM, 140°F EWT, 120°F LWT, 45°F EAT, 55°F LAT, 10,000 CFM, 465 TMBH, ***** WG.

COOLING SECTION: 85.5 GPM, 45°F EWT, 55°F LWT, 82.6°F EAT (DB), 72.6°F EAT (WB), 54.5°F LAT (DB), 54.4°F LAT (WB), 10,000 CFM, 282.6 SMBH, 429.1 TMBH, **** WG.

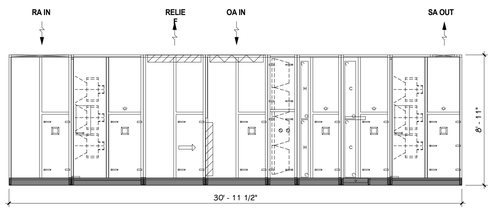
SUPPLY FAN: 10,000 CFM TOTAL, 2 FANS w/ **** WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT **** CFM, 4.4 TSP, 2.5 ESP, ** HP, **** TOTAL BHP, 460/3/60, 2187 RPM, ** Hz, DIRECT DRIVE, * VARIABLE FREQUENCY DRIVES FURNISHED BY TEMPERATURE CONTROLS. PROVIDE WITH FAN INLET AIR MEASUREING DEVICES BY MANUFACTURER. 33.6 FLA, 35 MCA, 40 MOCP

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 460/3/60, 29.2 FLA, 33.6 MCA, 50 MOP, AND DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS: PROVIDE WITH MINIMUM 1 YEAR MANUFACTURE'S WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



PLAN - TOP VIEW



ELEVATION - SIDE VIEW

INDOOR VAV AIR HANDLING UNIT

AHU-1: AIR-HANDLING UNIT

AREA SERVED: UNIT-A FIRST FLOOR OFFICE SPACE
TYPE: INDOOR VAV AIR-HANDLING UNIT, 16,500 CFM, BASED ON CARRIER "39MN" SIZE 35T
OUTSIDE AIR: 2,500 CFM
WEIGHT: 7369 LB
UNIT MOUNTING: FLOOR MOUNTED ON HOUSEKEEPING PAD.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
RETURN IN	78	84	86	83	77	76	80	78
SUPPLY	85	89	93	91	90	90	86	86
OA IN	80	86	89	85	79	79	83	80
EXHAUST OUT	**	**	**	**	**	**	**	**

AIR MIXING SECTION: TOP RETURN AIR INTAKE, 3' - 9" SECTION

RETURN FAN ARRAY: 16,500 CFM TOTAL, 6 FANS w/ 17.7" WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT 2,750 CFM, 0.93 TSP, 3.3 kW, 3.5 TOTAL BHP, 460/3/60, 1163 RPM, 3.3 kW ECM DIRECT DRIVE 4.7 VDC, 5.6 FLA (EACH). PROVIDE WITH FAN INLET AIR MEASUREING DEVICES BY MANUFACTURER.

AIR MIXING SECTION: TOP EXHAUST AIR DISCHARGE, 3' - 9" SECTION

AIR MIXING SECTION: TOP OUTDOOR AIR INTAKE, 3' - 9" SECTION

AIR BLENDER SECTION: 3' - 9" SECTION

FILTERS: PREFILTER 2" PLEATED MERV-8, HIGH EFFICIENCY 12" RIGID CARTRIDGE MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

HEATING SECTION: 54.3 GPM, 140°F EWT, 110.35°F LWT, 40°F EAT, 82.81°F LAT, 16,500 CFM, 805.4 TMBH, 0.23" WG.

ACCESS SECTION: 1' - 8" SECTION WITH ACCESS DOOR.

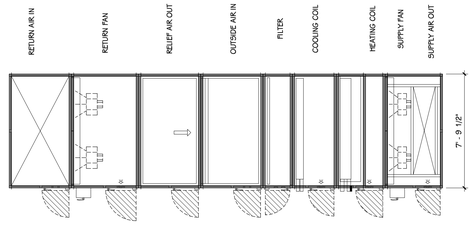
COOLING SECTION: 138.4 GPM, 42°F EWT, 54°F LWT, 80°F EDB, 67°F EWB, 48.53°F LDB 48.53°F LWB, 16,500 CFM, 540.8 SMBH, 833.4 TMBH, 0.99" WG.

ACCESS SECTION: 1' - 8" SECTION WITH ACCESS DOOR.

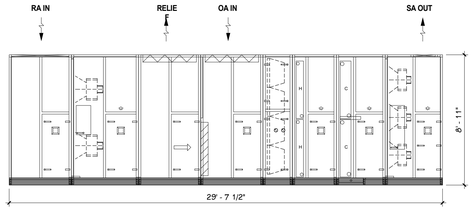
SUPPLY FAN: 20,000 CFM TOTAL, 3 FANS w/ 19.7" WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT 6667 CFM, 4.23 TSP, 2.5 ESP, 18.5 TOTAL BHP, 460/3/60 Hz, 2132 RPM, 13.2 kW ECM DIRECT DRIVE 9.7 VDC, 5.6 FLA (EACH). PROVIDE WITH FAN INLET AIR MEASURING DEVICES BY MANUFACTURER.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 460/3/60, 54.6 FLA, 68.3 MCA, 90 MOCP, DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS: PROVIDE WITH MINIMUM 1 YEAR MANUFACTURE'S WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



PLAN - TOP VIEW



ELEVATION - SIDE VIEW

INDOOR VAV AIR HANDLING UNIT

AHU-2: AIR-HANDLING UNIT

AREA SERVED: UNIT-A SECOND FLOOR OFFICE SPACE
TYPE: INDOOR VAV AIR-HANDLING UNIT, 20,000 CFM, BASED ON CARRIER "39MN" SIZE 42T
OUTSIDE AIR: 3,000 WITH "TRAQ" AIR MEASURING DAMPER.
WEIGHT: 8,107 LB
UNIT MOUNTING: FLOOR MOUNTED ON HOUSEKEEPING PAD.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
RETURN IN	81	86	87	79	77	76	78	70
SUPPLY	87	92	93	89	89	89	85	80
OA IN	82	88	89	81	80	79	81	73
EXHAUST OUT	**	**	**	**	**	**	**	**

AIR MIXING SECTION: TOP RETURN AIR INTAKE, 4' - 3" SECTION

RETURN FAN ARRAY: 20,000 CFM TOTAL, 6 FANS w/ 17.7" WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT 3,333 CFM, 1304 RPM, 0.97 TSP, 4.8 TOTAL BHP, 460/3/60, 5.6 FLA (EACH) 4.4 kW ECM DIRECT DRIVE 5.3 VDC. PROVIDE WITH FAN INLET AIR MEASUREING DEVICES BY MANUFACTURER.

AIR MIXING SECTION: TOP EXHAUST AIR DISCHARGE, 4' - 3" SECTION

AIR MIXING SECTION: TOP OUTDOOR AIR INTAKE, 4' - 3" SECTION

FILTERS: PREFILTER 2" PLEATED MERV-8, HIGH EFFICIENCY 12" RIGID CARTRIDGE MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

HEATING SECTION: 103.1 GPM, 140°F EWT, 120.3°F LWT, 40°F EAT, 84.6°F LAT, 20000 CFM, 1018 TMBH, 0.23" WG.

ACCESS SECTION: 1' - 8" SECTION WITH ACCESS DOOR.

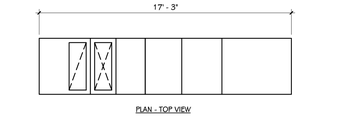
COOLING SECTION: 129.1 GPM, 42°F EWT, 54°F LWT, 80°F EDB, 67°F EWB, 53.6°F LDB, 53.6°F LWB 20000 CFM, 550.7 SMBH, 777.0 TMBH, 0.75" WG.

ACCESS SECTION: 1' - 8" SECTION WITH ACCESS DOOR.

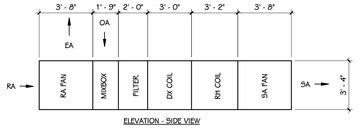
SUPPLY FAN: 20000 CFM TOTAL, 5 FANS w/ 17.7" WHEEL AND BACKDRAFT DAMPERS, EACH OPERATING AT 4,000 CFM, 2097 RPM, 4.04 TSP, 2.5 ESP, 17.2 TOTAL BHP, 460/3/60, 5.6 FLA (EACH), 14.5 kW ECM DIRECT DRIVE 8.5 VDC. PROVIDE WITH FAN INLET AIR MEASUREING DEVICES BY MANUFACTURER.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 460/3/60, 65.8 FLA, 82.3 MCA, 100 MOCP, 10 SCCR, DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS: PROVIDE WITH MINIMUM 1 YEAR MANUFACTURE'S WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



PLAN - TOP VIEW



ELEVATION - SIDE VIEW

AHU-11

BASED ON: CARRIER MODEL 39MN
AREA SERVED: OFFICE SPACES 4 SURROUNDING COORIDORS
TYPE: MODULAR, VARIABLE AIR VOLUME 3,750 CFM NOMINAL, SIZE 08W.
OUTSIDE AIR: MINIMUM 400 CFM - 800 CFM BASED ON CO2.
WEIGHT: 2286 LBS
UNIT MOUNTING: INDOOR SUSPENDED.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
RETURN IN	71	75	82	78	71	68	69	70
SUPPLY	82	80	85	84	84	87	80	78
OA IN	72	77	85	80	73	71	72	72
EXHAUST OUT	**	**	**	**	**	**	**	**

RETURN FANS: 3,750 CFM TOTAL @ 0.6" ESP, 2 FANS w/ 15.7" WHEEL, 1,087 FAN RPM, 0.5 BHP, 0.6 kW ECM MOTOR, 2.9 VDC, 4.8 FLA (EACH), 460/3/60.

MIXING BOX: TOP PREMIUM OPPOSED BLADE LOW-LEAK DAMPERS.

MIXING BOX: REAR PREMIUM PARALLEL, RIGHT SIDE ACCESS DOOR. TEMPURATURE CONTROLS CONTRACTOR TO PROVIDE EBTRON GOLD SERIES THERMAL DISPERSION AIRFLOW MEASUREMENT DEVICE WITH OUTPUT DENSITY "D".

FILTERS: 2" PLEATED MERV 8 PRE-FILTER, MERV 13 FILTER, DOOR RIGHT SIDE, MINIHELIC DIFFERENTIAL PRESSURE GAGE 0-2" w.c. RIGHT SIDE.

HOT WATER COIL: 124.26 MBH, 12.6 GPM, 140.0 °F EWT, 120.0 °F LWT, 60.0 °F EDB, 89.63 °F LDB, 0.39" APD, 2.8' WPD.

ACCESS SECTION: INCLUDE VIEW WINDOW, LED MARINE LIGHT AND ACCESS DOOR.

CHILLED WATER COIL: 140.97 TMBH, 23.4 GPM, 101.19 SMBH, 42.0 °F EWT, 54.0 °F LWT, 80.0 °F EDB, 67.0 °F EWB, 54.56 °F LDB, 54.29 °F LWB, 0.78" APD, 2.7' WPD, 490.8 FPM MAX FACE VELOCITY, WITH 55 IAQ DRAIN PAN.

SUPPLY FAN: 3,750 CFM @ 2.5" ESP, 2,539 RPM, 3.4 BHP, 2.8 kW ECM MOTOR 6.7 VDC, 4.8 FLA, 460/3/60.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 460/3/60, 18.6 FLA, 23.3 MCA, 30 MOCP, 10 SCCR

CONTROLS: BY OTHERS

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

SCALE:	1/4" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-502	D

22-133.010

FAN COILS — BASED ON TRANE

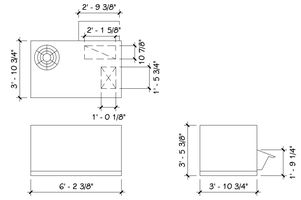
MARK	MODEL	AIR FLOW (CFM)	OUTDOOR AIR (CFM)	MAX SOUND (NC)	COOLING COIL						HEATING COIL					MOTOR DATA		REMARKS
					E.S.P. (IN WC)	TMBH	EAT (°F)	LAT (°F)	WPD (FT)	FLOW (GPM)	TMBH	EAT (°F)	LAT (°F)	WPD (FT)	FLOW (GPM)	TYPE	VOLTAGE	
FCU-141A	40CEA06	350 CFM	100 CFM	66	0.35	10.9	80/67	57/55.6	6.6	3.2	10.9	60	82	1.20	1.1 GPM	ECM	115/1/60	1,2

NOTES:

1. BASED ON 130° EWT, 20°F dT
2. FAN COILS SHALL HAVE ECM MOTORS WITH 0-10V CONTROL FOR VARIABLE SPEED OPERATION.

CABINET HEATERS - WATER — SIGMA

MARK	MODEL	TYPE	AIRFLOW (CFM)	HEATING COIL					MOTOR DATA				REMARKS
				CAPACITY (MBH)	FLOW (GPM)	WPD (FT)	EWT (°F)	LWT (°F)	HP	RPM	VOLTAGE	PHASE	
CH-002	CR81	CEILING MOUNT	400	21.9	2.3	1.04	140 °F	120 °F	0.1	0	120	1	
CH-101	CR81	CEILING MOUNT	400	21.9	2.3	1.04	140 °F	120 °F	0.1	0	120	1	
CH-C5	CR81	CEILING MOUNT	400	21.9	2.3	1.04	140 °F	120 °F	0.1	0	120	1	
CH-H1-3	CR81	CEILING MOUNT	400	21.9	2.3	1.04	140 °F	120 °F	0.1	0	120	1	
CH-H1-7	CR81	CEILING MOUNT	400	21.9	2.3	1.04	140 °F	120 °F	0.1	0	120	1	
CH-51-1	CR81	CEILING MOUNT	600	29.3	3.0	1.73	140 °F	120 °F	0.1	0	120	1	
CH-51-2	CR81	CEILING MOUNT	600	29.3	3.0	1.73	140 °F	120 °F	0.1	0	120	1	



RTU-1 & 2 T&S GAS

BASED ON: CARRIER MODEL 50LC (NOM. 4 TONS).
TYPE: OUTDOOR, HIGH-EFF., PACKAGED, MULTI- ZONE, VARIABLE VOLUME, 1,200 CFM, VERTICAL SUPPLY / VERTICAL RETURN.

OUTSIDE AIR: MIN. 420 CFM, BAROMETRIC RELIEF AND 100% (LOW LEAK) ENTHALPY ECONOMIZER INTEGRATED WITH 2-STAGE DX COOLING.

WEIGHT: 780 LBS.

MOUNTING: DIRECT REPLACEMENT ON EXISTING CURB - PROVIDE CURB ADAPTER.

CONTROLS: FACTORY CONTROLS, BACNET MSTP. FACTORY CONTROLS SHALL ACCEPT RUN SCHEDULE, SPACE TEMPERATURE ± SETPOINT, AND HIGH/LOW FAN SPEED. FACTORY CONTROLS SHALL OUTPUT TO BUILDING MANAGEMENT SYSTEM: RUN STATUS, RUNTIME, ALARMS, COOLING STAGES, ECONOMIZER %, SUPPLY AIR TEMP, OUTSIDE AIR TEMP ± HUMIDITY, RETURN AIR TEMP ± HUMIDITY, AND DIRTY FILTER SWITCH. AFMS: AIR MONITOR (MODEL: OAM II) WITH INTAKE HOOD MOUNTING SCREEN.

FILTERS: 2" PLEATED MERV 13 FILTER

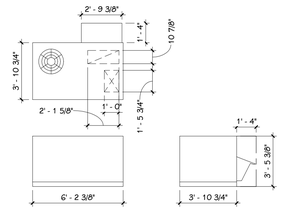
HEATING: 120 MBH NAT. GAS HEAT.

DX COOLING: 49.5 TMBH, 37.5 SMBH, 80.1°F EDB, 67.0°F EWB, 59.7°F LDB, 58.1°F LWB. R-410A REFRIGERANT, 2-STAGE COMPRESSOR. 16.4 SEER.

SUPPLY FAN: 1,200 CFM AT 1.5" ESP, 1,546 RPM, 2.44 HP, 208/3/60 BELT DRIVE MOTOR WITH VFD CONTROLLER.

ELECTRICAL: 208/3/60, FUSED DISCONNECT, 40 MCA, 50 MOCP, WITH 120V CONVENIENCE OUTLET.

OPTIONS: DEMAND CONTROLLED VENTILATION, POWERED EXHAUST, SYSTEMVU CONTROLLER, SPACE RELATIVE HUMIDITY SENSOR, SPACE TEMPERATURE SENSOR WITH OVERRIDE AND SETPOINT ADJUSTMENT.



RTU-3 GARAGE BREAKROOM

BASED ON: CARRIER MODEL 50LC (NOM. 4 TONS).
TYPE: OUTDOOR, HIGH-EFF., PACKAGED, MULTI- ZONE, VARIABLE VOLUME. 1,750 CFM, VERTICAL SUPPLY / VERTICAL RETURN.

OUTSIDE AIR: 420 CFM, BAROMETRIC RELIEF AND 100% (LOW LEAK) ENTHALPY ECONOMIZER INTEGRATED WITH 2-STAGE DX COOLING.

WEIGHT: 780 LBS.

MOUNTING: DIRECT REPLACEMENT ON EXISTING CURB - PROVIDE CURB ADAPTER.

CONTROLS: FACTORY CONTROLS, BACNET MSTP. FACTORY CONTROLS SHALL ACCEPT RUN SCHEDULE, SPACE TEMPERATURE ± SETPOINT, AND HIGH/LOW FAN SPEED. FACTORY CONTROLS SHALL OUTPUT TO BUILDING MANAGEMENT SYSTEM: RUN STATUS, RUNTIME, ALARMS, COOLING STAGES, ECONOMIZER %, SUPPLY AIR TEMP, OUTSIDE AIR TEMP ± HUMIDITY, RETURN AIR TEMP ± HUMIDITY, AND DIRTY FILTER SWITCH. AFMS: AIR MONITOR (MODEL: OAM II) WITH INTAKE HOOD MOUNTING SCREEN.

FILTERS: 2" PLEATED MERV 13 FILTER

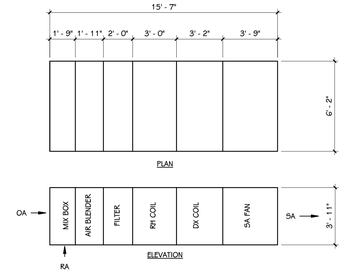
HEATING: 150 MBH NAT. GAS HEAT.

DX COOLING: 49.5 TMBH, 37.5 SMBH, 80.1°F EDB, 67.0°F EWB, 59.7°F LDB, 58.1°F LWB. R-410A REFRIGERANT, 2-STAGE COMPRESSOR. 16.4 SEER.

SUPPLY FAN: 1,750 CFM AT 0.7" ESP, 1,152 RPM, 1.0 HP, PREMIUM EFFICIENCY MOTOR, 208/3/60 BELT DRIVE MOTOR WITH VFD CONTROLLER.

ELECTRICAL: 208/3/60, FUSED DISCONNECT. 34 MCA, 45 MOCP, WITH 120V CONVENIENCE OUTLET.

OPTIONS: DEMAND CONTROLLED VENTILATION, POWERED EXHAUST, SYSTEMVU CONTROLLER, SPACE RELATIVE HUMIDITY SENSOR, SPACE TEMPERATURE SENSOR WITH OVERRIDE AND SETPOINT ADJUSTMENT.



AHU-13 MATERIAL STORAGE

BASED ON: CARRIER MODEL 39 MN SIZE 06W
AREA SERVED: UNIT-8 SUB-METRO / MAINTENANCE CREW ROOMS AND FIELD LEADERS
TYPE: INDOOR, MODULAR, VARIABLE AIR VOLUME 2600 CFM NOMINAL, SIZE 14W.
MINIMUM OUTSIDE AIR: MIN. 1300 CFM BASED ON CO2.
WEIGHT: 1804 LBS. (AHU)
UNIT MOUNTING: INDOOR, SUSPENDED.

OUTDOOR AIR INTAKE: TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE EBTRON GOLD SERIES THERMAL DISPERSION AIRFLOW MEASUREMENT DEVICE WITH OUTPUT DENSITY "D". LOCATE IN INTAKE PLENUM.

MIXING BOX: REAR PREMIUM PARALLEL, RIGHT SIDE ACCESS DOOR.

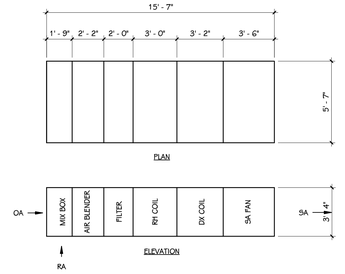
FILTERS: 2" PLEATED MERV 8 PRE-FILTER, MERV 13 FILTER, DOOR RIGHT SIDE, MINIHELIC DIFFERENTIAL PRESSURE GAUGE 0-2" w.c. RIGHT SIDE.

CHILLED WATER COIL: 132.6 TMBH, 89.1 SMBH, 22 GPM, 42 °F EWT, 54 °F LWT, 85.0 °F EDB, 69.5 °F EWB, 52.39 °F LDB, 52.23 °F LWB, 0.67" APD, 440.7 FPM MAX FACE VELOCITY, WITH 55 IAQ DRAIN PAN.
STD. CAPACITY STEPS: 8-100%, 36 STEPS.

HOT WATER COIL: 119.6 MBH, 12.1 GPM, 140.0 °F EWT, 120 °F LWT, 30.0°F EDB, 69.3 °F LDB, 0.37" APD, 0.8' WPD MAX.

SUPPLY FANS: 2,600 CFM @ 1.25" ESP, 2296 RPM, 1.8 BHP, 1.6 kW ECM DIRECT DRIVE MOTOR, 6.2 VDC, 460/3/60HZ.

ELECTRICAL: SINGLE POINT POWER WITH DISCONNECT, 11.9 FLA, 14.9 MCA, 20 MOCP, 10 SCCR, 460/3/60HZ.



AHU-14 MATERIAL STORAGE

BASED ON: CARRIER MODEL 39 MN SIZE 08W
AREA SERVED: UNIT-8 MANAGERS HOTELING, SURROUNDING OFFICES, FACILITIES, AND CORRIDOR
TYPE: INDOOR, MODULAR, VARIABLE AIR VOLUME 3,000 CFM NOMINAL, SIZE 10W.
MINIMUM OUTSIDE AIR: MIN. 1,500 CFM BASED ON CO2.
WEIGHT: 2,033 LBS. (AHU)
UNIT MOUNTING: INDOOR, SUSPENDED.

OUTDOOR AIR INTAKE: TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE EBTRON GOLD SERIES THERMAL DISPERSION AIRFLOW MEASUREMENT DEVICE WITH OUTPUT DENSITY "D". LOCATE IN INTAKE PLENUM.

MIXING BOX: REAR PREMIUM PARALLEL, RIGHT SIDE ACCESS DOOR.

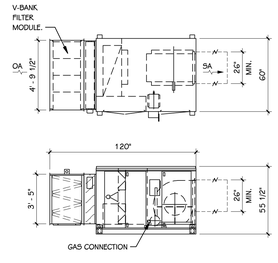
FILTERS: 2" PLEATED MERV 8 PRE-FILTER, MERV 13 FILTER, DOOR RIGHT SIDE, MINIHELIC DIFFERENTIAL PRESSURE GAUGE 0-2" w.c. RIGHT SIDE.

CHILLED WATER COIL: 144 TMBH, 99.1 SMBH, 23.9 GPM, 42 °F EWT, 54 °F LWT, 85.0 °F EDB, 69.5 °F EWB, 53.57 °F LDB, 53.42 °F LWB, 0.55" APD, 393 FPM MAX FACE VELOCITY, WITH 55 IAQ DRAIN PAN. STD. CAPACITY STEPS: 8-100%, 36 STEPS.

HOT WATER COIL: 152.4 MBH, 15.4 GPM, 140.0 °F EWT, 120 °F LWT, 30.0 °F EDB, 73.5 °F LDB, 0.29' APD, 1.2' WPD MAX.

SUPPLY FANS: 3,000 CFM @ 1.25" ESP, 2012 RPM, 1.7 BHP, 1.5 kW ECM DIRECT DRIVE MOTOR, 5.3 VDC, 4.8 FLA, 460/3/60HZ.

ELECTRICAL: SINGLE POINT POWER WITH DISCONNECT, 9.0 FLA, 11.3 MCA, 15 MOCP, 10 SCCR, 460/3/60HZ.



MUA-15 INDOOR PARKING AREA

BASED ON: "RUPPAIR" MODEL RAM-M 20
AREA SERVED: INDOOR PARKING AREA
TYPE: INDOOR, MODULAR, VARIABLE AIR VOLUME 13,000 CFM NOMINAL, SIZE 25W.
MINIMUM OUTSIDE AIR: MIN. 1,000 CFM - 6,000 CFM BASED ON CO2.
WEIGHT: 2,037 LBS. (AHU)
UNIT MOUNTING: INDOOR, SUSPENDED.

OUTDOOR AIR INTAKE: TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE EBTRON GOLD SERIES THERMAL DISPERSION AIRFLOW MEASUREMENT DEVICE WITH OUTPUT DENSITY "D". LOCATE IN INTAKE PLENUM.

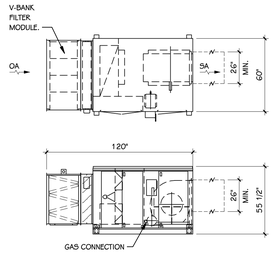
MIXING BOX: REAR PREMIUM PARALLEL, RIGHT SIDE ACCESS DOOR.

FILTERS: 2" PLEATED MERV 8 PRE-FILTER, MERV 13 FILTER, DOOR RIGHT SIDE, MINIHELIC DIFFERENTIAL PRESSURE GAGE 0-2" w.c. RIGHT SIDE.

HEATING: 1625 MBH, DIRECT-FIRED (N.G.) 5.5. BURNER.

SUPPLY FAN: 13,500 CFM @ 1.0" ESP, 956 FAN RPM, 11.4 BHP, 15 HP PREMIUM EFF. MOTOR WITH VFD AND SHAFT GROUNDING RING, 208/3/60HZ.

ELECTRICAL: SINGLE POINT POWER WITH DISCONNECT, 208/3/60HZ.



MUA-16 INDOOR PARKING AREA

BASED ON: "RUPPAIR" MODEL RAM-M 20
AREA SERVED: INDOOR PARKING AREA
TYPE: INDOOR, MODULAR, VARIABLE AIR VOLUME 13,000 CFM NOMINAL, SIZE 25W.
MINIMUM OUTSIDE AIR: MIN. 1,000 CFM - 6,000 CFM BASED ON CO2.
WEIGHT: 2,037 LBS. (AHU)
UNIT MOUNTING: INDOOR, SUSPENDED.

OUTDOOR AIR INTAKE: TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE EBTRON GOLD SERIES THERMAL DISPERSION AIRFLOW MEASUREMENT DEVICE WITH OUTPUT DENSITY "D". LOCATE IN INTAKE PLENUM.

MIXING BOX: REAR PREMIUM PARALLEL, RIGHT SIDE ACCESS DOOR.

FILTERS: 2" PLEATED MERV 8 PRE-FILTER, MERV 13 FILTER, DOOR RIGHT SIDE, MINIHELIC DIFFERENTIAL PRESSURE GAGE 0-2" w.c. RIGHT SIDE.

HEATING: 1625 MBH, DIRECT-FIRED (N.G.) 5.5. BURNER.

SUPPLY FAN: 13,500 CFM @ 1.0" ESP, 956 FAN RPM, 11.4 BHP, 15 HP PREMIUM EFF. MOTOR WITH VFD AND SHAFT GROUNDING RING, 208/3/60HZ.

ELECTRICAL: SINGLE POINT POWER WITH DISCONNECT, 208/3/60HZ.

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

SCALE:	1/4" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-503	D

22-133.010

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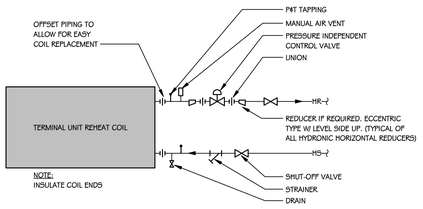
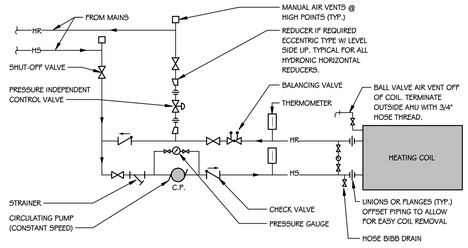
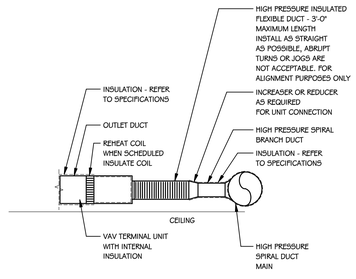


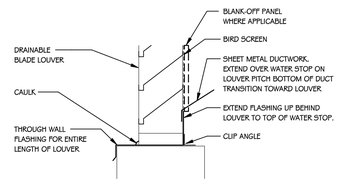
TERMINAL UNIT REHEAT COIL PIPING DETAIL (PICV)
SCALE: NONE



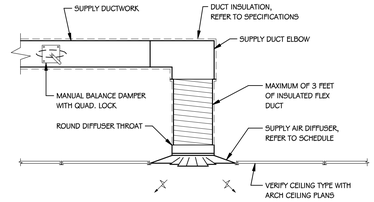
AHU HEATING COIL PIPING DETAIL - SINGLE COIL 2-WAY (PICV)
SCALE: NONE



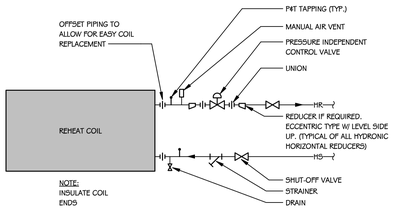
TERMINAL UNIT DUCTWORK DETAIL
SCALE: NONE



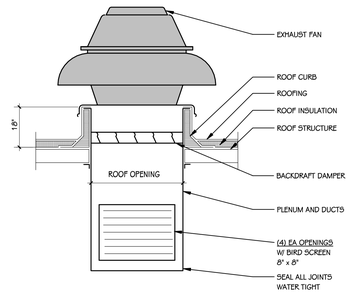
LOUVER INSTALLATION DETAIL
SCALE: NONE



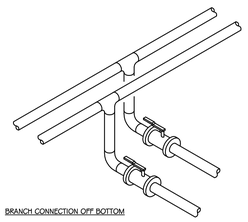
CEILING MOUNTED SUPPLY DIFFUSER DETAIL - TYPICAL
SCALE: NONE



REHEAT COIL PIPING DETAIL (PICV)
SCALE: NONE



MECHANICAL ROOM EXHAUST FAN DETAIL
SCALE: NONE

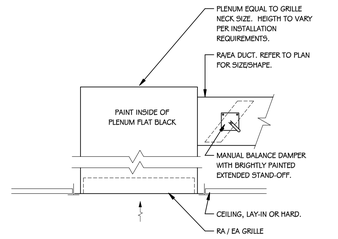


BRANCH CONNECTION OFF BOTTOM

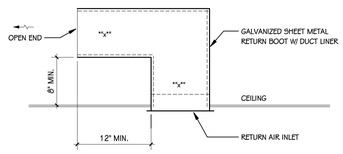
APPLIES TO THE FOLLOWING SYSTEMS:
HEATING HOT WATER
CHILLED WATER
GEOTHERMAL

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION TO THE TOP OF THE MAINS IS NOT ACCEPTABLE.

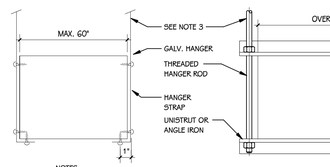
BRANCH TAKE-OFF PIPING DETAIL
SCALE: NONE



RETURN / EXHAUST AIR GRILLE PLENUM DETAIL
SCALE: NONE

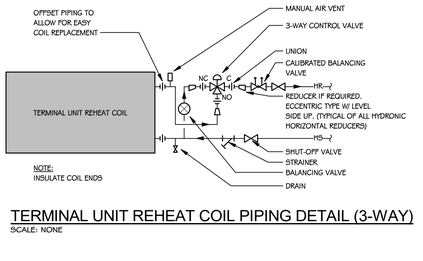


RETURN AIR BOOT DETAIL
SCALE: NONE

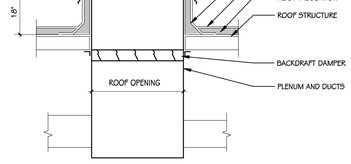


NOTES:
1. ON DUCTS OVER 48" WIDE, BOTTOM SHALL BE BRACE BY ANGLE. FOR CROSS SECTION AREA MORE THAN 6 SQ FT, DUCT SHALL BE BRACED BY ANGLES ON ALL FOUR SIDES.
2. CUTTING AND PATCHING SHALL BE LIMITED TO A MINIMUM AS REQUIRED FOR PROPER INSTALLATION.
3. SUPPORTS SHALL BE SPACED AND SIZED PER SMACNA.

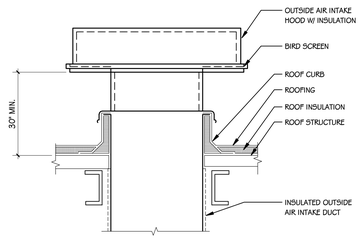
DUCT HANGER SUPPORT DETAIL
SCALE: NONE



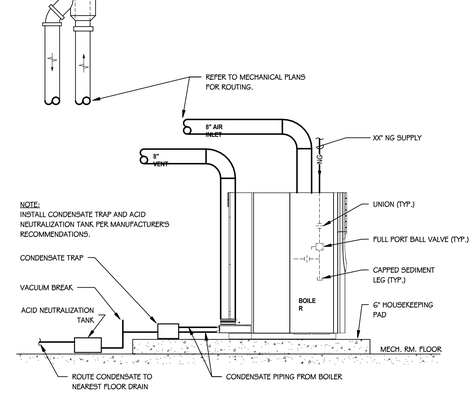
TERMINAL UNIT REHEAT COIL PIPING DETAIL (3-WAY)
SCALE: NONE



ROOF EXHAUSTER DETAIL - UPBLAST
SCALE: NONE



OUTSIDE AIR INTAKE DETAIL
SCALE: NONE



B-1, B-2 & B-3

BASED ON: LOCHINVAR "FTXL" MODEL: FTX850N
TYPE: 97% AHRI THERMAL EFFICIENCY, NAT. GAS-FIRED CONDENSING BOILER
OPERATING WEIGHT: 700 LBS

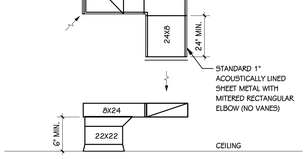
HEATING WATER: 2-1/2" FLANGED CONNECTIONS, 25 GPM MIN FLOW @ MIN FIRE, 150 GPM MAX FLOW, X.X FT WPD @ XX GPM, XX° dT.

NATURAL GAS: 1" CONNECTION, 850 MBH MAX INPUT, 118 MBH MIN OUTPUT, 825 MBH MAX OUTPUT, 4" W.C. MIN INLET PRESSURE (NG), 14" W.C. MAX INLET PRESSURE (NG)

VENTING: 4" DIA. PVC COMBUSTION AIR INLET AND 6" VENT, CONCENTRIC VENT THRU ROOF.

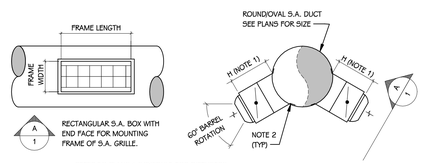
ELECTRICAL: SINGLE POINT POWER WITH DISCONNECT, 120/1/60

OPTIONS: PROVIDE WITH CONDENSATE NEUTRALIZATION KIT, HOT WATER GENERATOR SENSOR, AND BMS GATEWAY. REVEAL ALL POINTS.



NOTE:
1. SEE PLANS LOCATION OF RETURN AIR TRANSFER DUCTS.

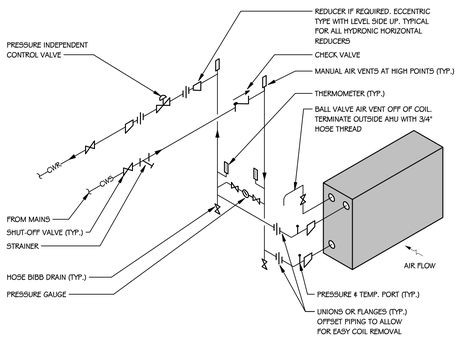
RETURN AIR PLENUM TRANSFER DUCT DETAIL
SCALE: NONE



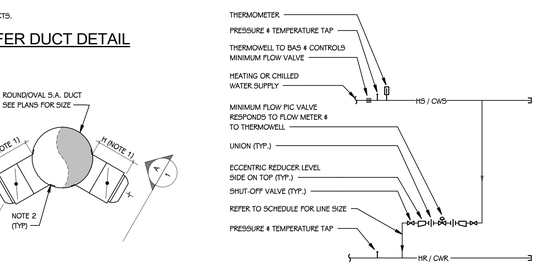
REFER TO PLANS & SCHEDULE FOR DIFFUSERS
PAINT TO MATCH SUPPLY DUCTWORK

NOTES:
1. DIMENSION "H" EQUALS HEIGHT OF DAMPER BLADE PLUS 2" (MIN.) TO ALLOW FOR INSTALLATION OF DAMPER WITHOUT DAMPER BLADE PROTRUDING INTO STREAM OF BRANCH MAIN DUCT.
2. SEAL (SUITABLE FOR PAINTING) ALL SEAMS AND JOINTS AIR TIGHT (TYP.)

DUCT MOUNTED DIFFUSER DETAIL
SCALE: NONE



AHU COOLING COIL PIPING DETAIL - SINGLE COIL 2-WAY (PICV)
SCALE: NONE



LOCATION	SERVICE	LINE SIZE	FLOW RANGE
ELECTRICAL KAL-110	HEATING WATER	1"	0 - *** GPM
MECHANICAL KAL-207	CHILLED WATER	4"	0 - *** GPM

MINIMUM & TEMP PIC VALVE DETAIL
SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
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REFERENCE DRAWINGS

SIGNATURE
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MICHIGAN P.E. No. 6201050501

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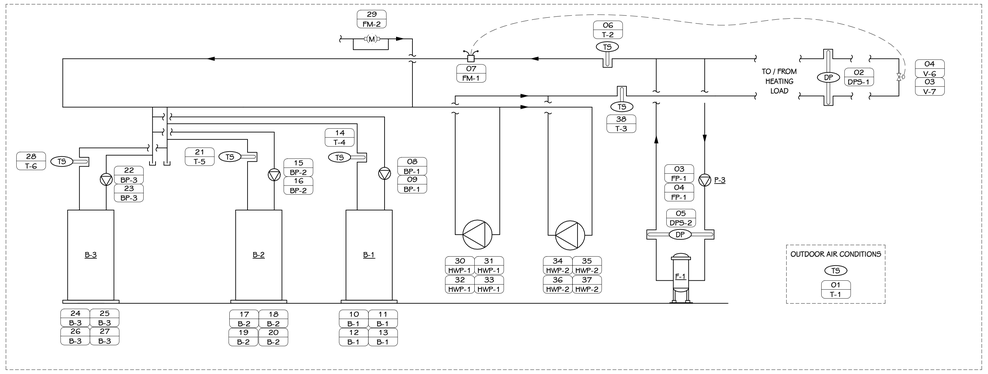
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

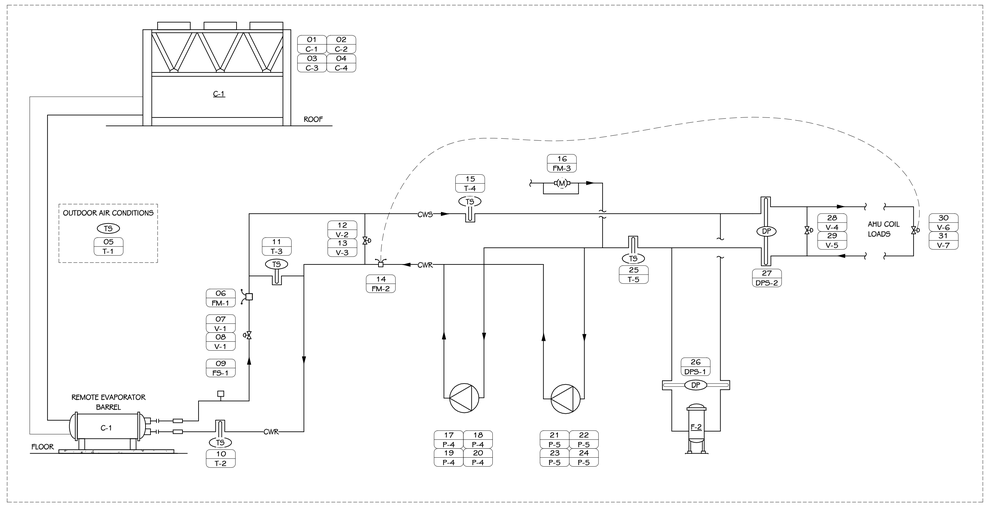
SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-504
REV: D

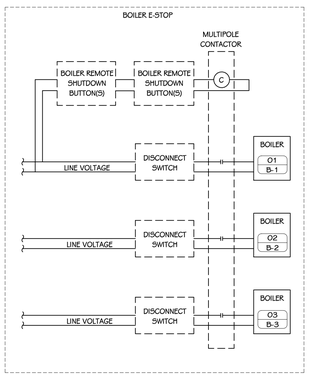
22-133.010



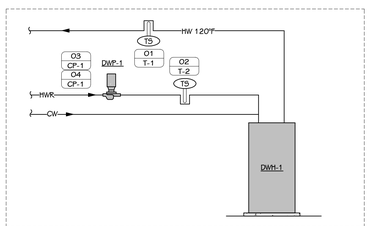
HEATING HOT WATER CONTROLS DIAGRAM
SCALE: NONE



CHILLED WATER CONTROLS DIAGRAM
SCALE: NONE



BOILER E-STOP CONTROLS DIAGRAM
SCALE: NONE



DOMESTIC WATER HEATER CONTROL DIAGRAM
SCALE: NONE

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	REMARKS
BOILER E-STOP					
01	B-1	ALARM POINT	■		E-STOP ALARM
02	B-2	ALARM POINT	■		E-STOP ALARM
03	B-3	ALARM POINT	■		E-STOP ALARM
HEATING HOT WATER SYSTEM					
01	T-1	OUTDOOR AIR TEMPERATURE		■	GLOBAL
02	DPS-1	HEATING LOOP DIFFERENTIAL PRESSURE	■	■	
03	FP-1	ENABLE/DISABLE		■	FILTER PUMP
03	V-7	MINIMUM FLOW BYPASS VALVE POSITION		■	
04	FP-1	RUN STATUS	■	■	FILTER PUMP
04	V-6	MINIMUM FLOW BYPASS VALVE SETPOINT		■	
05	DPS-2	FILTER DIFFERENTIAL PRESSURE	■	■	
06	T-2	HEATING WATER RETURN TEMPERATURE		■	
07	FM-1	LOOP FLOW (GPM)		■	
08	BP-1	STATUS		■	
09	BP-1	ALARM STATUS	■	■	
10	B-1	ENABLE/DISABLE		■	SENT FROM BMS (SYSTEM) TO BOILER CONTROLLER
11	B-1	STATUS		■	MODBUS/BACNET DATA (FIRE RATE/HOURS...)
12	B-1	ALARM STATUS	■	■	
13	B-1	FIRING RATE		■	
14	T-4	LEAVING WATER TEMPERATURE		■	
15	BP-2	STATUS		■	
16	BP-2	ALARM STATUS		■	
17	B-2	ENABLE/DISABLE		■	SENT FROM BMS (SYSTEM) TO BOILER CONTROLLER
18	B-2	STATUS		■	MODBUS/BACNET DATA (FIRE RATE/HOURS...)
19	B-2	ALARM STATUS	■	■	
20	B-2	FIRING RATE		■	
21	T-5	LEAVING WATER TEMPERATURE		■	
22	BP-3	STATUS		■	
23	BP-3	ALARM STATUS		■	
24	B-3	ENABLE/DISABLE		■	SENT FROM BMS (SYSTEM) TO BOILER CONTROLLER
25	B-3	STATUS		■	MODBUS/BACNET DATA (FIRE RATE/HOURS...)
26	B-3	ALARM STATUS	■	■	
27	B-3	FIRING RATE		■	
28	T-6	LEAVING WATER TEMPERATURE		■	
29	FM-2	BOILER MAKE UP WATER FLOW RATE		■	
30	HWP-1	ENABLE/DISABLE		■	
31	HWP-1	RUN STATUS	■	■	
32	HWP-1	SPEED CONTROL		■	
33	HWP-1	VFD FAULT STATUS	■	■	
34	HWP-2	ENABLE/DISABLE		■	
35	HWP-2	RUN STATUS	■	■	
36	HWP-2	SPEED CONTROL		■	
37	HWP-2	VFD FAULT STATUS	■	■	
38	T-3	HEATING SUPPLY WATER TEMPERATURE	■	■	
CHILLED WATER SYSTEM (AIR COOLED)					
01	C-1	ENABLE/DISABLE		■	
02	C-2	CHILLED WATER TEMPERATURE SETPOINT		■	
03	C-3	CHILLER STATUS		■	MODBUS/BACNET DATA (FIRE RATE/HOURS...)
04	C-4	CHILLER ALARM	■	■	
05	T-1	OUTDOOR AIR TEMPERATURE		■	GLOBAL
06	FM-1	CHILLER 2 FLOW RATE		■	
07	V-1	CHILLER 2 ISOLATION VALVE POSITION		■	
08	V-1	CHILLER 2 ISOLATION VALVE OPEN/CLOSE		■	
09	FS-1	CHILLER 2 FLOW SWITCH		■	MAY BE INTERNAL TO CHILLER
10	T-2	CHILLER 2 RETURN TEMPERATURE		■	MAY BE INTERNAL TO CHILLER
11	T-3	CHILLER 2 SUPPLY TEMPERATURE		■	MAY BE INTERNAL TO CHILLER
12	V-2	MINIMUM FLOW BYPASS VALVE SETPOINT		■	
13	V-3	MINIMUM FLOW BYPASS VALVE POSITION		■	
14	FM-2	LOOP FLOW (GPM)		■	
15	T-4	CHILLED WATER RETURN TEMPERATURE		■	
16	FM-3	CHILLER MAKE UP WATER FLOW RATE		■	
17	P-4	ENABLE/DISABLE		■	
18	P-4	RUN STATUS		■	
19	P-4	SPEED CONTROL		■	
20	P-4	VFD FAULT STATUS		■	
21	P-5	ENABLE/DISABLE		■	
22	P-5	RUN STATUS		■	
23	P-5	SPEED CONTROL		■	
24	P-5	VFD FAULT STATUS		■	
25	T-5	CHILLED WATER SUPPLY TEMPERATURE		■	
26	DPS-1	DIFFERENTIAL PRESSURE FILTER STATUS		■	
27	DPS-2	COOLING LOOP DIFFERENTIAL PRESSURE		■	
28	V-4	MINIMUM FLOW BYPASS VALVE SETPOINT		■	
29	V-5	MINIMUM FLOW BYPASS VALVE POSITION		■	
30	V-6	MINIMUM FLOW BYPASS VALVE SETPOINT		■	
31	V-7	MINIMUM FLOW BYPASS VALVE POSITION		■	
DOMESTIC WATER HEATER					
01	T-1	TEMPERED SUPPLY WATER TEMPERATURE		■	120°F / ALARM HIGH AND LOW TEMPERATURES
02	T-2	DOMESTIC RETURN WATER TEMPERATURE		■	
03	CP-1	ENABLE/DISABLE		■	
04	CP-1	STATUS	■	■	

SEQUENCE OF OPERATIONS

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROLS DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

SINGLE ZONE VAV ROOFTOP UNIT CONTROLS (RTU-1, 2, 4 3)

A. UNIT IS PROVIDED WITH FACTORY CONTROLS. UNIT IS AN OUTDOOR, SINGLE-ZONE, CONSTANT VOLUME UNIT, CONSTANT SPEED EXHAUST FAN, ENTHALPY ECONOMIZER, OUTSIDE AIR AIRFLOW MEASURING STATION WITH TRANSDUCER, AND DX COOLING COIL WITH INTEGRAL AIR COOLED CONDENSING UNIT. UNITS ARE EQUIPPED WITH BACNET COMMUNICATION AND TERMINAL STRIP FOR BUILDING MANAGEMENT SYSTEM (BMS) INTEGRATION, CONTROL, AND MONITORING.
B. UNIT SHALL HAVE AN ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
   a. TIME-OF-DAY (TOD) SCHEDULE.
C. START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   a. WHEN INDEXED TO STOP: DISABLE COOLING AND HEATING SOURCES AND AFTER TIME DELAY DISABLE SUPPLY AND EXHAUST FANS, OUTDOOR AND EXHAUST AIR DAMPERS 100% CLOSED, RETURN AIR DAMPER 100% OPEN.
   b. WHEN INDEXED TO START: ENABLE SUPPLY FAN, OPERATION OF SYSTEM TO RESUME AFTER START-UP DELAY.
D. THE BMS SHALL SEND THE UNIT CONTROLLER THE FOLLOWING MODES BASED ON SPACE NEEDS: OCCUPIED BYPASS, OPTIMAL MORNING WARM-UP / PRE-COOL, OCCUPIED HEAT/COOL, UNOCCUPIED HEAT/COOL MODES.
   a. IF BMS COMMUNICATION IS LOST WITH UNIT CONTROLLER, THE UNIT CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.
E. UNITS SHALL HAVE THE FOLLOWING ADJUSABLE SETPOINTS:
   a. OCCUPIED 74°F COOLING / 70°F HEATING.
   b. UNOCCUPIED 85°F COOLING / 62°F HEATING.
   c. CO2 800 PPM MINIMUM / 1,000 PPM MAXIMUM.
F. FACTORY CONTROLS TO INCLUDE THE FOLLOWING OPTIONS. REVEAL ALL POINTS, TREND AIRFLOWS, AND REPORT ALARMS TO BMS.
   a. OPTIMAL START.
   b. COMPARATIVE ENTHALPY ECONOMIZER.
   c. DIRTY FILTER SWITCH.
   d. FAN FAILURE SWITCH.
   e. SINGLE-ZONE FAN SPEED CONTROL.
   f. POWERED EXHAUST FAN CONTROL.
      • ENABLE WHENEVER OUTDOOR AIR DAMPER ACTUATOR EXCEEDS 25% (ADJ)DAMPER POSITION.
   g. OUTDOOR AIR DAMPER CONTROL.
      • WHEN THE UNIT FANS ARE ENERGIZED DURING SCHEDULE OCCUPANCY, THE UNIT OUTDOOR AIR DAMPER SHALL OPEN TO SCHEDULED MINIMUM AIR FLOW.
   h. UNIT DISCHARGE AIR SENSOR SHALL MODULATE (OR STAGE) THE GAS VALVE, ECONOMIZER DAMPERS, AND CYCLE THE DX COOLING COIL TO MAINTAIN SPACE TEMPERATURE SETPOINT.
   i. THE FOLLOWING SHALL BE SUPPLIED AND INSTALLED BY TEMPERATURE CONTROL INSTALLER:
      • DUCT-MOUNTED SENSORS:
        1. SUPPLY AIR TEMPERATURE AND HUMIDITY.
        2. RETURN AIR TEMPERATURE AND HUMIDITY.
        3. OUTDOOR AIR TEMPERATURE AND HUMIDITY.
        4. CO2.
        5. UNIT OUTDOOR AIR DAMPER CONTROLLED BY OUTDOOR AIR MONITOR STATION (APMS).
      • ZONE LEVEL SENSORS (REFER TO PLANS FOR SENSOR LOCATIONS):
        1. TEMPERATURE.
        2. HUMIDITY.
      • AMBIENT SENSORS:
        1. OUTDOOR AIR TEMPERATURE AND HUMIDITY.
           A. TO BE LOCATED ON NORTH WALL OF FACILITY (OR UNIT) OUT OF DIRECT SUNLIGHT WITH PROPER CLEARANCES FROM SNOW, WIND, UNIT EXHAUST, OR ANY OTHER CONDITION THAT MAY NEGATIVELY INFLUENCE THE READINGS.
      • SUPPLY (DUCT-MOUNTED) AIRFLOW MONITORING STATION.
      • HIGH STATIC PRESSURE SENSOR IN THE SUPPLY DISCHARGE PLENUM TO TURN OFF THE SUPPLY AND EXHAUST FANS UPON SENSING A HIGH STATIC PRESSURE. PROVIDE MANUAL RESET.
      • HIGH NEGATIVE STATIC PRESSURE SENSOR IN THE RETURN AIR PLENUM TO TURN OFF THE SUPPLY AND EXHAUST FANS UPON SENSING A HIGH NEGATIVE STATIC PRESSURE. PROVIDE MANUAL RESET.
   j. DUCT-MOUNTED IONIZATION SMOKE DETECTOR(S) PROVIDED BY DIVISION 28 SHALL DE-ENERGIZE THE UNIT FAN MOTOR WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
   k. ALARM LIST:
      • GENERAL ALARM FOR UNIT ISSUES NOT LISTED BELOW.
      • DIRTY FILTER.
      • DISCHARGE AIR TEMPERATURE +/-10 DEG F.
      • FAN FAILURE.
      • BI-POLAR IONIZATION STATUS.
      • HIGH / LOW DUCT STATIC PRESSURE.
      • SMOKE DETECTION.

HEATING HOT WATER SYSTEM:

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR HEATING HOT WATER SYSTEM OPERATION. SYSTEM IS A COMBINATION OF VARIABLE VOLUME BASE MOUNTED CENTRIFUGAL PUMP(S), VARIABLE FREQUENCY CONTROLLER(S), MODULAR HOT WATER CONDENSING BOILER(S) WITH MANUFACTURER MULTIPLE BOILER CASCADING CONTROLLER AND BOILER PUMP'S, SIDE STREAM FILTER WITH CONSTANT VOLUME INLINE PUMP AND WATER TEMPERATURE/AIR TEMPERATURE/FLOW SENSOR(S).
2. SYSTEM ENABLED/DISABLED BASED ON THE FOLLOWING:
   A. UPON A CALL FOR HEAT BY ANY PIECE OF HEATING EQUIPMENT.
      a. INCLUDE CAPABILITY TO OMIT ANY INDIVIDUAL PIECE OF HEATING EQUIPMENT.
   B. AT AN ADJUSTABLE 55°F OUTDOOR AIR TEMPERATURE.
   C. BY OPERATOR COMMAND.
3. SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   A. WHEN INDEXED TO STOP:
      a. DISABLE BOILER CONTROLLER.
      b. AFTER DELAY OF TEN (10) MINUTE HOLD TO EQUALIZE SYSTEM, DISABLE LEAD PUMP.
   B. WHEN INDEXED TO START:
      a. ENABLE ASSOCIATED BOILER PUMP.
         • PUMP SHALL START AND PROVE FLOW BEFORE BOILER FIRES.
         • PUMP SHALL CONTINUE TO RUN FOR FIVE (5 ADJ.) MINUTES AFTER BOILER STOPS FIRING.
      b. ENABLE LEAD SYSTEM PUMP.
      c. AFTER DELAY OF TEN (10) MINUTE HOLD TO ESTABLISH FLOW IN SYSTEM, ENABLE BOILER CONTROLLER.
4. INITIAL START-UP CONTROL – WHEN INDEXED TO START, SYSTEM CONTROLLER SHALL ENABLE LEAD PUMP BASED ON THE FOLLOWING:
   A. WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, DDC SHALL INDICATE A CRITICAL ALARM .
      a. START LAG PUMP SHOULD LEAD PUMP FAIL.
   B. WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A TOTALIZES OF RUN HOURS FOR UNIT WILL BE ACTIVE.
   C. ALTERNATE OF LEAD AND LAG PUMPS (15 DAYS ADJUSTABLE) TO EVEN OUT OPERATING TIME OF EACH PUMP.
      a. UTILIZE CALENDAR DAY(S) AND TOTALIZED HOURS TO DETERMINE LEAD PUMP FOR DURATION.
5. PUMP PRESSURE CONTROL (FIXED) – SYSTEM CONTROLLER SHALL MODULATE SYSTEM PUMP MOTOR(S) VARIABLE FREQUENCY CONTROLLER(S) TO MAINTAIN A FIXED PRESSURE DIFFERENTIAL (PSID) SETPOINT MEASURED BY AN PRESSURE DIFFERENTIAL CONTROLLER LOCATED 75% OF MAXIMUM MAIN PIPE DISTANCE DOWNSTREAM OF SYSTEM (FINAL POSITION TO BE APPROVED BY ENGINEER). PRESSURE DIFFERENTIAL SETPOINT BASED ON THE FOLLOWING:
   A. SETPOINT TO BE DETERMINED BY TEST AND BALANCE CONTRACTOR.
6. PUMP VARIABLE FREQUENCY CONTROLLER(S) SHALL BE MONITORED BASED ON THE FOLLOWING:
   A. VIA BACNET/MODBUS CONNECTION.
      a. POWER USAGE / SPEED % AND HZ / HOURS / FAULT / ALARM.

E-STOP CONTROLS SEQUENCE OF OPERATION:

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR THE INSTALLATION AND OPERATION OF THE BOILER E-STOP CONTROLS.
2. REFER TO EXISTING BOILER SYSTEM OPERATION FOR E-STOP SEQUENCE OF OPERATION.
3. PROVIDE AND COORDINATE THE INSTALLATION OF E-STOP LOCATIONS BETWEEN THE ELECTRICAL AND CONTROLS CONTRACTOR.
4. PROVIDE AND COORDINATE THE RELAYS AND DEVICES TO BE INSTALLED BETWEEN ELECTRICAL AND CONTROLS CONTRACTOR.
5. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS AND QTY. OF E-STOP BUTTONS (ENTRANCES) AND RELAYS (BOILERS).

SEQUENCE OF OPERATIONS, CON'T

HEATING HOT WATER SYSTEM (CONT)

7. TEMPERATURE CONTROL (OAT RESET) – SYSTEM CONTROLLER SHALL SEND TO BUILDING AUTOMATION CONTROLS SYSTEM AN ADJUSTABLE HEATING HOT WATER TEMPERATURE SETPOINT MEASURED BY MAIN SUPPLY WATER TEMPERATURE SENSOR LOCATED DOWNSTREAM OF HEATING SYSTEM. RESET HOT WATER SUPPLY TEMPERATURE SETPOINT BASED ON THE FOLLOWING:
   A. INITIAL STARTUP SET SUPPLY WATER TEMPERATURE SETPOINT AT 110°F (ADJ.)
   B. MAIN SUPPLY WATER TEMPERATURE SETPOINT SHALL BE RESET BASED ON THE FOLLOWING:
      a. AT 0°F (ADJ.) OUTDOOR AIR TEMPERATURE, SET SUPPLY WATER TEMPERATURE AT 130°F (ADJ.).
      b. AT 55°F (ADJ.) OUTDOOR AIR TEMPERATURE, SET SUPPLY WATER TEMPERATURE AT 110°F (ADJ.).
8. SYSTEM CONTROLLER SHALL MONITOR HEATING HOT WATER SYSTEM GALLONS PER MINUTE (GPM)
   A. COORDINATE MINIMUM FLOW RATE WITH ACTUAL BOILER(S)/PUMP(S) INSTALLED.
9. SIDE STREAM FILTER CONTROL – SYSTEM CONTROLLER SHALL ENABLE FILTER PUMP AND MONITOR FILTER PRESSURE DIFFERENTIAL BASED ON THE FOLLOWING:
   A. FILTER PUMP ENERGIZED WHEN SYSTEM IS ENABLED.
      a. WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
   B. FILTER PRESSURE DIFFERENTIAL CONTROLLER SHALL MONITOR FILTER PRESSURE DIFFERENTIAL.
      a. WHEN PUMP IS ENABLED AND FILTER PRESSURE DIFFERENTIAL READING IS GREATER THAN FILTER ALARM SETPOINT, THE DDC SHALL INDICATE A GENERAL ALARM.
         • ALARM SETPOINT SHALL BE 10 PSID (ADJ.).
10. SYSTEM SAFETY SHUTDOWNS – WHEN EMERGENCY BUTTON(S) LOCATED OUTSIDE OF BOILER ROOM IS ACTIVE, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:
   A. SYSTEM SHALL BE DISABLED WHEN EMERGENCY BUTTON(S) IS ACTIVE.
   B. DE-ENERGIZED BOILERS, PUMPS DISABLED AND ALARM GENERATED.
      a. PUMPS SHALL REMAIN ON FOR A PERIOD OF TIME PRIOR TO BE DISABLED.

AIR COOLED CHILLER:

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR AIR COOLED CHILLED WATER SYSTEM OPERATION. SYSTEM IS A COMBINATION OF VARIABLE-VOLUME INLINE PUMP(S), VARIABLE FREQUENCY CONTROLLER(S), AIR-COOLED CHILLER WITH FACTORY FURNISHED BACNET INTERFACE CONTROLLER AND CHILLER OPTIMIZER CONTROL PANEL, SIDE STREAM FILTER, AND WATER TEMPERATURE/AIR TEMPERATURE/FLOW SENSOR(S).
2. SYSTEM ENABLED BASED ON THE FOLLOWING:
   A. UPON A CALL FOR MECHANICAL COOLING BY ANY PIECE OF COOLING EQUIPMENT.
      a. INCLUDE THE CAPABILITY TO OMIT ANY INDIVIDUAL PIECE OF COOLING EQUIPMENT.
   B. AT AN ADJUSTABLE 55°F OUTDOOR AIR TEMPERATURE.
   C. BY OPERATOR COMMAND.
3. SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   A. WHEN INDEXED TO STOP:
      a. DISABLE CHILLER CONTROLLER.
      b. AFTER DELAY OF FIVE (5) MINUTE HOLD, DISABLE PUMP(S).
   B. WHEN INDEXED TO START:
      a. ENABLE LEAD PUMP(S) (PRIMARY AND SECONDARY).
      b. AFTER DELAY OF FIVE (5) MINUTE HOLD TO ESTABLISH FLOW IN SYSTEM, ENABLE CHILLER CONTROLLER.
4. VARIABLE PRIMARY PUMP PRESSURE CONTROL (FIXED PSI) – SYSTEM CONTROLLER SHALL MODULATE SYSTEM PUMP MOTOR(S) VARIABLE FREQUENCY CONTROLLER(S) TO MAINTAIN A FIXED PRESSURE DIFFERENTIAL (PSID) SETPOINT MEASURED BY AN PRESSURE DIFFERENTIAL CONTROLLER LOCATED 75% OF MAXIMUM MAIN PIPE DISTANCE DOWNSTREAM OF SYSTEM (FINAL POSITION TO BE APPROVED BY ENGINEER). PRESSURE DIFFERENTIAL SETPOINT BASED ON THE FOLLOWING:
   A. COORDINATE MINIMUM FLOW RATE WITH ACTUAL CHILLER(S)/PUMP(S) INSTALLED.
   B. SETPOINT TO BE DETERMINED BY TEST AND BALANCE CONTRACTOR.
5. PUMP VARIABLE FREQUENCY CONTROLLER(S) SHALL BE MONITORED BASED ON THE FOLLOWING:
   A. VIA BACNET/MODBUS CONNECTION (POWER USAGE / SPEED % AND HZ / HOURS / FAULT / ALARM)
6. PUMP INITIAL START-UP CONTROL – WHEN INDEXED TO START, SYSTEM CONTROLLER SHALL ENABLE LEAD PUMP(S) BASED ON THE FOLLOWING:
   A. WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, DDC SHALL INDICATE A CRITICAL ALARM.
      a. START LAG PUMP SHOULD LEAD PUMP FAIL.
   B. WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A TOTALIZES OF RUN HOURS FOR PUMP WILL BE ACTIVE.
   C. ALTERNATE OF LEAD AND LAG PUMPS (7 DAYS, WEDNESDAY, ADJUSTABLE) TO EVEN OUT OPERATING TIME OF EACH PUMP.
      a. UTILIZE CALENDAR DAY(S) AND TOTALIZED HOURS TO DETERMINE LEAD PUMP FOR DURATION.
7. CHILLER STAGING CONTROL – FLOW (GPM)
8. CHILLER 'F CONTROL (VALVE% RESET) – SYSTEM CONTROLLER SHALL SEND TO CHILLER CONTROLLER AN ADJUSTABLE COOLING WATER TEMPERATURE SETPOINT MEASURED BY MAIN SUPPLY WATER TEMPERATURE SENSOR LOCATED DOWNSTREAM OF COOLING SYSTEM. RESET CHILLED WATER SUPPLY TEMPERATURE SETPOINT BASED ON THE FOLLOWING:
   A. INITIAL STARTUP SET SUPPLY WATER TEMPERATURE SETPOINT AT 50°F (ADJ.).
   B. MAIN SUPPLY WATER TEMPERATURE SETPOINT SHALL BE RESET USING "TRIM AND RESPOND" LOGIC WITH THE RANGE OF 42°F TO 50°F (ADJ.). WHEN THE SYSTEM IS OFF, THE SETPOINT SHALL BE AT MINIMUM. WHEN SYSTEM IS ON, EVERY TWO (2) MINUTES, TRIM THE SETPOINT BY 0.25°F.
      a. A REQUEST IS GENERATED WHENEVER ANY COOLING EQUIPMENT CONTROL VALVE POSITION IS GREATER THAN 95% (ADJ.) OPEN UNTIL IT DROPS TO 90% (ADJ.) OPEN.
      b. PROVIDE THE ABILITY TO OMIT OTHER COOLING UNITS FROM "TRIM AND RESPOND" LOGIC.
   C. THE CHILLER CONTROLLER WILL MONITOR SUPPLY MAIN WATER TEMPERATURE AND MODULATE TO MAINTAIN SUPPLY MAIN WATER TEMPERATURE SETPOINTS AS RECEIVED FROM BMS.
      a. UPON INITIAL STARTUP, SET MAIN SUPPLY WATER TEMPERATURE SETPOINT AT 50°F (ADJ.).
9. WHENEVER ANY SECONDARY CONTROL VALVE POSITIONS ARE ABOVE 75% OPEN (ADJ.), RESET SETPOINT DOWN TO A MAXIMUM ADJUSTABLE MAIN SUPPLY WATER TEMPERATURE SETPOINT OF 42° F, TO MAINTAIN A MAXIMUM CONTROL VALVE POSITION OF 95% OPEN (ADJ.).
10. CHILLER CONTROL – WHEN SYSTEM IS ENABLED AND LEAD PRIMARY PUMP HAS PROVED "ON" STATUS, ASSOCIATED CHILLER AND PACKAGED CONTROLS WILL BE ENABLED BY DDC.
   A. CHILLER PACKAGED CONTROLS WILL CONTROL TO DDC CHILLED WATER SETPOINT OF 42°F (ADJ.).
   B. CHILLER STAGING:
      a. PACKAGED CONTROLLER WILL STAGE CIRCUITS "ON" TO MAINTAIN SYSTEM SUPPLY WATER TEMPERATURE SETPOINT.
11. SYSTEM CONTROLLER SHALL MONITOR CHILLED WATER SYSTEM GALLON PER MINUTE (GPM) FOR THE FOLLOWING-P
   A. PRIMARY CHILLED WATER LOOP.
12. SIDE STREAM FILTER CONTROL – SYSTEM CONTROLLER SHALL MONITOR FILTER PRESSURE DIFFERENTIAL BASED ON THE FOLLOWING:
   A. FILTER PRESSURE DIFFERENTIAL CONTROLLER SHALL MONITOR FILTER PRESSURE DIFFERENTIAL.
      a. WHEN FILTER PRESSURE DIFFERENTIAL READING IS GREATER THAN FILTER ALARM SETPOINT, THE DDC SHALL INDICATE A GENERAL ALARM.
         • ALARM SETPOINT SHALL BE 10 PSID (ADJ.).
13. DE-HUMIDIFICATION CONTROL – WHEN ANY HVAC ZONE SYSTEM IS IN DE-HUMIDIFICATION MODE, SYSTEM CONTROLLER SHALL ENABLE (OVERRIDE) COOLING SYSTEM AND CONTROL TO MAXIMUM (DEFAULT) COOLING SUPPLY TEMPERATURE.
14. SYSTEM SAFETY SHUTDOWNS – WHEN EMERGENCY BUTTON(S) LOCATED OUTSIDE OF CHILLER ROOM IS ACTIVE, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:
   A. SYSTEM SHALL BE DISABLED WHEN REFRIGERANT DETECTION IS ACTIVE.
   B. DISABLE CHILLER(S), PUMP(S), AND ALARM(S) GENERATED.
      a. PUMPS SHALL REMAIN ON FOR A PERIOD OF TIME PRIOR TO BEING DISABLED.
15. EMERGENCY POWER CONTROL – WHEN BUILDING IS ON EMERGENCY POWER, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:
   A. SYSTEM SHALL BE DISABLED DURING EMERGENCY POWER.
16. CHILLED WATER FREEZE PROTECTION CONTROL – WHEN OUTDOOR AIR TEMPERATURE IS 20° F AND BELOW, OPEN COOLING COIL TO 10% (ADJ.) AND OPERATE CHILLED WATER PUMP(S) AT MINIMUM SPEED (APPROX 50 GPM, ADJ.).

DOMESTIC WATER SYSTEM CONTROLS (WH-1 & WH-2)

A. MONITOR AND ALARM DOMESTIC HOT WATER HEATER SUPPLY WATER TEMPERATURE AND SUPPLY WATER TEMPERATURE DOWNSTREAM OF MIXING VALVE (120° F SETPOINT) PLUS HEATER ALARM STATUS. WATER HEATER CONTROL SYSTEM SHALL FIRE TO MAINTAIN A 140° F WATER TEMPERATURE IN STORAGE TANK.

B. CONTROL DOMESTIC WATER HEATER RECIRCULATION PUMP BASED ON A TIME OF DAY SCHEDULE. PUMP SHALL START AND STOP BASED ON AN ADJUSTABLE START/ STOP TEMPERATURE SETTING OF THE RECIRCULATING WATER TEMPERATURE. MONITOR PUMP STATUS AND ALARM.

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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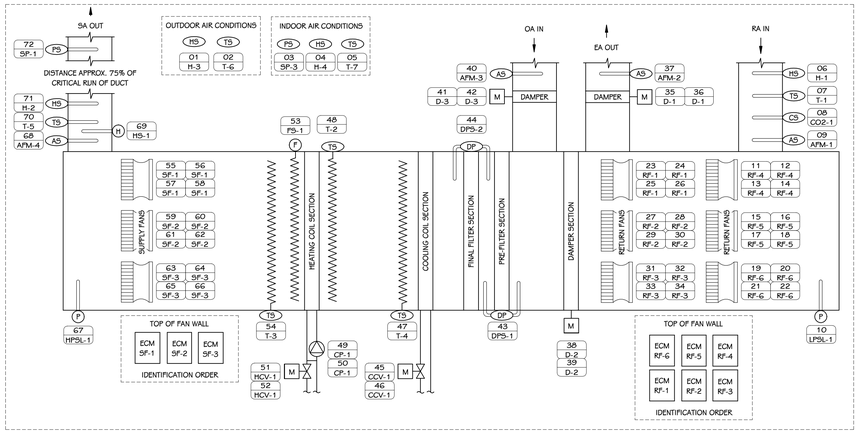
Architecture · Engineering · Interiors

SHEET TITLE
MECHANICAL CONTROLS

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: M-601
REV: D

22-133.010



AHU-1&2 CONTROLS

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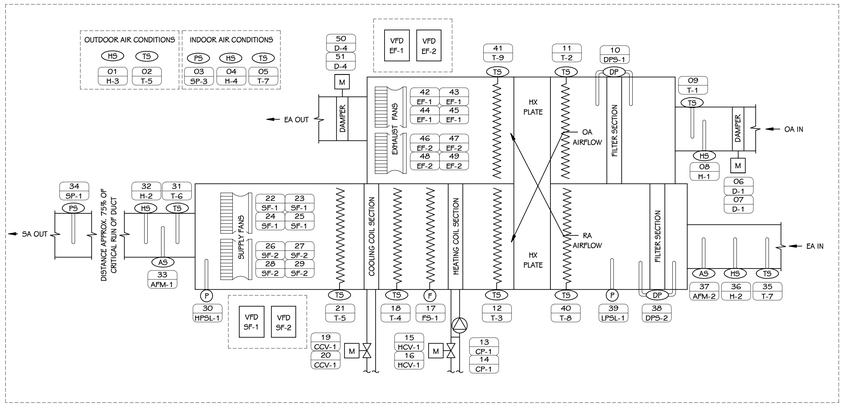
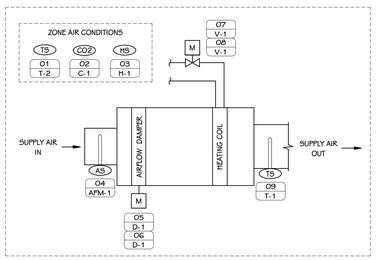


ERU-1 (HX PLATE CHW) CONTROLS DIAGRAM

SCALE: NONE



VAV (RHC) CONTROLS DIAGRAM

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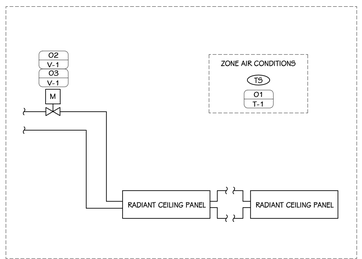


HHWS (RCP) CONTROLS DIAGRAM

SCALE: NONE

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	REMARKS
AHU-1&2 CONTROLS					
01	H-3	OUTDOOR AIR HUMIDITY			GLOBAL
02	T-6	OUTDOOR AIR TEMPERATURE			GLOBAL
03	SP-3	ROOM STATIC PRESSURE			
04	H-4	INDOOR AIR HUMIDITY SENSOR			
05	T-7	INDOOR AIR TEMPERATURE			
06	H-1	RETURN AIR HUMIDITY			DISPLAY ENTHALPY BASED ON T4H READINGS
07	T-1	RETURN AIR TEMPERATURE			DISPLAY ENTHALPY BASED ON T4H READINGS
08	CO2-1	RETURN AIR CARBON DIOXIDE	■		
09	AFM-1	TOTAL RETURN AIR FLOW			
10	LPSL-1	LOW PRESSURE STATIC LIMIT	■		HARD WIRED SAFETY - MANUAL RESET
11	RF-4	FAN AIR FLOW			
12	RF-4	FAN SPEED CONTROL			
13	RF-4	FAN ENABLED/DISABLE			
14	RF-4	FAN RUN STATUS	■		
15	RF-5	FAN AIR FLOW			
16	RF-5	FAN SPEED CONTROL			
17	RF-5	FAN ENABLED/DISABLE			
18	RF-5	FAN RUN STATUS	■		
19	RF-6	FAN AIR FLOW			
20	RF-6	FAN SPEED CONTROL			
21	RF-6	FAN ENABLED/DISABLE			
22	RF-6	FAN RUN STATUS	■		
23	RF-1	FAN AIR FLOW			
24	RF-1	FAN SPEED CONTROL			
25	RF-1	FAN ENABLED/DISABLE			
26	RF-1	FAN RUN STATUS	■		
27	RF-2	FAN AIR FLOW			
28	RF-2	FAN SPEED CONTROL			
29	RF-2	FAN ENABLED/DISABLE			
30	RF-2	FAN RUN STATUS	■		
31	RF-3	FAN AIR FLOW			
32	RF-3	FAN SPEED CONTROL			
33	RF-3	FAN ENABLED/DISABLE			
34	RF-3	FAN RUN STATUS	■		
35	D-1	EXHAUST AIR DAMPER OUTPUT			
36	D-1	EXHAUST AIR DAMPER POSITION			
37	AFM-2	EXHAUST AIR FLOW			
38	D-2	MIXED AIR DAMPER OUTPUT			
39	D-2	MIXED AIR DAMPER POSITION			
40	AFM-3	OUTDOOR AIR FLOW			
41	D-3	OUTDOOR AIR DAMPER POSITION			
42	D-3	OUTDOOR AIR DAMPER OUTPUT			
43	DPS-1	PRE-FILTER STATUS	■		
44	DPS-2	FINAL FILTER STATUS	■		
45	CCV-1	COOLING CONTROL VALVE OUTPUT			
46	CCV-1	COOLING CONTROL VALVE POSITION			
47	T-4	COOLING COIL DISCHARGE TEMPERATURE			
48	T-2	MIXED AIR TEMPERATURE	■		
49	CP-1	PUMP STATUS	■		
50	CP-1	PUMP ENABLED/DISABLE			
51	HCV-1	HEATING CONTROL VALVE OUTPUT			
52	HCV-1	HEATING CONTROL VALVE POSITION			
53	FS-1	FREEZE STAT ALARM STATUS	■		HARD WIRED SAFETY - MANUAL RESET
54	T-3	HEATING COIL DISCHARGE TEMPERATURE			
55	SF-1	FAN AIR FLOW			
56	SF-1	FAN SPEED CONTROL			
57	SF-1	FAN ENABLED/DISABLE			
58	SF-1	FAN RUN STATUS	■		
59	SF-2	FAN AIR FLOW			
60	SF-2	FAN SPEED CONTROL			
61	SF-2	FAN ENABLED/DISABLE			
62	SF-2	FAN RUN STATUS	■		
63	SF-3	FAN AIR FLOW			
64	SF-3	FAN SPEED CONTROL			
65	SF-3	FAN ENABLED/DISABLE			
66	SF-3	FAN RUN STATUS	■		
67	HPSL-1	HIGH PRESSURE STATIC LIMIT	■		HARD WIRED SAFETY - MANUAL RESET
68	AFM-4	TOTAL SUPPLY AIR FLOW			
69	HS-1	HUMIDIFIER HIGH LIMIT	■		HARD WIRED SAFETY - MANUAL RESET
70	T-5	DISCHARGE AIR TEMPERATURE			DISPLAY ENTHALPY BASED ON T4H READINGS
71	H-2	DISCHARGE AIR HUMIDITY			DISPLAY ENTHALPY BASED ON T4H READINGS
72	SP-1	SUPPLY AIR STATIC PRESSURE			NOTE LOCATION ON AS-BUILTS
ERU (HX PLATE) CONTROL POINTS					
01	H-3	OUTDOOR AIR HUMIDITY		■	GLOBAL
02	T-5	OUTDOOR AIR TEMPERATURE		■	GLOBAL
03	SP-3	ROOM STATIC PRESSURE			
04	H-4	INDOOR AIR HUMIDITY SENSOR			
05	T-7	INDOOR AIR TEMPERATURE			
06	D-1	OUTDOOR AIR DAMPER OUTPUT		■	
07	D-1	OUTDOOR AIR DAMPER POSITION		■	
08	H-1	OUTDOOR AIR HUMIDITY		■	
09	T-1	OUTDOOR AIR TEMPERATURE		■	
10	DPS-1	OUTDOOR AIR FILTER STATUS		■	
11	T-2	ERW ENTERING OUTDOOR AIR TEMPERATURE		■	
12	T-3	ERW LEAVING OUTDOOR AIR TEMPERATURE		■	
13	CP-1	HEATING COIL PUMP STATUS		■	
14	CP-1	HEATING COIL PUMP ENABLED/DISABLE		■	
15	HCV-1	HEATING CONTROL VALVE OUTPUT		■	
16	HCV-1	HEATING CONTROL VALVE POSITION		■	
17	FS-1	FREEZE STAT ALARM STATUS		■	HARD WIRED SAFETY - MANUAL RESET
18	T-4	HEATING COIL DISCHARGE TEMPERATURE		■	
19	CCV-1	COOLING CONTROL VALVE OUTPUT		■	
20	CCV-1	COOLING CONTROL VALVE POSITION		■	
21	T-5	COOLING COIL DISCHARGE TEMPERATURE		■	
22	SF-1	FAN AIR FLOW		■	
23	SF-1	FAN SPEED CONTROL		■	
24	SF-1	FAN ENABLED/DISABLE		■	
25	SF-1	FAN RUN STATUS		■	
26	SF-2	FAN AIR FLOW		■	
27	SF-2	FAN SPEED CONTROL		■	
28	SF-2	FAN ENABLED/DISABLE		■	
29	SF-2	FAN RUN STATUS		■	
30	HPSL-1	HIGH PRESSURE STATIC LIMIT		■	HARD WIRED SAFETY - MANUAL RESET
31	T-6	DISCHARGE AIR TEMPERATURE		■	DISPLAY ENTHALPY BASED ON T4H READINGS
32	H-2	DISCHARGE AIR HUMIDITY		■	DISPLAY ENTHALPY BASED ON T4H READINGS
33	AFM-1	TOTAL SUPPLY AIR FLOW		■	
34	SP-1	SUPPLY AIR STATIC PRESSURE		■	
35	T-7	EXHAUST AIR TEMPERATURE		■	DISPLAY ENTHALPY BASED ON T4H READINGS
36	H-2	EXHAUST AIR HUMIDITY		■	DISPLAY ENTHALPY BASED ON T4H READINGS
37	AFM-2	TOTAL EXHAUST AIR FLOW		■	
38	DPS-2	EXHAUST AIR FILTER STATUS		■	
39	LPSL-1	LOW PRESSURE STATIC LIMIT		■	HARD WIRED SAFETY - MANUAL RESET
40	T-8	ERW ENTERING EXHAUST AIR TEMPERATURE		■	
41	T-9	ERW LEAVING EXHAUST AIR TEMPERATURE		■	
42	EF-1	FAN AIR FLOW		■	
43	EF-1	FAN SPEED CONTROL		■	
44	EF-1	FAN ENABLED/DISABLE		■	
45	EF-1	FAN RUN STATUS		■	
46	EF-2	FAN AIR FLOW		■	

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	REMARKS
47	EF-2	FAN SPEED CONTROL		■	
48	EF-2	FAN ENABLED/DISABLE		■	
49	EF-2	FAN RUN STATUS		■	
50	D-4	EXHAUST AIR DAMPER OUTPUT		■	
51	D-4	EXHAUST AIR DAMPER POSITION		■	
AIR TERMINAL (VAV W/RHC) CONTROL POINTS					
01	T-2	ZONE AIR TEMPERATURE		■	
02	C-1	ZONE CARBON DIOXIDE LEVEL		■	
03	H-1	ZONE HUMIDITY		■	
04	AFM-1	SUPPLY AIR FLOW		■	
05	D-1	AIR DAMPER POSITION		■	
06	D-1	AIR DAMPER OUTPUT		■	
07	V-1	HEATING CONTROL VALVE POSITION		■	
08	V-1	HEATING CONTROL VALVE OUTPUT		■	
09	T-1	DISCHARGE AIR TEMPERATURE		■	
RADIANT CEILING PANEL CONTROL POINTS					
01	T-1	ZONE AIR TEMPERATURE		■	
02	V-1	CONTROL VALVE POSITION		■	
03	V-1	CONTROL VALVE OUTPUT		■	

SEQUENCE OF OPERATIONS

ERU-1 LOCKER ROOM ENERGY RECOVERY UNIT CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR ENERGY RECOVERY UNIT OPERATION. UNIT IS A COMBINATION OF AN INDOOR/OUTDOOR MULTI-ZONE VARIABLE VOLUME UNIT, SUPPLY FAN, EC MOTOR, CHILLED WATER COIL, CONTROL VALVE (CV) AND ACTUATOR, HEATING HOT WATER COIL, CONTROL VALVE (CV) AND ACTUATOR WITH CIRCULATING PUMP, ENERGY RECOVERY WHEEL, MERV 13 FINAL/MERV 8 PRE-FILTERS, EXHAUST FAN, EC MOTOR, AND AIR TEMPERATURE/AIRFLOW/HUMIDITY SENSORS.
2. ENERGY RECOVERY UNIT ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
   A. TIME OF DAY (TOD) SCHEDULE.
      a. TO BE DETERMINED BY OWNER.(CONSULT WITH OWNER).
   B. ENABLED AND DISABLED BASED ON MANUAL OVERRIDE FROM DDC.
3. ENERGY RECOVERY UNIT ADJUSTABLE SETPOINTS:
   A. OCCUPIED 74°F COOLING / 70°F HEATING.
   B. STANDBY 76°F COOLING / 68°F HEATING (BASED ON LIGHTING OCCUPANCY SENSOR(S)).
   C. UNOCCUPIED 85°F COOLING / 62°F HEATING.
4. START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   A. WHEN INDEXED TO STOP:
      a. DISABLE SUPPLY AND EXHAUST FAN(S) SIMULTANEOUSLY.
      b. COOLING CV 100% CLOSED.
      c. HEATING CV SHALL MODULATE TO MAINTAIN HEATING COIL DISCHARGE AIR TEMPERATURE SENSOR AT 80°F (ADJ.), WHEN OUTDOOR AIR TEMPERATURE IS BELOW 45°F (ADJ.).
      d. OUTDOOR AND EXHAUST AIR DAMPERS 100% CLOSED, ONCE SYSTEM FANS HAVE BEEN DISABLED.
      e. WHEEL OFF.
   B. WHEN INDEXED TO START:
      a. OUTDOOR AND EXHAUST AIR DAMPERS 100% OPENED.
      b. ENABLE SUPPLY AND EXHAUST FAN(S).
      c. WHEEL ENABLED.
      d. OPERATION OF SYSTEM TO RESUME AFTER START-UP DELAY.
5. SUPPLY FAN CONTROL -SPACE TEMPERATURE - SYSTEM CONTROLLER SHALL MODULATE SUPPLY FAN EC MOTOR, HEATING AND COOLING SOURCES TO MAINTAIN AN ADJUSTABLE SPACE TEMPERATURE SETPOINT MEASURED BY A SPACE TEMPERATURE THERMOSTAT.
   A. HEATING -UPON A FALL IN SPACE TEMPERATURE BELOW SPACE TEMPERATURE SETPOINT, CONTROLLER SHALL RESPOND AS FOLLOWS:
      a. MODULATE HEATING SOURCE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
         • INCLUDE A MAXIMUM HEATING DISCHARGE TEMPERATURE OF 95°F (ADJ.).
         • SUPPLY FAN SHALL BE AT MAXIMUM CFM SETPOINT.
   B. COOLING -UPON A RISE IN SPACE TEMPERATURE ABOVE SPACE TEMPERATURE SETPOINT, CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:
      a. MODULATE COOLING SOURCE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
         • SUPPLY FAN SHALL BE AT MAXIMUM CFM SETPOINT.
6. EXHAUST FAN CONTROL -SPACE PRESSURE -SYSTEM CONTROLLER SHALL MODULATE EXHAUST FAN EC MOTOR TO MAINTAIN SPACE PRESSURE SETPOINT MEASURED BY A SPACE PRESSURE CONTROLLER LOCATED IN SPACE SERVED.
   A. THE SPACE STATIC PRESSURE SETPOINT (ADJ.) SHALL BE A SETPOINT THAT CONTROLS TO A SLIGHTLY POSITIVE PRESSURE RELATIVE TO OUTSIDE AND SIGNIFICANTLY POSITIVE RELATIVE TO THE LOCKER ROOM.
7. FAN(S) INITIAL START-UP CONTROL -WHEN INDEXED TO START, SYSTEM CONTROLLER SHALL ENABLE FAN(S) BASED ON THE FOLLOWING:
   A. WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, DDC SHALL INDICATE A CRITICAL ALARM.
      a. IF ANY FAN (SUPPLY OR EXHAUST) STATUS IS NOT SENSED, THE SYSTEM SHALL BE DISABLED.
   B. WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A RUNTIME HOUR METER FOR EACH FAN WILL BE ACTIVE.
8. DISCHARGE AIR TEMPERATURE CONTROL.
   A. HEATING/COOLING MODE -WHEN OUTDOOR AIR TEMPERATURE IS GREATER OR LESS THAN DISCHARGE AIR TEMPERATURE SETPOINT BY 3°F (ADJ.), THE FOLLOWING SHALL BE INITIATED:
      a. ENABLE WHEEL TO MAINTAIN ACTIVE DAT SETPOINT.
         • IF WHEEL IS UNABLE TO MAINTAIN DAT SETPOINT, THE HEATING/COOLING CV SHALL MODULATE TO MAINTAIN SETPOINT.
   B. VENTILATION MODE -WHEN OUTDOOR AIR TEMPERATURE IS EQUAL TO DISCHARGE AIR TEMPERATURE SETPOINT BY LESS THAN 3°F (ADJ.), THE FOLLOWING SHALL BE INITIATED:
      a. STOP/JOG WHEEL.
   C. FROST MODE -WHEN OUTDOOR AIR TEMPERATURE IS BELOW THE FROST CONTROL SETPOINT OF 20°F (ADJ.).
      a. THE WHEEL WILL STOP/JOG TO PREVENT THE EXHAUST AIR FROM BEING COOLED BELOW THE SATURATION POINT.
9. COIL PUMP CONTROL BASED ON THE FOLLOWING:
   A. HEATING HOT WATER COIL PUMP SHALL RUN WHEN THE SYSTEM IS IN HEATING MODE (WHEN CV IS GREATER THAN 10% OPEN).
   B. PUMP(S) SHALL RUN CONTINUOUSLY WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN 40°F.
10. DE-HUMIDIFICATION CONTROL -EXHAUST DUCT -SYSTEM CONTROLLER SHALL ENABLE DE-HUMIDIFICATION MODE TO MAINTAIN AN EXHAUST HUMIDITY SETPOINT OF 55%RH (ADJ.) MEASURED BY A DUCT HUMIDISTAT LOCATED UPSTREAM OF UNIT EXHAUST FAN(S).
   A. TEMPERATURE CONTROL SHALL OVERRIDE DISCHARGE AIR TEMPERATURE FUNCTION AND RESET DOWN TO 45°F (ADJ.).
11. FILTER MONITORING - SYSTEM CONTROLLER SHALL MONITOR AND ALARM FILTER PRESSURE DIFFERENTIAL PRESSURE DROP(S) FOR THE FOLLOWING:
   A. PRE-FILTERS (BOTH OUTDOOR AND EXHAUST)
      a. MONITORING OF PSID.
      b. ALARM SETPOINT 0.75"W.C. (ADJ.).
12. UNOCCUPIED CONTROL -SYSTEM CONTROLLER SHALL INITIATE THE FOLLOWING BASED ON A FALL OR RISE IN SPACE TEMPERATURE:
   A. HEATING AND COOLING CONTROL WILL BE THE SAME AS OCCUPIED CONTROL BUT USING UNOCCUPIED SETPOINTS.
13. INITIAL STARTUP CONTROL -SYSTEM CONTROLLER SHALL ENABLE UNIT PRIOR TO SCHEDULED OCCUPANCY UTILIZING OPTIMUM START LOGIC TO ADJUST STARTUP TIME FOR UNIT BASED ON OUTDOOR AIR TEMPERATURE, BUILDING TEMPERATURE AND HISTORIC ELAPSE TIME TO REACH SETPOINT.
   A. UNIT SHALL ENERGIZE AND PROVIDE HEATING AND COOLING BASED ON THE SPACE TEMPERATURE SENSOR(S) TO BRING SPACE TO OCCUPIED SETPOINT. ONCE OCCUPIED SETPOINT HAS BEEN REACHED, THE UNIT SHALL SWITCH TO OCCUPIED MODE.
14. TIMED OVERRIDE CONTROL -SYSTEM CONTROLLER SHALL ENABLE UNIT WHEN ASSOCIATED TIMED OVERRIDE (2 HOURS (ADJ.)) IS ENABLED, SYSTEM SHALL BE ENABLE AND FUNCTION AS IN OCCUPIED MODE.
15. SAFETY SHUTDOWNS:
   A. PROVIDE A LOW-TEMPERATURE PROTECTION THERMOSTAT(S) ON THE LEAVING SIDE OF HEATING HOT WATER COIL WHICH WILL DE-ENERGIZE UNIT, CLOSE MIXED AIR DAMPERS (CLOSING OUTDOOR/RELIEF/EXHAUST AIR DAMPER(S)), CLOSE CHILLED WATER COIL CONTROL VALVE AND THE HEATING HOT WATER COIL CONTROL VALVE SHALL BE FULLY OPENED AND COIL PUMP ENERGIZED. PROVIDE MANUAL RESET.
   B. PROVIDE A HIGH STATIC PRESSURE SENSOR IN THE SUPPLY DISCHARGE PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH STATIC PRESSURE OF 4.0" W.C.. PROVIDE MANUAL RESET.
   C. PROVIDE A LOW PRESSURE STATIC LIMIT IN THE RETURN PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH NEGATIVE STATIC PRESSURE OF -4.0" W.C.. PROVIDE MANUAL RESET.
   D. DUCT MOUNTED IONIZATION SMOKE DETECTOR(S) PROVIDED BY DIVISION 28 SHALL DE-ENERGIZE THE UNIT WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
16. THE FOLLOWING SHALL BE SUPPLIED AND INSTALLED BY TEMPERATURE CONTROL INSTALLER:
   A. SENSORS.
   B. ACTUATORS.
17. THE FOLLOWING SHALL BE SUPPLIED BY TEMPERATURE CONTROL INSTALLER AND INSTALLED BY OTHERS:
   A. CONTROL DAMPERS.
   B. CONTROL VALVES.

AHU-1 & 2 OFFICE SPACE AIR HANDLERS

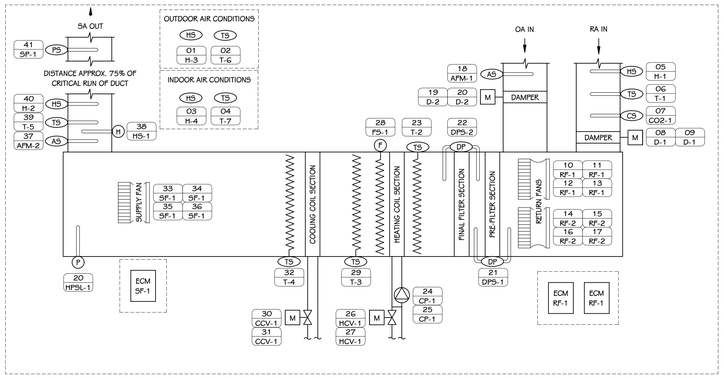
1. OCCUPIED/UNOCCUPIED MODE SHALL BE DETERMINED BY A TIME SCHEDULE. THE VAV ZONE SPACE TEMPERATURES SENSORS SHALL HAVE A PUSH BUTTON OVERRIDE TIMER TO PLACE THE UNIT IN OCCUPIED MODE WHEN IT IS SCHEDULE TO BE UNOCCUPIED.
2. OCCUPIED MODE:
   A. THE UNIT SUPPLY FAN AND RETURN FAN SHALL RUN CONTINUOUSLY IN OCCUPIED MODE. UPON UNIT START-UP, RETURN FAN SHALL START FIRST.
   B. UPON PROOF OF FAN, THE DDC SYSTEM SHALL MODULATE THE OUTDOOR, RETURN, AND RELIEF AIR DAMPER TO MAINTAIN THE MINIMUM CFM OF OUTDOOR AIR FLOW WITH THE RETURN AIR DAMPER OPEN TO PROVIDE THE BALANCE OF THE TOTAL AIR FLOW. THE DDC SYSTEM SHALL MONITOR RETURN AIR CO2, IF RETURN AIR CO2 SENSOR EXCEEDS THE SETPOINT OF 800 PPM (ADJ.) THE DDC SYSTEM SHALL INCREASE MINIMUM OUTSIDE AIR VOLUME TO THE MAXIMUM CFM.
   C. THE DDC SYSTEM SHALL MODULATE THE OUTDOOR, RETURN, AND RELIEF AIR DAMPERS CLOSED IF THE MIXED AIR TEMPERATURE DROPS BELOW A LOW LIMIT OF 45 DEG F (ADJ).
   D. THE UNIT SHALL SWITCH TO ECONOMIZER MODE WHEN THE OUTDOOR IS BELOW THE ECONOMIZING SETPOINT OR WHEN THE OUTDOOR AIR ENTHALPY IS BELOW THE RETURN AIR ENTHALPY.
   E. THE UNIT SHALL MODULATE THE MINIMUM OUTDOOR AIR DAMPER POSITION TO MAINTAIN BUILDING STATIC PRESSURE SETPOINT.
   F. THE HEATING VALVE, COOLING, OUTDOOR, RETURN, AND RELIEF AIR DAMPER (WHEN IN ECONOMIZER MODE) SHALL WORK IN UNISON TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.
   G. RESET SUPPLY AIR TEMPERATURE SETPOINT AS FOLLOWS:
3. ALL VAV ZONE SPACE TEMPERATURES AND SPACE TEMPERATURE SETPOINTS FOR THE VAV SERVING THIS AHU SHALL BE AVERAGED. A REVERSE ACTING PI (PROPORTIONAL, INTEGRAL) LOOP SHALL BE CONFIGURED SUCH THAT ITS INPUT SHALL BE THE AVERAGE ZONE SPACE TEMPERATURE AND ITS SETPOINT SHALL RESET THE AHU SUPPLY TEMPERATURE SETPOINT AND SHALL BE LIMITED BETWEEN 55 DEG F(ADJ) AND 70 DEG F(ADJ).
4. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE OVERRIDDEN IN COOLING MODE TO MAINTAIN A 60 DEG F(ADJ) DEW POINT FOR SUPPLY AIR.
5. AHU HEATING COIL PUMP SHALL RUN CONTINUOUSLY WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 36 DEG F (ADJ) OR WHEN THE AHU IS IN HEATING MODE.
6. THE SUPPLY FANS SHALL MODULATE TO MAINTAIN AN ADJUSTABLE SUPPLY DUCT STATIC (3" W.C. MAX) AS MEASURED BY A DUCT STATIC PRESSURE SENSOR LOCATED 75% OF MAXIMUM MAIN DUCT DISTANCE.
   A. RESET SUPPLY STATIC PRESSURE SETPOINT AS FOLLOWS:
   B. TRIM AND RESPOND LOGIC WITHIN THE RANGE OF 0.15 INCH WG. TO 1.75 IN WG (ADJ). WHEN THE UNIT IS OFF, THE SETPOINT SHALL BE 0.5 IN WC (ADJ). WHILE THE UNIT IS ON, EVERY TWO MINUTES, TRIM THE SETPOINT BY 0.04 IN WC IF THERE ARE TWO OR FEWER VAV DAMPERS GREATER THAN 95% OPEN WITH A DIFFERENTIAL OF 15%.
   C. IF THERE ARE MORE THAN TWO VAV DAMPERS GREATER THAN 95% OPEN WITH A DIFFERENTIAL OF 15%, RESPOND BY INCREASING THE SETPOINT BY 0.06 INCH WG.
   D. EXCLUDE ANY TERMINAL UNITS SET-UP AS CONSTANT VOLUME FROM TRIM AND RESPOND LOGIC.
7. THE RETURN FANS SHALL MODULATE TO TRACK THE RETURN FAN AIR FLOW SETPOINT. THE RETURN AIR FLOW SETPOINT SHALL BE A FUNCTION OF THE MEASURE SUPPLY AIR, EXHAUST AIR VOLUME, AND OUTDOOR AIR VOLUME.
8. UNOCCUPIED MODE:
   A. WHEN IN UNOCCUPIED MODE AND THERE IS NO CALL FOR HEAT OR DEHUMIDIFICATION THE UNIT SHALL BE OFF.
   B. ON A CALL FOR HEAT, DETERMINED BY VAV ROOM SENSORS, THE UNIT SHALL ENERGIZE AND THE SYSTEM SHALL FUNCTION AS DESCRIBED IN OCCUPIED MODE TO PROVIDE HEAT TO THE BUILDING EXCEPT OUTDOOR AND RELIEF AIR DAMPERS SHALL REMAIN CLOSED. UPON SATISFYING THE CALL FOR HEAT, THE UNIT SHALL DE-ENERGIZE.
   C. IF RETURN AIR HUMIDITY REACHES 60% RH (ADJ) IN UNOCCUPIED MODE AND THE CHILLED WATER SYSTEM IS ENABLED, THE UNIT SHALL ENERGIZE, THE HEATING COIL VALVE SHALL BE CLOSED, AND THE COOLING COIL CONTROL VALVE SHALL MODULATE TO PROVIDE UNIT COOLING SUPPLY AIR TEMPERATURE SETPOINT. ALL OTHER EQUIPMENT SHALL REMAIN IN NON-COOLING UNOCCUPIED MODE. UPON RETURN AIR HUMIDITY LOWERING DOWN TO 55% RH (ADJ), THE UNIT SHALL DE-ENERGIZE.
9. MORNING START-UP MODE:
   A. THE UNIT SHALL ENERGIZE AND PROVIDE HEATING BASED ON THE ROOM AIR TEMPERATURES TO BRING THE SPACE TO OCCUPIED SETPOINT. THE OUTDOOR AIR DAMPER SHALL BE CLOSED. ONCE OCCUPIED SETPOINT HAS BEEN REACHED, THE UNIT SHALL SWITCH TO OCCUPIED MODE. B. PROVIDE OPTIMUM START LOGIC TO ADJUST START UP TIME FOR AHU BASED ON OUTSIDE AIR TEMPERATURE, BUILDING TEMPERATURE AND HISTORIC ELAPSE TIME TO REACH SETPOINT.
10. UNIT OFF MODE:
   A. WHEN THE UNIT IS DE-ENERGIZED, THE OUTDOOR AIR AND RELIEF AIR DAMPERS SHALL CLOSE, AND THE RETURN AIR DAMPER SHALL OPEN. COOLING COIL CONTROL VALVE SHALL BE CLOSED AND THE HEATING COIL CONTROL VALVE SHALL REMAIN UNDER CONTROL OF THE SUPPLY AIR SENSOR WITH A SETPOINT OF 45 DEG. F.
11. SAFETIES:
   A. A LOW-TEMPERATURE THERMOSTAT SHALL DE-ENERGIZE THE UNIT, AND RETURN ALL VALVES AND DAMPER TO THEIR NORMAL POSITION WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW 40 DEG F. PROVIDE MANUAL RESET.
   B. DUCT MOUNTED SMOKE DETECTOR(S) SHALL DE-ENERGIZE THE UNIT WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
   C. PROVIDE A HIGH STATIC PRESSURE SENSOR IN THE SUPPLY PLENUM TO TURN OFF THE SUPPLY AND RETURN FANS UPON SENSING A HIGH STATIC PRESSURE. PROVIDE MANUAL RESET.
   D. PROVIDE A HIGH NEGATIVE STATIC PRESSURE SENSOR IN THE RETURN AIR PLENUM TO TURN OFF THE SUPPLY AND RETURN FANS UPON SENSING A HIGH NEGATIVE STATIC PRESSURE. PROVIDE MANUAL RESET.
12. MONITORING:
   A. MONITOR AMPERAGE OF EACH MOTOR VIA VFD INTEGRATION, ALARM WHEN MOTOR AMPERAGE IS 20% (ADJ) ABOVE NORMAL.

VAV TERMINAL UNIT WITH REHEAT COIL CONTROLS

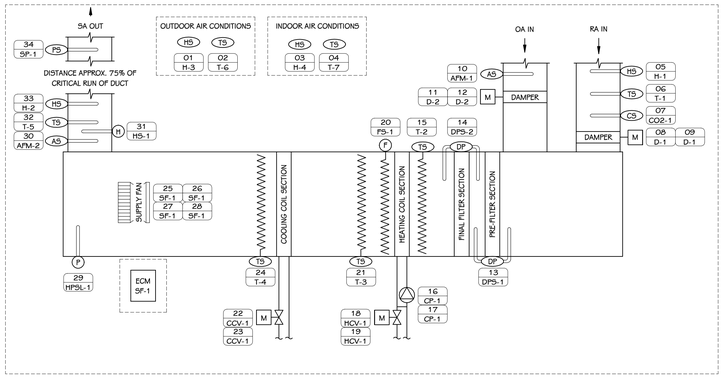
1. PROVIDE DIRECT DIGITAL CONTROLS FOR EACH UNIT THAT INCLUDES A PRESSURE INDEPENDENT BOX CONTROLLER, DAMPER OPERATION, HEATING WATER VALVE, AND ROOM SENSOR TO MAINTAIN SPACE TEMPERATURE BY AUTOMATICALLY SEQUENCING THE TERMINAL UNIT DAMPER AND NORMALLY CLOSED MODULATING HEATING VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL TERMINAL UNIT(S).
2. OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS:
   A. SCHEDULE TO BE DETERMINED BY OWNER.
   B. OCCUPIED SETPOINTS: 72°F CLG / 68°F HTG
   C. UNOCCUPIED SETPOINTS: 77°F CLG / 63°F HTG
3. UPON A RISE IN SPACE TEMPERATURE ABOVE THE ROOM SETPOINT, THE HEATING COIL VALVE WILL BE CLOSED, THE TERMINAL UNIT DAMPER WILL MODULATE BETWEEN THE MINIMUM AND MAXIMUM COOLING AIRFLOW SETPOINTS TO SATISFY ROOM TEMPERATURE SETPOINT.
4. UPON A FALL IN SPACE TEMPERATURE BELOW THE ROOM SETPOINT, THE TERMINAL UNIT DAMPER WILL MODULATE TOWARDS MINIMUM AIRFLOW SETPOINT, THE ASSOCIATED RE-HEAT COIL (RHC) VALVE WILL MODULATE TO SATISFY ROOM TEMPERATURE SETPOINT.
   A. PROVIDE 1ST AND 2ND STAGE HEATING FOR ROOMS WITH RADIANT CEILING PANELS (RCP'S) AND RHC'S, WITH RCP AS 1ST STAGE HEAT.
      a. RCP'S DISABLED WHEN OUTDOOR AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
   B. UPON A CALL FOR ADDITIONAL HEAT BY THE ROOM SENSOR AND WITH HEATING VALVES DELIVERING THE MAXIMUM UNIT DISCHARGE AIR TEMPERATURE SETPOINT OF 95°F AND THE SUPPLYING AHU MECHANICAL COOLING IS OFF, THE SUPPLY AIRFLOW SHALL MODULATE BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW TO SATISFY ROOM TEMPERATURE SETPOINT WHILE HEATING VALVE MODULATES TO MAINTAIN MAXIMUM UNIT DISCHARGE AIR TEMPERATURE SETPOINT.

UNIT HEATER CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR ALL UNIT HEATER OPERATION. UNIT HEATERS ARE EQUIPPED WITH A FAN, HEATING COIL AND NORMALLY OPEN TWO-POSITION HOT WATER CONTROL VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL SYSTEM.
2. PROVIDE WALL MOUNTED ROOM AIR TEMPERATURE SENSOR, THAT WILL ENERGIZE UNIT HEATER WHENEVER SPACE TEMPERATURE FALLS BELOW ACTIVE HEATING SETPOINT.
   A. WHEN UNIT IS INDEXED TO STOP VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. UNIT HEATER FAN SHALL BE DE-ENERGIZED.
      b.



AHU-11 (CHW COOLING) CONTROLS DIAGRAM
SCALE: NONE



AHU-13 & 14 (CHW COOLING) CONTROLS DIAGRAM
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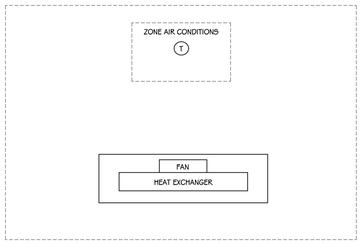

GAS FIRED UNIT HEATER CONTROLS DIAGRAM
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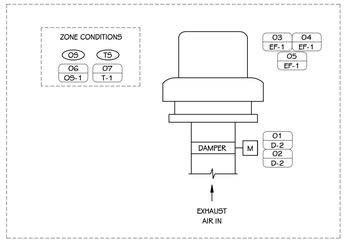

EXHAUST FAN (ROOF) CONTROLS DIAGRAM
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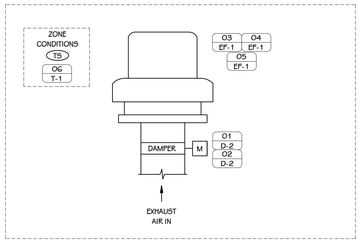
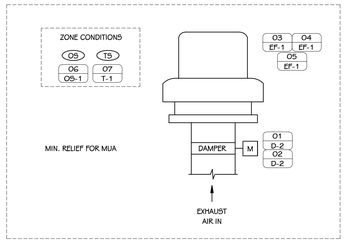


EXHAUST FAN (ELEVATOR) CONTROLS DIAGRAM
SCALE: NONE



EXHAUST FAN (GARAGE) CONTROLS DIAGRAM
SCALE: NONE

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
AHU-11						
01	H-3	OUTDOOR AIR HUMIDITY		∎		GLOBAL
02	T-6	OUTDOOR AIR TEMPERATURE		∎		GLOBAL
03	H-4	INDOOR AIR HUMIDITY SENSOR				
04	T-7	INDOOR AIR TEMPERATURE				
05	H-1	RETURN AIR HUMIDITY		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
06	T-1	RETURN AIR TEMPERATURE		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
07	CO2-1	RETURN AIR CARBON DIOXIDE		∎		
08	D-1	RETURN AIR DAMPER OUTPUT		∎		
09	D-1	RETURN AIR DAMPER POSITION		∎		
10	RF-1	FAN AIR FLOW		∎		
11	RF-1	FAN SPEED CONTROL		∎		
12	RF-1	FAN ENABLE/DISABLE		∎		
13	RF-1	FAN RUN STATUS		∎		
14	RF-2	FAN AIR FLOW		∎		
15	RF-2	FAN SPEED CONTROL		∎		
16	RF-2	FAN ENABLE/DISABLE		∎		
17	RF-2	FAN RUN STATUS		∎		
18	AFM-1	OUTDOOR AIR FLOW		∎		
19	D-2	OUTDOOR AIR DAMPER POSITION		∎		
20	D-2	OUTDOOR AIR DAMPER OUTPUT		∎		
20	HPSL-1	HIGH PRESSURE STATIC LIMIT		∎		HARD WIRED SAFETY - MANUAL RESET
21	DPS-1	PRE-FILTER STATUS		∎		
22	DPS-2	FINAL FILTER STATUS		∎		
23	T-2	MIXED AIR TEMPERATURE		∎		
24	CP-1	HEATING COIL PUMP STATUS		∎		
25	CP-1	HEATING COIL PUMP ENABLE/DISABLE		∎		
26	HCV-1	HEATING CONTROL VALVE OUTPUT		∎		
27	HCV-1	HEATING CONTROL VALVE POSITION		∎		
28	FS-1	FREEZE STAT ALARM STATUS		∎		HARD WIRED SAFETY - MANUAL RESET
29	T-3	HEATING COIL DISCHARGE TEMPERATURE		∎		
30	CCV-1	COOLING CONTROL VALVE OUTPUT		∎		
31	CCV-1	COOLING CONTROL VALVE POSITION		∎		
32	T-4	COOLING COIL DISCHARGE TEMPERATURE		∎		
33	SF-1	FAN AIR FLOW		∎		
34	SF-1	FAN SPEED CONTROL		∎		
35	SF-1	FAN ENABLE/DISABLE		∎		
36	SF-1	FAN RUN STATUS		∎		
37	AFM-2	TOTAL SUPPLY AIR FLOW		∎		
38	HS-1	HUMIDIFIER HIGH LIMIT		∎		HARD WIRED
39	T-5	DISCHARGE AIR TEMPERATURE		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
40	H-2	DISCHARGE AIR HUMIDITY		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
41	SP-1	SUPPLY AIR STATIC PRESSURE		∎		NOTE LOCATION ON AS-BUILTS
AHU-13&14						
01	H-3	OUTDOOR AIR HUMIDITY		∎		GLOBAL
02	T-6	OUTDOOR AIR TEMPERATURE		∎		GLOBAL
03	H-4	INDOOR AIR HUMIDITY SENSOR		∎		
04	T-7	INDOOR AIR TEMPERATURE		∎		
05	H-1	RETURN AIR HUMIDITY		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
06	T-1	RETURN AIR TEMPERATURE		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
07	CO2-1	RETURN AIR CARBON DIOXIDE		∎		
08	D-1	RETURN AIR DAMPER OUTPUT		∎		
09	D-1	RETURN AIR DAMPER POSITION		∎		
10	AFM-1	OUTDOOR AIR FLOW		∎		
11	D-2	OUTDOOR AIR DAMPER POSITION		∎		
12	D-2	OUTDOOR AIR DAMPER OUTPUT		∎		
13	DPS-1	PRE-FILTER STATUS		∎		
14	DPS-2	FINAL FILTER STATUS		∎		
15	T-2	MIXED AIR TEMPERATURE		∎		
16	CP-1	HEATING COIL PUMP STATUS		∎		
17	CP-1	HEATING COIL PUMP ENABLE/DISABLE		∎		
18	HCV-1	HEATING CONTROL VALVE OUTPUT		∎		
19	HCV-1	HEATING CONTROL VALVE POSITION		∎		
20	FS-1	FREEZE STAT ALARM STATUS		∎		HARD WIRED SAFETY - MANUAL RESET
21	T-3	HEATING COIL DISCHARGE TEMPERATURE		∎		
22	CCV-1	COOLING CONTROL VALVE OUTPUT		∎		
23	CCV-1	COOLING CONTROL VALVE POSITION		∎		
24	T-4	COOLING COIL DISCHARGE TEMPERATURE		∎		
25	SF-1	FAN AIR FLOW		∎		
26	SF-1	FAN SPEED CONTROL		∎		
27	SF-1	FAN ENABLE/DISABLE		∎		
28	SF-1	FAN RUN STATUS		∎		
29	HPSL-1	HIGH PRESSURE STATIC LIMIT		∎		HARD WIRED SAFETY - MANUAL RESET
30	APM-2	TOTAL SUPPLY AIR FLOW		∎		
31	HS-1	HUMIDIFIER HIGH LIMIT		∎		HARD WIRED
32	T-5	DISCHARGE AIR TEMPERATURE		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
33	H-2	DISCHARGE AIR HUMIDITY		∎		DISPLAY ENTHALPY BASED ON T4H READINGS
34	SP-1	SUPPLY AIR STATIC PRESSURE		∎		NOTE LOCATION ON AS-BUILTS
ROOF MOUNTED EXHAUST FAN CONTROL POINTS						
01	D-2	EXHAUST AIR DAMPER POSITION		∎		OPEN/CLOSE
01	D-2	EXHAUST AIR DAMPER POSITION		∎		OPEN/CLOSE
01	D-2	EXHAUST AIR DAMPER POSITION		∎		OPEN/CLOSE
02	D-2	EXHAUST AIR DAMPER OUTPUT		∎		OPEN/CLOSE
02	D-2	EXHAUST AIR DAMPER OUTPUT		∎		OPEN/CLOSE
02	D-2	EXHAUST AIR DAMPER OUTPUT		∎		OPEN/CLOSE
03	EF-1	FAN SPEED CONTROL		∎		
03	EF-1	FAN SPEED CONTROL		∎		
03	EF-1	FAN SPEED CONTROL		∎		
04	EF-1	FAN ENABLE/DISABLE		∎		
04	EF-1	FAN ENABLE/DISABLE		∎		
04	EF-1	FAN ENABLE/DISABLE		∎		
05	EF-1	FAN STATUS		∎		
05	EF-1	FAN STATUS		∎		
05	EF-1	FAN STATUS		∎		
06	OS-1	OCCUPANCY SENSOR		∎		
06	T-1	ZONE AIR TEMPERATURE		∎		
06	OS-1	OCCUPANCY SENSOR		∎		
07	T-1	ZONE AIR TEMPERATURE		∎		
07	T-1	ZONE AIR TEMPERATURE		∎		

SEQUENCE OF OPERATIONS

VAV TERMINAL UNIT WITH REHEAT COIL CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR EACH UNIT THAT INCLUDES A PRESSURE INDEPENDENT BOX CONTROLLER, DAMPER OPERATION, HEATING WATER VALVE, AND ROOM SENSOR TO MAINTAIN SPACE TEMPERATURE BY AUTOMATICALLY SEQUENCING THE TERMINAL UNIT DAMPER AND NORMALLY CLOSED MODULATING HEATING VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL TERMINAL UNIT(S).
2. OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS:
   A. SCHEDULE TO BE DETERMINED BY OWNER.
   B. OCCUPIED SETPOINTS: 72°F CLG / 69°F HTG
   C. UNOCCUPIED SETPOINTS: 77°F CLG / 63°F HTG
3. UPON A RISE IN SPACE TEMPERATURE ABOVE THE ROOM SETPOINT, THE HEATING COIL VALVE WILL BE CLOSED, THE TERMINAL UNIT DAMPER WILL MODULATE BETWEEN THE MINIMUM AND MAXIMUM COOLING AIRFLOW SETPOINTS TO SATISFY ROOM TEMPERATURE SETPOINT.
4. UPON A FALL IN SPACE TEMPERATURE BELOW THE ROOM SETPOINT, THE TERMINAL UNIT DAMPER WILL MODULATE TOWARDS MINIMUM AIRFLOW SETPOINT, THE ASSOCIATED RE-HEAT COIL (RHC) VALVE WILL MODULATE TO SATISFY ROOM TEMPERATURE SETPOINT.
   A. PROVIDE 1ST AND 2ND STAGE HEATING FOR ROOMS WITH RADIANT CEILING PANELS (RCPS) AND RHCS, WITH RCP AS 1ST STAGE HEAT.
      a. RCPS DISABLED WHEN OUTDOOR AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
   B. UPON A CALL FOR ADDITIONAL HEAT BY THE ROOM SENSOR AND WITH HEATING VALVES DELIVERING THE MAXIMUM UNIT DISCHARGE AIR TEMPERATURE SETPOINT OF 95°F AND THE SUPPLYING AHU MECHANICAL COOLING IS OFF, THE SUPPLY AIRFLOW SHALL MODULATE BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW TO SATISFY ROOM TEMPERATURE SETPOINT WHILE HEATING VALVE MODULATES TO MAINTAIN MAXIMUM UNIT DISCHARGE AIR TEMPERATURE SETPOINT.

CABINET UNIT HEATER CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR ALL CABINET UNIT HEATER OPERATION. CABINET UNIT HEATERS ARE EQUIPPED WITH A FAN, HEATING COIL AND NORMALLY OPEN TWO-POSITION HOT WATER CONTROL VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL SYSTEM.
2. PROVIDE WALL MOUNTED ROOM AIR TEMPERATURE SENSOR, THAT WILL ENERGIZE UNIT HEATER WHENEVER SPACE TEMPERATURE FALLS BELOW ACTIVE HEATING SETPOINT.
   A. WHEN UNIT IS INDEXED TO STOP VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. UNIT HEATER FAN SHALL BE DE-ENERGIZED.
      b. HEATING COIL CONTROL VALVE SHALL BE 100% CLOSED.
   B. WHEN SYSTEM IS INDEXED TO START VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. HEATING COIL CONTROL VALVE SHALL BE 100% OPENED.
      b. UNIT HEATER FAN SHALL BE ENERGIZED.
   C. OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS:
      a. OCCUPIED SETPOINT: 68°F HEATING (ADJ.).
      b. UNOCCUPIED SETPOINT: 63°F HEATING (ADJ.).

UNIT HEATER CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR ALL UNIT HEATER OPERATION. UNIT HEATERS ARE EQUIPPED WITH A FAN, HEATING COIL AND NORMALLY OPEN TWO-POSITION HOT WATER CONTROL VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL SYSTEM.
2. PROVIDE WALL MOUNTED ROOM AIR TEMPERATURE SENSOR, THAT WILL ENERGIZE UNIT HEATER WHENEVER SPACE TEMPERATURE FALLS BELOW ACTIVE HEATING SETPOINT.
   A. WHEN UNIT IS INDEXED TO STOP VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. UNIT HEATER FAN SHALL BE DE-ENERGIZED.
      b. HEATING COIL CONTROL VALVE SHALL BE 100% CLOSED.
   B. WHEN SYSTEM IS INDEXED TO START VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. HEATING COIL CONTROL VALVE SHALL BE 100% OPENED.
      b. UNIT HEATER FAN SHALL BE ENERGIZED.
   C. OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS:
      a. OCCUPIED SETPOINT: 68°F HEATING (ADJ).
      b. UNOCCUPIED SETPOINT: 63°F HEATING (ADJ).

RADIANT CEILING PANEL CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR RADIANT CEILING PANELS OPERATION. REFER TO DRAWINGS FOR EQUIPMENT COUNT NORMALLY OPEN HEATING CONTROL VALVES. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL RADIANT CEILING PANELS AS A 1ST STAGE OF HEAT FOR RE-HEAT COILS SUPPLY AIR VALVES AND VARIABLE AIR VOLUME BOXES.
   A. REFER TO VARIABLE AIR VOLUME (VAV) TERMINAL UNIT CONTROL ARTICLES FOR VAV TERMINAL UNIT OPERATION.

MINI-SPLIT CONTROLS

1. PROVIDE DIRECT DIGITAL CONTROLS FOR MS-*** MINI-SPLIT SYSTEM UNITS OPERATION. UNIT IS INDOOR UNIT WITH SUPPLY FAN, AIR FILTER AND REFRIGERANT COIL. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL SYSTEM VIA BACNET.
2. SYSTEM START / STOP.
   A. UNIT SUPPLY FAN SHALL CYCLE BASED ON SPACE DEMAND.
   B. WHEN SYSTEM IS INDEXED TO STOP VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. SUPPLY FAN SHALL BE DE-ENERGIZED.
   C. WHEN SYSTEM IS INDEXED TO START VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. SUPPLY FAN SHALL BE ENERGIZED
3. AN ADJUSTABLE ROOM AIR TEMPERATURE SENSOR SHALL ENABLE UNIT SUPPLY FAN DNA REFRIGERANT COIL TO MAINTAIN ROOM TEMPERATURE SETPOINT.
   A. COOLING SETPOINT OF 74°F (ADJ).
      a. WHEN HIGH DRAIN PAN OVERFLOW IS ACTIVATED THE REFRIGERANT COIL SHAL BE DISABLED AND ALARM GENERATED AT BMS. SUPPLY FAN SHALL CONTINUE TO RUN.

GENERAL EXHAUST FAN:

A. PROVIDE DDC CONTROL SYSTEM FOR ALL EXISTING EXHAUST FANS.
B. EXHAUST FANS SHALL BE CONTROLLED BY BMS USING OCCUPIED/UNOCCUPIED TIME SEQUENCING (TOD SCHEDULE) TO CYCLE FAN MOTOR.
C. MONITOR AND ALARM EACH EXISTING FAN IF FAN IS COMMANDED ON BUT NOT PROVED ON BY CURRENT SENSING SWITCH.

EXHAUST FAN (REFRIGERANT PURGE)

OPERATION BASED ON THE FOLLOWING:

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR SYSTEM OPERATION. SYSTEM IS A COMBINATION OF CONSTANT VOLUME EXHAUST FAN, ISOLATION OUTLET AND INTAKE AIR DAMPERS WITH ACTUATORS AND REFRIGERANT DETECTION DEVICE.
   A. OPERATION SHALL BE BASED ON WALL MOUNTED REFRIGERANT DETECTION DEVICE, ENABLE SYSTEM WHENEVER REFRIGERANT IS DETECTED.
      a. REFRIGERANT DETECTOR PROVIDE BY CHILLER MANUFACTURER.
      b. MINIMUM RUN TIME EQUALS 30 MINUTES (ADJ.)
   B. SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
      a. WHEN INDEXED TO STOP: DISABLE EXHAUST FAN.
         • ISOLATION AIR DAMPER 100% CLOSED.
         • INTAKE HOOD AIR DAMPER 100% CLOSED.
      b. WHEN INDEXED TO START: ENABLE EXHAUST FAN.
         • ISOLATION AIR DAMPER 100% OPENED.
         • INTAKE HOOD AIR DAMPER 100% OPENED.
   C. SYSTEM DDC MONITORING AND ALARMING OF THE FOLLOWING:
      a. EXHAUST FAN MOTOR STATUS.
         • WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
         • WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A RUN TIMER WILL BE ACTIVE

DOMESTIC WATER SYSTEM CONTROLS (WH-1 & WH-2)

1. MONITOR AND ALARM DOMESTIC HOT WATER HEATER SUPPLY WATER TEMPERATURE AND SUPPLY WATER TEMPERATURE DOWNSTREAM OF MIXING VALVE (120° F SETPOINT) PLUS HEATER ALARM STATUS. WATER HEATER CONTROL SYSTEM SHALL FIRE TO MAINTAIN A 140° F WATER TEMPERATURE IN STORAGE TANK.
2. CONTROL DOMESTIC WATER HEATER RECIRCULATION PUMP BASED ON A TIME OF DAY SCHEDULE. PUMP SHALL START AND STOP BASED ON AN ADJUSTABLE START/ STOP TEMPERATURE SETTING OF THE RECIRCULATING WATER TEMPERATURE. MONITOR PUMP STATUS AND ALARM.

EXHAUST FAN (ELEVATOR)

OPERATION BASED ON THE FOLLOWING:

1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR SYSTEM OPERATION. SYSTEM IS A COMBINATION OF CONSTANT VOLUME EXHAUST FAN, ISOLATION DAMPERS WITH ACTUATOR AND TEMPERATURE SENSOR.
   A. OPERATION SHALL BE BASED ON WALL MOUNTED ROOM AIR TEMPERATURE SENSOR, ENABLE SYSTEM WHENEVER SPACE TEMPERATURE RISES ABOVE COOLING SETPOINT OF 78°F (ADJ.).
   B. SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
      a. WHEN INDEXED TO STOP: DISABLE EXHAUST FAN.
         • ISOLATION AIR DAMPER 100% CLOSED.
      b. WHEN INDEXED TO START: ENABLE EXHAUST FAN.
         • ISOLATION AIR DAMPER 100% OPENED.
   C. SYSTEM DDC MONITORING AND ALARMING OF THE FOLLOWING:
      a. EXHAUST FAN MOTOR STATUS.
         • WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
         • WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A RUN TIMER WILL BE ACTIVE.
   D. SAFETIES:
      a. DISABLES SYSTEM UPON FIRE ALARM ACTIVATION

AHU-13 & 14 OFFICE SPACE AIR HANDLERS

1. OCCUPIED/UNOCCUPIED MODE SHALL BE DETERMINED BY A TIME SCHEDULE. THE VAV ZONE SPACE TEMPERATURES SENSORS SHALL HAVE A PUSH BUTTON OVERRIDE TIMER TO PLACE THE UNIT IN OCCUPIED MODE WHEN IT IS SCHEDULE TO BE UNOCCUPIED.
2. OCCUPIED MODE:
   A. THE UNIT SUPPLY FAN AND RETURN FAN SHALL RUN CONTINUOUSLY IN OCCUPIED MODE. UPON UNIT START-UP, RETURN FAN SHALL START FIRST.
   B. UPON PROOF OF FAN, THE DDC SYSTEM SHALL MODULATE THE OUTDOOR, RETURN, AND RELIEF AIR DAMPER TO MAINTAIN THE MINIMUM CFM OF OUTDOOR AIR FLOW WITH THE RETURN AIR DAMPER OPEN TO PROVIDE THE BALANCE OF THE TOTAL AIR FLOW. THE DDC SYSTEM SHALL MONITOR RETURN AIR CO2, IF RETURN AIR CO2 SENSOR EXCEEDS THE SETPOINT OF 800 PPM (ADJ.) THE DDC SYSTEM SHALL INCREASE MINIMUM OUTSIDE AIR VOLUME TO THE MAXIMUM CFM.
   C. THE DDC SYSTEM SHALL MODULATE THE OUTDOOR, RETURN, AND RELIEF AIR DAMPERS CLOSED IF THE MIXED AIR TEMPERATURE DROPS BELOW A LOW LIMIT OF 45 DEG F (ADJ.).
   D. THE UNIT SHALL SWITCH TO ECONOMIZER MODE WHEN THE OUTDOOR IS BELOW THE ECONOMIZING SETPOINT OR WHEN THE OUTDOOR AIR ENTHALPY IS BELOW THE RETURN AIR ENTHALPY.
   E. THE UNIT SHALL MODULATE THE MINIMUM OUTDOOR AIR DAMPER POSITION TO MAINTAIN BUILDING STATIC PRESSURE SETPOINT.
   F. THE HEATING VALVE, COOLING, OUTDOOR, RETURN, AND RELIEF AIR DAMPER (WHEN IN ECONOMIZER MODE) SHALL WORK IN UNISON TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.
   G. RESET SUPPLY AIR TEMPERATURE SETPOINT AS FOLLOWS:
3. ALL VAV ZONE SPACE TEMPERATURES AND SPACE TEMPERATURE SETPOINTS FOR THE VAV SERVING THIS AHU SHALL BE AVERAGED. A REVERSE ACTING PI (PROPORTIONAL, INTEGRAL) LOOP SHALL BE CONFIGURED SUCH THAT ITS INPUT SHALL BE THE AVERAGE ZONE SPACE TEMPERATURE AND ITS SETPOINT SHALL RESET THE AHU SUPPLY TEMPERATURE SETPOINT AND SHALL BE LIMITED BETWEEN 55 DEG F(ADJ) AND 70 DEG F(ADJ).
4. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE OVERRIDDEN IN COOLING MODE TO MAINTAIN A 60 DEG F(ADJ) DEW POINT FOR SUPPLY AIR.
5. AHU HEATING COIL PUMP SHALL RUN CONTINUOUSLY WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 36 DEG F (ADJ) OR WHEN THE AHU IS IN HEATING MODE.
6. THE SUPPLY FANS SHALL MODULATE TO MAINTAIN AN ADJUSTABLE SUPPLY DUCT STATIC (3" W.C. MAX) AS MEASURED BY A DUCT STATIC PRESSURE SENSOR LOCATED 75% OF MAXIMUM MAIN DUCT DISTANCE.
   A. RESET SUPPLY STATIC PRESSURE SETPOINT AS FOLLOWS:
   B. TRIM AND RESPOND. LOGIC WITHIN THE RANGE OF 0.15 INCH WG. TO 1.75 IN WG (ADJ). WHEN THE UNIT IS OFF, THE SETPOINT SHALL BE 0.5 IN WC (ADJ). WHILE THE UNIT IS ON, EVERY TWO MINUTES, TRIM THE SETPOINT BY 0.04 IN WC IF THERE ARE TWO OR FEWER VAV DAMPERS GREATER THAN 95% OPEN WITH A DIFFERENTIAL OF 15%.
   C. IF THERE ARE MORE THAN TWO VAV DAMPERS GREATER THAN 95% OPEN WITH A DIFFERENTIAL OF 15%, RESPOND BY INCREASING THE SETPOINT BY 0.06 INCH WG.
   D. EXCLUDE ANY TERMINAL UNITS SET-UP AS CONSTANT VOLUME FROM TRIM AND RESPOND LOGIC.
7. THE RETURN FANS SHALL MODULATE TO TRACK THE RETURN FAN AIR FLOW SETPOINT. THE RETURN AIR FLOW SETPOINT SHALL BE A FUNCTION OF THE MEASURE SUPPLY AIR, EXHAUST AIR VOLUME, AND OUTDOOR AIR VOLUME.
8. UNOCCUPIED MODE:
   A. WHEN IN UNOCCUPIED MODE AND THERE IS NO CALL FOR HEAT OR DEHUMIDIFICATION THE UNIT SHALL BE OFF.
   B. ON A CALL FOR HEAT, DETERMINED BY VAV ROOM SENSORS, THE UNIT SHALL ENERGIZE AND THE SYSTEM SHALL FUNCTION AS DESCRIBED IN OCCUPIED MODE TO PROVIDE HEAT TO THE BUILDING EXCEPT OUTDOOR AND RELIEF AIR DAMPERS SHALL REMAIN CLOSED. UPON SATISFYING THE CALL FOR HEAT, THE UNIT SHALL DE-ENERGIZE.
   C. IF RETURN AIR HUMIDITY REACHES 60% RH (ADJ) IN UNOCCUPIED MODE AND THE CHILLED WATER SYSTEM IS ENABLED, THE UNIT SHALL ENERGIZE, THE HEATING COIL VALVE SHALL BE CLOSED, AND THE COOLING COIL CONTROL VALVE SHALL MODULATE TO PROVIDE UNIT COOLING SUPPLY AIR TEMPERATURE SETPOINT. ALL OTHER EQUIPMENT SHALL REMAIN IN NON-COOLING UNOCCUPIED MODE. UPON RETURN AIR HUMIDITY LOWERING DOWN TO 55% RH (ADJ), THE UNIT SHALL DE-ENERGIZE.
9. MORNING START-UPMODE:
   A. THE UNIT SHALL ENERGIZE AND PROVIDE HEATING BASED ON THE ROOM AIR TEMPERATURES TO BRING THE SPACE TO OCCUPIED SETPOINT. THE OUTDOOR AIR DAMPER SHALL BE CLOSED. ONCE OCCUPIED SETPOINT HAS BEEN REACHED, THE UNIT SHALL SWITCH TO OCCUPIED MODE. B. PROVIDE OPTIMUM START LOGIC TO ADJUST START UP TIME FOR AHU BASED ON OUTSIDE AIR TEMPERATURE, BUILDING TEMPERATURE AND HISTORIC ELAPSE TIME TO REACH SETPOINT.
10. UNIT OFF MODE:
    A. WHEN THE UNIT IS DE-ENERGIZED, THE OUTDOOR AIR AND RELIEF AIR DAMPERS SHALL CLOSE, AND THE RETURN AIR DAMPER SHALL OPEN. COOLING COIL CONTROL VALVE SHALL BE CLOSED AND THE HEATING COIL CONTROL VALVE SHALL REMAIN UNDER CONTROL OF THE SUPPLY AIR SENSOR WITH A SETPOINT OF 45 DEG. F.
11. SAFETIES:
    A. A LOW-TEMPERATURE THERMOSTAT SHALL DE-ENERGIZE THE UNIT, AND RETURN ALL VALVES AND DAMPER TO THEIR NORMAL POSITION WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW 40 DEG F. PROVIDE MANUAL RESET.
    B. DUCT MOUNTED SMOKE DETECTOR(S) SHALL DE-ENERGIZE THE UNIT WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
    C. PROVIDE A HIGH STATIC PRESSURE SENSOR IN THE SUPPLY PLENUM TO TURN OFF THE SUPPLY AND RETURN FANS UPON SENSING A HIGH STATIC PRESSURE. PROVIDE MANUAL RESET.
    D. PROVIDE A HIGH NEGATIVE STATIC PRESSURE SENSOR IN THE RETURN AIR PLENUM TO TURN OFF THE SUPPLY AND RETURN FANS UPON SENSING A HIGH NEGATIVE STATIC PRESSURE. PROVIDE MANUAL RESET.
12. MONITORING:
    A. MONITOR AMPERAGE OF EACH MOTOR VIA VFD INTEGRATION, ALARM WHEN MOTOR AMPERAGE IS 20% (ADJ) ABOVE NORMAL.

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

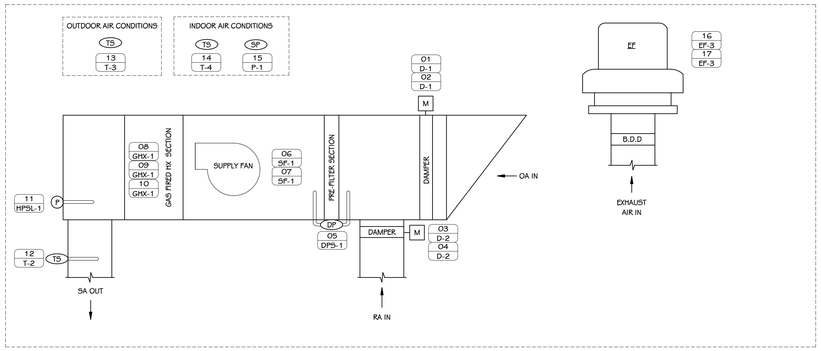
Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
MECHANICAL CONTROLS

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-603	D

22-133.010



MAKE-UP AIR (MAU-15 & 16) CONTROLS DIAGRAM
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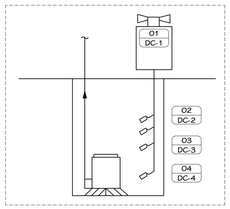

SUMP PUMPS CONTROLS DIAGRAM
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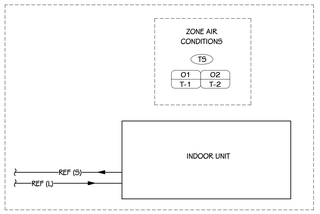

MINI-SPLIT CONTROLS DIAGRAM
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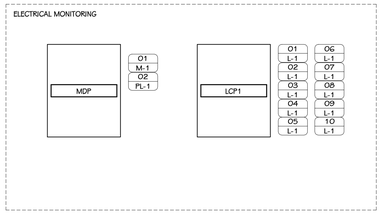
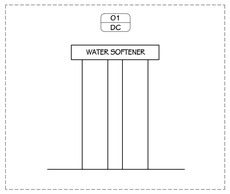
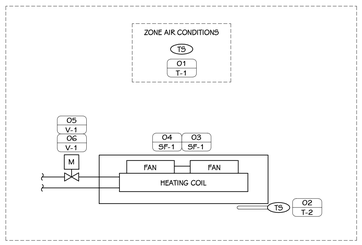


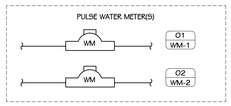
ELECTRICAL MONITORING CONTROLS DIAGRAM
SCALE: NONE



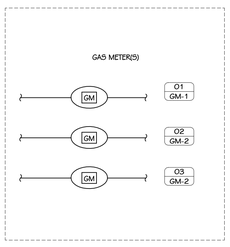
WATER SOFTNER CONTROLS DIAGRAM
SCALE: NONE



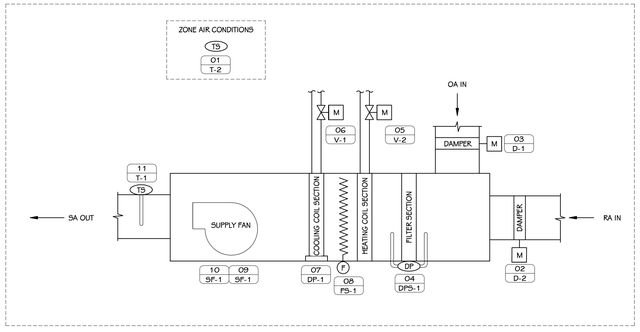
HHWS (CUH) CONTROLS DIAGRAM
SCALE: NONE



WATER METERS CONTROLS DIAGRAM
SCALE: NONE



GAS METERS CONTROLS DIAGRAM
SCALE: NONE



FAN COIL CONTROLS DIAGRAM
SCALE: NONE

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	REMARKS
HORIZONTAL UNIT VENTILATOR					
01	T-2	ZONE AIR TEMPERATURE		▮	
02	SF-1	FAN ENABLE/DISABLE		▮	
03	SF-1	SUPPLY FAN ALARM STATUS	▮		
04	T-1	DISCHARGE AIR TEMPERATURE		▮	
05	FS-1	FREEZE STAT ALARM STATUS	▮		HARD WIRED SAFETY - MANUAL RESET
06	V-1	HEATING CONTROL VALVE OUTPUT		▮	
07	V-1	HEATING CONTROL VALVE POSITION	▮		
08	DPS-1	FILTER STATUS	▮		ALARM AT 0.75" (ADJ.)
09	D-1	OUTDOOR AIR DAMPER OUTPUT		▮	
10	D-1	OUTDOOR AIR DAMPER POSITION	▮		OPEN/CLOSE
FAN COILS					
01	T-2	ZONE AIR TEMPERATURE	▮	▮	
02	D-2	RETURN AIR DAMPER OUTPUT		▮	MODULATING OPEN/CLOSE
03	D-1	OUTDOOR AIR DAMPER POSITION		▮	
04	DPS-1	FILTER STATUS	▮	▮	
05	V-2	HEATING CONTROL VALVE POSITION		▮	
06	V-1	HEATING CONTROL VALVE POSITION		▮	
07	DP-1	DRAIN PAN ALARM	▮	▮	HARD WIRED SAFETY - MANUAL RESET
08	FS-1	FREEZE STAT ALARM STATUS	▮	▮	HARD WIRED SAFETY - MANUAL RESET
09	SF-1	FAN RUN STATUS	▮	▮	
10	SF-1	FAN ENABLE/DISABLE		▮	
11	T-1	DISCHARGE AIR TEMPERATURE	▮	▮	
MAU-15 & 16					
01	D-1	MIXED AIR DAMPER OUTPUT		▮	
02	D-1	MIXED AIR DAMPER POSITION	▮	▮	
03	D-2	RETURN AIR DAMPER OUTPUT		▮	
04	D-2	RETURN AIR DAMPER POSITION	▮	▮	
05	DPS-1	PRE-FILTER STATUS	▮	▮	
06	SF-1	FAN ENABLE/DISABLE		▮	
07	SF-1	FAN STATUS	▮	▮	
08	GHX-1	GAS FIRED HX ENABLE/DISABLE		▮	
09	GHX-1	GAS FIRED HX RUN STATUS		▮	
10	GHX-1	GAS FIRED HX ALARM STATUS	▮	▮	
11	HPSL-1	HIGH PRESSURE STATIC LIMIT	▮	▮	HARD WIRED SAFETY - MANUAL RESET
12	T-2	DISCHARGE AIR TEMPERATURE	▮	▮	
13	T-3	OUTDOOR AIR TEMPERATURE		▮	GLOBAL
14	T-4	INDOOR AIR TEMPERATURE		▮	
15	P-1	INDOOR STATIC PRESSURE		▮	
16	EF-3	FAN ENABLE/DISABLE		▮	
17	EF-3	FAN STATUS	▮	▮	
MDP					
01	M-1	METERING		▮	VISIBLE ON BMS
02	PL-1	PHASE LOSS PROTECTION	▮	▮	VISIBLE/ALERT BMS
CABINET UNIT HEATER CONTROL POINTS					
01	T-1	ZONE AIR TEMPERATURE		▮	
02	T-2	DISCHARGE AIR TEMPERATURE		▮	
03	SF-1	FAN STATUS	▮	▮	
04	SF-1	ENABLE/DISABLE		▮	
05	V-1	CONTROL VALVE POSITION		▮	
06	V-1	CONTROL VALVE OUTPUT		▮	
LCP1					
01	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
02	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
03	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
04	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
05	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
06	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
07	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
08	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
09	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
10	L-1	LIGHTS ON/OFF		▮	VISIBLE ON BMS
DOMESTIC (WATER SOFTNER)					
01	DC	DRY CONTACT ALARM	▮	▮	
MINI-SPLIT CONTROL POINTS					
01	T-1	SPACE TEMPERATURE ALARM STATUS		▮	
02	T-2	SPACE TEMPERATURE		▮	
SUMP PUMP SYSTEM					
01	DC-1	DRY CONTACT	▮	▮	LOSS OF POWER
02	DC-2	DRY CONTACT	▮	▮	HIGH WATER ALARM FLOAT
03	DC-3	DRY CONTACT		▮	PUMP #1 ON
04	DC-4	DRY CONTACT		▮	PUMPS OFF
DOMESTIC (WATER METERS)					
01	WM-1	WATER METER (PULSE)		▮	MAIN WATER UTILITY METER)
02	WM-2	WATER METER (PULSE)		▮	IRRIGATION
GAS MONITORING					
01	GM-1	GAS METER		▮	MAIN UTILITY METER
02	GM-2	GAS METER		▮	HEATING BOILERS
03	GM-2	GAS METER		▮	OUTBUILDINGS (AG BIN, STARAGE , REMOTE HEATERS)

SEQUENCE OF OPERATIONS

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROLS DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

CABINET UNIT HEATER CONTROLS
1. PROVIDE DIRECT DIGITAL CONTROLS FOR ALL CABINET UNIT HEATER OPERATION. CABINET UNIT HEATERS ARE EQUIPPED WITH A FAN, HEATING COIL AND NORMALLY OPEN TWO-POSITION HOT WATER CONTROL VALVE. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND CONTROL SYSTEM.
2. PROVIDE WALL MOUNTED ROOM AIR TEMPERATURE SENSOR, THAT WILL ENERGIZE UNIT HEATER WHENEVER SPACE TEMPERATURE FALLS BELOW ACTIVE HEATING SETPOINT.
   A. WHEN UNIT IS INDEXED TO STOP VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. UNIT HEATER FAN SHALL BE DE-ENERGIZED.
      b. HEATING COIL CONTROL VALVE SHALL BE 100% CLOSED.
   B. WHEN SYSTEM IS INDEXED TO START VIA BMS, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. HEATING COIL CONTROL VALVE SHALL BE 100% OPENED.
      b. UNIT HEATER FAN SHALL BE ENERGIZED.
   C. OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS:
      a. OCCUPIED SETPOINT: 68°F HEATING (ADJ.).
      b. UNOCCUPIED SETPOINT: 63°F HEATING (ADJ.).

MINI-SPLIT CONTROLS
1. MINI-SPLIT SYSTEM UNIT OPERATION. UNIT IS INDOOR UNIT WITH SUPPLY FAN, AIR FILTER AND REFRIGERANT COIL. BUILDING MANAGEMENT SYSTEM (BMS) WILL MONITOR AND ALARM SPACE TEMPERATURE.
2. SYSTEM START / STOP.
   A. UNIT SUPPLY FAN SHALL CYCLE BASED ON SPACE DEMAND.
   B. WHEN SYSTEM IS INDEXED TO STOP VIA LOCAL THERMOSTAT, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. SUPPLY FAN SHALL BE DE-ENERGIZED.
   C. WHEN SYSTEM IS INDEXED TO START VIA LOCAL THERMOSTAT, CONTROL DEVICES SHALL RESPOND AS FOLLOWS:
      a. SUPPLY FAN SHALL BE ENERGIZED
3. A SPACE TEMPERATURE SENSOR SHALL PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR TO MONITOR, TREND, AND ALARM SPACE TEMPERATURE.
   A. COOLING SETPOINT OF 70°F (ADJ).
      a. ALARM AT 80°F (ADJ.).

SEQUENCE OF OPERATIONS

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROLS DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

MAKE-UP AIR ROOFTOP UNIT CONTROLS
1. UNIT IS AN OUTDOOR, SINGLE-ZONE, CONSTANT VOLUME UNIT WITH SUPPLY FAN, GAS-FIRED HEATING, AND OUTDOOR/RETURN AIR MIXING DAMPERS.
2. UNIT SHALL HAVE AN ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
   A. TIME-OF-DAY (TOD) SCHEDULE.
3. START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   A. WHEN INDEXED TO STOP: DISABLE HEATING AND AFTER TIME DELAY DISABLE SUPPLY FAN. OUTDOOR AIR DAMPER SHALL CLOSE AND RETURN AIR DAMPER SHALL OPEN.
   B. WHEN INDEXED TO START: ENABLE SUPPLY FAN AND OPEN OUTDOOR AIR DAMPER TO MINIMUM POSITION.
   C. THE UNIT SHALL MODULATE HEATING TO MAINTAIN SPACE TEMPERATURE SETPOINT.
   D. THE UNIT SHALL MODULATE OUTDOOR/RETURN AIR DAMPERS TO MAINTAIN SPACE STATIC PRESSURE.
   E. ASSOCIATED EXHAUST FAN SHALL BE ENABLED/DISABLED BASED ON TIME-OF-DAY (TOD) SCHEDULE.
4. UNITS SHALL HAVE THE FOLLOWING ADJUSABLE SETPOINTS:
   A. OCCUPIED: 65°F HEATING.
   B. UNOCCUPIED: 55°F HEATING.
   C. SPACE STATIC PRESSURE: 0.0" W.C.
5. PROVIDE DEVICES AND MONITOR THE FOLLOWING FEATURES.
   A. DIRTY FILTER SWITCH.
   B. FAN FAILURE SWITCH.
   C. THE UNIT SHALL MODULATE THE GAS VALVE.
   D. OUTDOOR AIR DAMPER POSITION.
   E. RETURN DAMPER POSITION.
   F. SUPPLY AIR TEMPERATURE.
   G. SPACE TEMPERATURE.
   H. OUTDOOR AIR TEMPERATURE.
   I. SPACE STATIC PRESSURE.
   J. EXHAUST FAN STATUS.
   K. ALARM LIST:
      a. GLOBAL ALARM.
      b. DIRTY FILTER.
      c. HIGH DISCHARGE AIR TEMPERATURE 120 DEG F.
      d. FAN FAILURE.
      e. GAS-FIRED FURNACE ALARM.
      f. EXHAUST FAN STATUS ALARM.

SUMP PUMPS
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR SUMP PUMP SYSTEM MONITORING.
   A. SYSTEM SHALL BE MONITORED BY DDC BASED ON THE FOLLOWING:
      a. COMMON ALARM CONTACT.
      b. PUMP OFF
      c. PUMP ON
      d. HIGH WATER ALARM

DOMESTIC WATER SOFTENER
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR WATER SOFTENER SYSTEM OPERATION. SYSTEM IS A COMBINATION OF FILTER(S), TANK(S), SENSOR(S) AND MANUFACTURER CONTROLLER.
   A. SYSTEM SHALL BE CONTROLLED BY MANUFACTURER UNITARY CONTROLLER. THE FACTORY CONTROLLER SHALL BE PROVIDED WITH AN EXPANSION BOARD WITH CONTACT FOR ALARM STATUS.
   B. MONITOR THE "ALARM" COMMON CONTACT(S) AND PROVIDE A STATUS TO BMS WHEN ACTIVATED.

ENERGY MONITORING
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR TOTAL BUILDING ELECTRICAL LOAD MONITORING, LOGGING, AND TRENDING.
2. OBTAIN ELECTRICAL USAGE DIRECTLY FROM MAIN ELECTRICAL PANEL METER.
3. PROVIDE ON THE OPERATOR WORKSTATION A READ/COMPREHEND DATA PRESENTATION TO SHOW HISTORIC AND LIVE IN REAL-TIME ENERGY DATA.
4. DEVELOP A DASHBOARD AND USER INTERFACE TO PRESENT THE INFORMATION IN AN INTUITIVE AND USER-FRIENDLY FORMAT. PROVIDE INFORMATION ROLLED UP INTO THE FOLLOWING CATEGORIES:
   A. LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO NOW), MONTH-TO-DATE, YEAR-TO-DATE, & LAST YEAR.
5. THE SYSTEM SHALL PERFORM MEASUREMENT, DATA ACQUISITION, CALCULATIONS, RECORD KEEPING, ANALYSIS, NOTIFICATION, AND REPORTING OF ENERGY USAGE FOR THE FOLLOWING POINTS USING THE ABOVE DATA FORMATS.
   A. TOTAL FACILITY ELECTRICAL USAGE IN kW-h
6. PROVIDE USER THE ABILITY TO DOWNLOAD A CSV FILE OF THE DATA WITH USERS SELECTED INTERVALS, START DATE AND STOP DATE.
   A. THE CSV FILE SHALL CONTAIN A DATE AND TIME STAMP ON EACH INTERVAL VALUE. CSV ENTRIES SHALL BE FORMATTED AS NUMBERS NOT AS TEXT.

DOMESTIC WATER METERS
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR DOMESTIC WATER SYSTEM MONITORING. SYSTEM IS A COMBINATION OF PULSE TYPE WATER METER(S).
   A. SYSTEM SHALL BE MONITORED BY DDC BASED ON MONITORING, LOGGING, AND TRENDING FOR THE FOLLOWING:
      a. BUILDING WATER (METER PROVIDED BY OTHERS).
      b. IRRIGATION WATER (METER PROVIDED BY OTHERS).
      c. BUILDING MAKE-UP WATER FOR HEATING HOT WATER SYSTEM (METER PROVIDED BY OTHERS).
         - PROVIDE ALARMING FOR EXCESSIVE WATER USAGE TO INDICATE A SYSTEM WATER LEAK.

DOMESTIC GAS METERS
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR GAS SYSTEM MONITORING. SYSTEM IS A PULSE TYPE GAS METER.
   A. SYSTEM SHALL BE MONITORED BY DDC BASED ON MONITORING, LOGGING, AND TRENDING FOR THE FOLLOWING:
      a. BUILDING GAS #1 - (EXISTING).
      b. BUILDING GAS #2 - INDOOR PARKING AREA (METER PROVIDED BY OTHERS).
      c. BOILERS GAS METER - (METER PROVIDED BY OTHERS).

DEMAND RESPONSE
- AHU-1: AIR HANDLING UNIT SETPOINT ADJUSTMENTS
  UPON A DEMAND RESPONSE EVENT, THE AIR HANDLING UNIT COOLING SETPOINT SHALL BE INCREASED BY 2 DEGF WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 80 DEGF. DURING COOLING MODE, THE CHILLED WATER COOLING COIL SHALL BE STAGED TO MAINTAIN THE UPDATED ZONE COOLING TEMPERATURE SETPOINT. DURING UNOCCUPIED MODE, FANS SHALL BE OFF, OUTDOOR AIR DAMPERS CLOSED, RETURN AIR DAMPER OPEN, AND HEATING COIL VALVE CLOSED. TURNDOWN OF THE AIR HANDLING UNIT AND ASSOCIATED TERMINAL UNITS IS ANTICIPATED TO IMPACT THE STEAM PLANT AND CONDENSING EQUIPMENT BY REDUCED THE LOAD REQUIRED TO MEET UPDATED SETPOINTS. TERMINAL UNIT SETPOINTS SHALL BE UPDATED IN UNISON TO AVOID CONFLICTING ALARMS.
- AHU-2: AIR HANDLING UNIT SETPOINT ADJUSTMENTS
  UPON A DEMAND RESPONSE EVENT, THE AIR HANDLING UNIT COOLING SETPOINT SHALL BE INCREASED BY 2 DEGF WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 80 DEGF. DURING COOLING MODE, THE CHILLED WATER COOLING COIL SHALL BE STAGED TO MAINTAIN THE UPDATED ZONE COOLING TEMPERATURE SETPOINT. DURING UNOCCUPIED MODE, FANS SHALL BE OFF, OUTDOOR AIR DAMPERS CLOSED, RETURN AIR DAMPER OPEN, AND HEATING COIL VALVE CLOSED. TURNDOWN OF THE AIR HANDLING UNIT AND ASSOCIATED TERMINAL UNITS IS ANTICIPATED TO IMPACT THE STEAM PLANT AND CONDENSING EQUIPMENT BY REDUCED THE LOAD REQUIRED TO MEET UPDATED SETPOINTS. TERMINAL UNIT SETPOINTSSHALL BE UPDATED IN UNISON TO AVOID CONFLICTING ALARMS.
- SUPPLEMENTAL HEAT ADJUSTMENTS
  UPON A DEMAND RESPONSE EVENT, THE RADIANT CEILING PANEL TEMPERATURE SETPOINTS ARE DECREASED TO ELIMINATE EXCESS COMFORT HEATING FOR NON-OFFICE SPACES SUCH AS VESTIBULE AREAS. THE HEATING WATER VALVE SHALL MODULATE TO MAINTAIN THE NEW TEMPERATURE SETPOINT. THE VESTIBULE AREAS ARE CONSIDERED ACCEPTABLE ZONES TO REDUCE COMFORT LEVELS FOR THE FOUR HOUR EVENT PERIOD DUE TO LOW TRAFFIC DURING TYPICAL OPERATING HOURS. TURNDOWN OF THE RADIANT PANELS IS ANTICIPATED TO IMPACT THE HEATING PLANT BY DECREASING LOAD REQUIRED.
- DECORATIVE LIGHT FIXTURE SHUTDOWNS
  UPON A DEMAND RESPONSE EVENT, ALL LIGHT FIXTURES SHALL BE TRIMMED FROM 100% DOWN TO 80% CAPACITY THROUGH THE DALI CONTROL SYSTEM.
  IF ADDITIONAL LOAD REDUCTIONS ARE REQUIRED THEN DECORATIVE LIGHTING FIXTURES SHALL BE TURNED OFF. ALL OF THE PENDANT DECORATIVES START WITH A P##, SO P1##, P5##, PC##, PD##, PE## ARE ALL DECORATIVE FIXTURES AS SHOWN IN THE LIGHT FIXTURE SCHEDULE.
- LIFE SAFETY IS NOT IMPACTED BY SHUTOFF OF THESE FIXTURES. SHUTOFF OF DECORATIVE LIGHTING FIXTURES IS ANTICIPATED TO DIRECTLY REDUCE ELECTRICAL LOAD AND MINIMALLY IMPACT OCCUPANTS.

LIGHTING
1. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR INTERIOR AND EXTERIOR LIGHTING. SYSTEM CONSISTS OF A LIGHTING CONTROL PANEL WITH BACNET INTEGRATION. SYSTEM SHALL BE ACCESSIBLE THROUGH THE BUILDING AUTOMATION SYSTEM.

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	JC	CT	BG	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	JC	CT	BG	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	JC	CT	BG	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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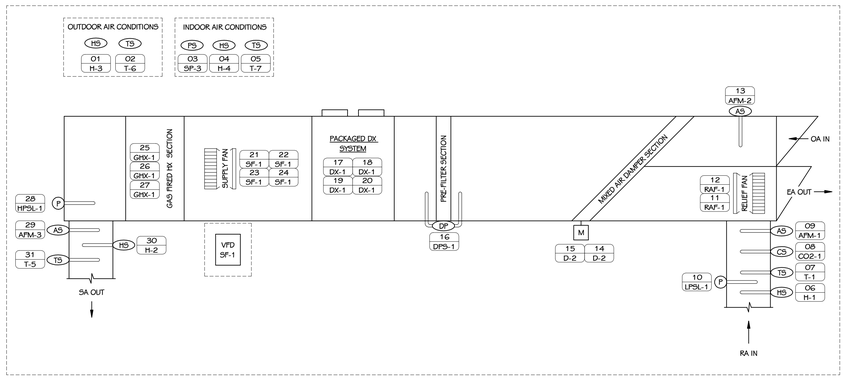
Architecture · Engineering · Interiors

SHEET TITLE
MECHANICAL CONTROLS

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	M-604	D

22-133.010



RTU-1, 2, & 3 CONTROLS DIAGRAM

SCALE: NONE

CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	REMARKS
RTU-1, 2, 3 CONTROL POINTS					
01	H-3	OUTDOOR AIR HUMIDITY			GLOBAL
02	T-6	OUTDOOR AIR TEMPERATURE			GLOBAL
03	SP-3	ROOM STATIC PRESSURE			
04	H-4	INDOOR AIR HUMIDITY SENSOR			
05	T-7	INDOOR AIR TEMPERATURE			
06	H-1	RETURN AIR HUMIDITY			DISPLAY ENTHALPY BASED ON T4H READINGS
07	T-1	RETURN AIR TEMPERATURE			DISPLAY ENTHALPY BASED ON T4H READINGS
08	CO2-1	RETURN AIR CARBON DIOXIDE	■		
09	APM-1	TOTAL RETURN AIR FLOW			
10	LPSL-1	LOW PRESSURE STATIC LIMIT	■		HARD WIRED SAFETY - MANUAL RESET
11	RAF-1	FAN STATUS	■		
12	RAF-1	FAN ENABLED/DISABLE			
13	APM-2	OUTDOOR AIR FLOW			
14	D-2	MIXED AIR DAMPER OUTPUT			
15	D-2	MIXED AIR DAMPER POSITION			
16	DPS-1	PRE-FILTER STATUS	■		
17	DX-1	COOLING SYSTEM ALARM STATUS	■	■	
18	DX-1	COOLING SYSTEM RUN STATUS		■	
19	DX-1	COOLING SYSTEM ENABLE/DISABLE		■	
20	DX-1	COOLING SYSTEM STAGING		■	
21	SF-1	FAN AIR FLOW			
22	SF-1	FAN SPEED CONTROL			
23	SF-1	FAN ENABLED/DISABLE			
24	SF-1	FAN STATUS	■		
25	GHX-1	GAS FIRED HX ENABLE/DISABLE		■	
26	GHX-1	GAS FIRED HX RUN STATUS		■	
27	GHX-1	GAS FIRED HX ALARM STATUS	■	■	
28	HPSL-1	HIGH PRESSURE STATIC LIMIT	■		HARD WIRED SAFETY - MANUAL RESET
29	APM-3	TOTAL SUPPLY AIR FLOW			
30	H-2	DISCHARGE AIR HUMIDITY			DISPLAY ENTHALPY BASED ON T4H READINGS
31	T-5	DISCHARGE AIR TEMPERATURE			DISPLAY ENTHALPY BASED ON T4H READINGS

SEQUENCE OF OPERATIONS

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SINGLE ZONE VAV ROOFTOP UNIT CONTROLS (RTU-1, 2, & 3)

A. UNIT IS PROVIDED WITH FACTORY CONTROLS. UNIT IS AN OUTDOOR, SINGLE-ZONE, CONSTANT VOLUME UNIT, CONSTANT SPEED EXHAUST FAN, ENTHALPY ECONOMIZER, OUTSIDE AIR AIRFLOW MEASURING STATION WITH TRANSDUCER, AND DX COOLING COIL WITH INTEGRAL AIR COOLED CONDENSING UNIT. UNITS ARE EQUIPPED WITH BACNET COMMUNICATION AND TERMINAL STRIP FOR BUILDING MANAGEMENT SYSTEM (BMS) INTEGRATION, CONTROL, AND MONITORING.
B. UNIT SHALL HAVE AN ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
   a. TIME-OF-DAY (TOD) SCHEDULE.
C. START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
   a. WHEN INDEXED TO STOP: DISABLE COOLING AND HEATING SOURCES AND AFTER TIME DELAY DISABLE SUPPLY AND EXHAUST FANS, OUTDOOR AND EXHAUST AIR DAMPERS 100% CLOSED, RETURN AIR DAMPER 100% OPEN.
   b. WHEN INDEXED TO START: ENABLE SUPPLY FAN, OPERATION OF SYSTEM TO RESUME AFTER START-UP DELAY.
D. THE BMS SHALL SEND THE UNIT CONTROLLER THE FOLLOWING MODES BASED ON SPACE NEEDS: OCCUPIED BYPASS, OPTIMAL MORNING WARM-UP / PRE-COOL, OCCUPIED HEAT/COOL, UNOCCUPIED HEAT/COOL MODES.
   a. IF BMS COMMUNICATION IS LOST WITH UNIT CONTROLLER, THE UNIT CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.
E. UNITS SHALL HAVE THE FOLLOWING ADJUSABLE SETPOINTS:
   a. OCCUPIED 74°F COOLING / 70°F HEATING.
   b. UNOCCUPIED 85°F COOLING / 62°F HEATING.
   c. CO2 800 PPM MINIMUM / 1,000 PPM MAXIMUM.
F. FACTORY CONTROLS TO INCLUDE THE FOLLOWING OPTIONS. REVEAL ALL POINTS, TREND AIRFLOWS, AND REPORT ALARMS TO BMS.
   a. OPTIMAL START.
   b. COMPARATIVE ENTHALPY ECONOMIZER.
   c. DIRTY FILTER SWITCH.
   d. FAN FAILURE SWITCH.
   e. SINGLE-ZONE FAN SPEED CONTROL.
   f. POWERED EXHAUST FAN CONTROL.
      - ENABLE WHENEVER OUTDOOR AIR DAMPER ACTUATOR EXCEEDS 25% (ADJ)DAMPER POSITION.
   g. OUTDOOR AIR DAMPER CONTROL.
      - WHEN THE UNIT FANS ARE ENERGIZED DURING SCHEDULE OCCUPANCY, THE UNIT OUTDOOR AIR DAMPER SHALL OPEN TO SCHEDULED MINIMUM AIR FLOW.
   h. UNIT DISCHARGE AIR SENSOR SHALL MODULATE (OR STAGE) THE GAS VALVE, ECONOMIZER DAMPERS, AND CYCLE THE DX COOLING COIL TO MAINTAIN SPACE TEMPERATURE SETPOINT.
   i. THE FOLLOWING SHALL BE SUPPLIED AND INSTALLED BY TEMPERATURE CONTROL INSTALLER:
      - DUCT-MOUNTED SENSORS:
        1. SUPPLY AIR TEMPERATURE AND HUMIDITY.
        2. RETURN AIR TEMPERATURE AND HUMIDITY.
        3. OUTDOOR AIR TEMPERATURE AND HUMIDITY.
        4. CO2.
        5. UNIT OUTDOOR AIR DAMPER CONTROLLED BY OUTDOOR AIR MONITOR STATION (APM3).
      - ZONE LEVEL SENSORS (REFER TO PLANS FOR SENSOR LOCATIONS):
        1. TEMPERATURE.
        2. HUMIDITY.
      - AMBIENT SENSORS:
        1. OUTDOOR AIR TEMPERATURE AND HUMIDITY.
           A. TO BE LOCATED ON NORTH WALL OF FACILITY (OR UNIT) OUT OF DIRECT SUNLIGHT WITH PROPER CLEARANCES FROM SNOW, WIND, UNIT EXHAUST, OR ANY OTHER CONDITION THAT MAY NEGATIVELY INFLUENCE THE READINGS.
      - SUPPLY (DUCT-MOUNTED) AIRFLOW MONITORING STATION.
      - HIGH STATIC PRESSURE SENSOR IN THE SUPPLY DISCHARGE PLENUM TO TURN OFF THE SUPPLY AND EXHAUST FANS UPON SENSING A HIGH STATIC PRESSURE. PROVIDE MANUAL RESET.
      - HIGH NEGATIVE STATIC PRESSURE SENSOR IN THE RETURN AIR PLENUM TO TURN OFF THE SUPPLY AND EXHAUST FANS UPON SENSING A HIGH NEGATIVE STATIC PRESSURE. PROVIDE MANUAL RESET.
   j. DUCT-MOUNTED IONIZATION SMOKE DETECTOR(S) PROVIDED BY DIVISION 28 SHALL DE-ENERGIZE THE UNIT FAN MOTOR WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
   k. ALARM LIST:
      - GENERAL ALARM FOR UNIT ISSUES NOT LISTED BELOW.
      - DIRTY FILTER.
      - DISCHARGE AIR TEMPERATURE +/-10 DEG F.
      - FAN FAILURE.
      - BI-POLAR IONIZATION STATUS.
      - HIGH / LOW DUCT STATIC PRESSURE.
      - SMOKE DETECTION.

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	JC	CT	BG	SDT	TP

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SHEET TITLE: MECHANICAL CONTROLS

SCALE:	JOB:	DRAWING NUMBER	SHEET	REV
1/8" = 1'-0"	FM-00155-Tow	3084-KAL-SC01	M-605	A

22-133.010

REFER TO CONSUMERS ENERGY SPECIFICATION FOR CABLE COLORING STANDARDS

YELLOW - CORPORATE SECURITY
VIOLET - ELECTRICAL / LIGHTING CONTROLS / HVAC
WHITE - DATA PLENUM COAX / SOUND MASKING
GRAY - AV DIGITAL SIGNAGE
BLUE - DATA STANDARD CAT6
ORANGE - DATA 800 MHZ RADIO OR ANALOG
BLACK - DATA WIFI
RED - FIRE AND SPECIFICALLY DESIGNED LIFE SAFETY
PINK - RESERVED FOR ONE OFF PROJECT NEEDS
GREEN - RESERVED FOR FUTURE

STRUCTURED CABLING

		MOUNTING HEIGHTS
	DATA/VOICE OUTLET	REFER TO TECHNOLOGY DRAWINGS, DETAILS AND PLANS FOR LOCATIONS AND ROUGH-IN DATA.
	DATA/VOICE OUTLET - SURFACE	
	DATA/VOICE OUTLET - ABOVE BACKSPLASH	
	SECURITY CONTROLS PATHWAY	
WAP	WIRELESS ACCESS POINT	
GBB	GROUNDING BUS BAR	
	CABLE TRAY	
	CLOCK	
MCP	MASTER CLOCK PANEL	
PAS	PAGING SYSTEM HEAD END	
12U	NETWORK COMMUNICATION RACK	
	4'X8'X3/4" FIRE-RATED PLYWOOD	
	CONDUIT SLEEVE	

AUDIO/VISUAL

		MOUNTING HEIGHTS
TV n	TV WALL BACKBOX	REFER TO TECHNOLOGY DRAWINGS, DETAILS AND PLANS FOR LOCATIONS AND ROUGH-IN DATA.
PJ n	PROJECTOR (OUTLET WITHIN 16" OF PROJECTOR LOCATION)	
AV n	A/V WALL STATION BOXES	
TS n	TECHNOLOGY OR TEACHER'S STATION BOXES	
MIC	MICROPHONE JACK	
CB	CEILING BOX	
BT	BLUETOOTH DEVICE	
ANT	ANTENNA	
PCR	PROJECTOR SCREEN	
	LOUDSPEAKER CEILING MOUNTED	
	LOUDSPEAKER WALL MOUNTED	
VC	VOLUME CONTROL	

SECURITY SYMBOLS

		MOUNTING HEIGHTS
	SECURITY CAMERA	REFER TO SECURITY DRAWINGS, DETAILS AND PLANS FOR LOCATIONS AND ROUGH-IN INFORMATION.
	SECURITY CAMERA	
SCP	SECURITY CABLING PATHWAY	
ACP	ACCESS CONTROL PANEL	
RB	RELEASE BUTTON	
IM	INTERCOM MASTER STATION	
LD	LOCKDOWN BUTTON	
DB	DURESS ALARM PUSH BUTTON	
CR	CARD READER	
CR M	CARD READER, MULLION MOUNT	
LS	LOCKDOWN STROBE	
KP	KEY PAD	
IC	INTERCOM	
	ACCESS CONTROL DETAIL INDICATOR: REFER TO ACCESS CONTROL DETAILS AND SCHEDULE	

NOTES:

MOUNT DEVICES AT HEIGHTS INDICATED UNLESS INDICATED OTHERWISE ON PLANS. HEIGHTS ARE TO BOTTOM OF DEVICE.

ELECTRICAL ABBREVIATIONS

(#)	# INDICATES QUANTITIES (I.E. (4) 3" CONDUITS MEANS FOUR 3" DIAMETER CONDUITS)
(E)	EXISTING
AFC	ABOVE FINISHED CEILING
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CT	CURRENT TRANSFORMER
CU	COPPER
DFA	DROP FROM ABOVE
DW	DISHWASHER
EM	EMERGENCY
ET	ELECTRONIC TRIP
EWC	ELECTRIC WATER COOLER
FDS	FUSIBLE DISCONNECT SWITCH
GAP	GENERATOR ANNUNCIATOR PANEL
GD	GARBAGE DISPOSAL
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER, 5mA
GFP	GROUND FAULT PROTECTION OF EQUIPMENT, 30mA
GND	GROUND
IAW	IN ACCORDANCE WITH
IC	INSULATION CONTACT
IDF	INTERMEDIATE DISTRIBUTION FRAME
JB	JUNCTION BOX
KCMIL	THOUSANDS OF CIRCULAR MILS
LCP	LIGHTING CONTROL PANEL
MDF	MAIN DISTRIBUTION FRAME
NFDS	NON-FUSIBLE DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
PB	PULL BOX
REF	REFRIGERATOR
RT	RAINTIGHT
SPD	SURGE PROTECTIVE DEVICE
TR	TAMPER RESISTANT
TTB	TELECOMMUNICATIONS TERMINAL BOARD
TX	TRANSFORMER
TYP	TYPICAL
ULSE	UL SERVICE ENTRANCE RATED
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WEATHERPROOF

LIGHTING SYMBOLS

		MOUNTING HEIGHTS
S	SINGLE POLE SWITCH	44"
SOS	OCCUPANCY SENSOR (SET TO VACANCY MODE) - SWITCH MOUNTED	44"
SLV	LOW VOLTAGE CONTROL SWITCH, REFER TO DETAIL	44"
S3	THREE-WAY SWITCH	44"
S4	FOUR-WAY SWITCH	44"
SP	SWITCH AND PILOT LIGHT	44"
SK	KEY OPERATED, SINGLE POLE SWITCH	44"
S3K	KEY OPERATED, THREE-WAY SWITCH	44"
OS	OCCUPANCY SENSOR (SET TO VACANCY MODE) CEILING MOUNTED	
OS	OCCUPANCY SENSOR (SET TO VACANCY MODE) - WALL MOUNTED	88"
DA	LOCAL, NON-SYSTEM 0-10V DIMMING CONTROLLER, SEE DETAIL	44"
ELD	EMERGENCY LIGHTING DEVICE - UL924 EMERGENCY SWITCHING DEVICE (FORMERLY GTD)	
	EMERGENCY BATTERY UNIT	88"
	WALL MTD. LIGHT FIXTURE	
	DOWNLIGHT FIXTURE	
	DOWNLIGHT FIXTURE - EMERGENCY, SWITCHABLE	
	RECTANGULAR LIGHT FIXTURE	
	RECTANGULAR EMERGENCY LIGHT FIXTURE ON EMERGENCY POWER, SWITCHABLE	
	INDUSTRIAL LIGHT FIXTURE	
	EXIT SIGN - CEILING MOUNTED	
	EXIT SIGN - WALL MOUNTED	
	PHOTOCONTROL	

RECEPTACLE SYMBOLS

	DUPLEX RECEPTACLE	18"
	DUPLEX RECEPTACLE - 4" ABOVE COUNTER BACKSPLASH	
WP	DUPLEX RECEPTACLE - WET LOCATION ENCLOSURE WITH GFI	

RECEPTACLES VARIATIONS - HEIGHT PER ABOVE UNLESS INDICATED ON DRAWINGS:

	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE - SURFACE MOUNTED #WM500
	DUPLEX RECEPTACLE - EMERGENCY
GFI	DUPLEX RECEPTACLE - WITH GFI
EWC	DUPLEX RECEPTACLE - FOR ELECTRIC WATER COOLER, WITH GFI
USB	DUPLEX RECEPTACLE - WITH (2) USB OUTLETS BETWEEN POWER
H	DUPLEX RECEPTACLE - HORIZONTAL MOUNTING
ST	DUPLEX RECEPTACLE - STACK ALIGNED BELOW DEVICE ABOVE (DEVICE ALIGNMENT IS NOT LIMITED TO THOSE LABELED, REFER TO ELECTRICAL DEVICE ALIGNMENT GUIDELINES)
GFI	GFCI REMOTE TRIP DEVICE, CONNECT NEARBY OUTLET TO LOAD SIDE	44"
	SPECIAL PURPOSE RECEPTACLE	18"
FB A	POWER/COMMUNICATION FLOOR BOX LEGRAND EVOLUTION #RFBGE-OG-6CTC2(COLOR)-1-1/4"C DATA	
PT A	POKE THROUGH POWER DEVICE - LEGRAND EVOLUTION #6ATC2P(COLOR)-1-1/4"C DATA	
HD	HANDHAIR DRYER	

FIRE ALARM SYMBOLS

		MOUNTING HEIGHTS
SD	FIRE ALARM SMOKE DETECTOR - CEILING TYPE	
SD ELEV	FIRE ALARM SMOKE DETECTOR - ELEVATOR TYPE, CONNECT TO FIRE ALARM SYSTEM AND TO ELEVATOR CONTROL PANEL. COORDINATE WITH ELEVATOR MANUFACTURER.	
HD	FIRE ALARM HEAT DETECTOR. - CEILING TYPE	
SD	FIRE ALARM SMOKE DETECTOR - DUCT TYPE	
RT	FIRE ALARM DUCT DETECTOR REMOTE TEST STATION	60"
SD	SMOKE/FIRE DAMPER, PROVIDE WITH DUCT DETECTOR AND 120V POWER	
FD	FIRE SHUTTER	
DH	MAGNETIC DOOR HOLDER, PROVIDE WITH SMOKE DETECTOR WITHIN 5' OF DOOR ON EACH SIDE, COORDINATE MOUNTING WITH DOOR HARDWARE.	
F	FIRE ALARM MANUAL PULL STATION	44"
V	FIRE ALARM AUDIO/VISUAL ALARM, WALL MTD.	80"
V	FIRE ALARM - VISUAL ALARM	80"
V	FIRE ALARM AUDIO/VISUAL ALARM, CEILING MTD.	
V	FIRE ALARM - VISUAL ALARM, CEILING MTD.	
S	FIRE ALARM SPEAKER	
SF	SPRINKLER SYSTEM FLOW SWITCH	
B	FIRE ALARM - BELL	
SDV	SPRINKLER VALVE MONITOR SWITCH	
FACP	FIRE ALARM CONTROL PANEL - FLUSH MTD.	72" TO TOP
FAA NAC	FIRE ALARM ANNUNCIATOR PANEL REMOTE - FLUSH MTD.	60" TO TOP
	STROBE PANEL	72" TO TOP

POWER SYMBOLS

		MOUNTING HEIGHTS
M	ELECTRIC METER	
SPD	SURGE PROTECTION DEVICE	
	PANELBOARD	72" TO TOP
	DISTRIBUTION PANELBOARD	72" TO TOP
EQ	ELECTRICAL EQUIPMENT CONNECTION - REFER TO CONNECTION SCHEDULES FOR FEEDER SIZE, BREAKERS, DISCONNECT MEANS ETC.	
TCP	TEMPERATURE CONTROL PANEL	72" TO TOP
DJ	DISCONNECT SWITCH - UNFUSED	
DJ	DISCONNECT SWITCH - FUSED	
CJ	COMBINATION DISCONNECT/MAGNETIC MOTOR STARTER	
MJ	MANUAL MOTOR STARTER WITH PILOT LIGHT	44"
VFD	VARIABLE FREQUENCY DRIVE	
5	MOTOR - HP AS INDICATED	
	FUSE	
	CIRCUIT BREAKER	
ET	CIRCUIT BREAKER - ELECTRONIC TRIP	
	SWITCH	
	TRANSFORMER	
R	RELAY	
T	TRANSFORMER	
	SYSTEM GROUND - REFER TO SPECIFICATIONS	
P	PUSH-BUTTON STATION - 1 HOLE	44"
PP	PUSH-BUTTON STATION - 2 HOLE	44"
PPP	PUSH-BUTTON STATION - 3 HOLE	44"
	EMERGENCY MUSHROOM HEAD PUSH-BUTTON STATION - 1 HOLE	44"
LC	LIGHTING CONTACTOR	
TC	TIME CLOCK	72" TO TOP
J	JUNCTION BOX - SIZE AND TYPE AS REQUIRED	
P	PULL BOX - SIZE AND TYPE AS REQUIRED	
HH	FLUSH IN-GRADE HAND HOLE	
DO	DOOR OPERATOR	

GENERAL NOTE - ELECTRICAL - DEMOLITION

1 COORDINATE ALL DEMOLITION WITH CONSTRUCTION MANAGERS (CM) ABATEMENT DEMOLITION SCOPE. WHERE INDICATED BY THE CM, REMOVE ALL LIGHTING, RECEPTACLES, FLOOR BOXES, FIRE ALARM DEVICES, AND CONNECTIONS TO MECHANICAL EQUIPMENT ALONG WITH ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.

2 FIXTURES, DEVICES, AND EQUIPMENT SHOWN RED, DASHED, OR WITH KEYED NOTES ARE TO BE REMOVED. FIXTURES, DEVICES, AND EQUIPMENT SHOWN LIGHTLY, OR WITH "EX" ARE EXISTING TO REMAIN UNDISTURBED.

3 REMOVE ALL LIGHT FIXTURES, DEVICES, WIRING AND EXPOSED CONDUIT FROM WALL AND CEILINGS TO BE DEMOLISHED. COORDINATE WITH ARCHITECTURAL. REMOVE ABANDONED EXPOSED CONDUIT AND ABANDONED WIRING BACK TO SOURCE. RE-LABEL CIRCUIT BREAKER AS A SPARE.

4 DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES, CONDUIT, AND WIRE ASSOCIATED WITH DEMOLISHED EQUIPMENT BY OTHER TRADES. REFER TO MECHANICAL

5 REMOVE AND/OR TEMPORARILY SUPPORT EXISTING CEILING DEVICES TO REMAIN IN EXISTING CEILINGS TO BE REPLACED. REINSTALL DEVICES INTO NEW CEILING. REWORK AND EXTEND EXISTING CIRCUIT AS REQUIRED.

6 RELABEL PANEL DIRECTORIES TO REFLECT ALL CHANGES MADE BY DEMOLITION WORK. PROVIDE NEW, TYPED, DIRECTORY FOR ALL PANELS AFFECTED.

7 CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT PHASING. TEMPORARY POWER, EGRESS LIGHTING, EXIT SIGNAGE, PULL STATIONS AND BATTERY BACKUP LIGHTING SHALL BE PROVIDED AS REQUIRED WHILE BUILDING IS OCCUPIED BETWEEN PHASES OF CONSTRUCTION.

8 PATCH AND REPAIR ANY MATERIALS TO MATCH ADJACENT FOR ANY EQUIPMENT OR LIGHT FIXTURES REMOVED OR MATERIALS DAMAGED IN REMOVAL.

GENERAL NOTES - LIGHTING

1 ALL OCCUPANCY SENSORS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.

2 ALL OCCUPANCY SENSOR WIRING SHALL BE CONCEALED WITHIN CONDUIT WHERE EXPOSED. NO LOW VOLTAGE WIRING SHALL BE EXPOSED.

3 ALL CONDUITS SHALL RUN AS TIGHT TO DECK AS PERMITTED BY CODE. CONDUITS SHALL BE RUN IN A NEAT MANNER. MAINTAIN THE SAME SPACING WHEN CONDUITS ARE RUN TOGETHER. CONCEAL JUNCTION BOXES OVER LAY-IN CEILING AND USE EMT DROPS DOWN TO CLOUDS. LOCATE CONDUIT DROPS TO CLOUDS AND CEILING ELEMENTS IN LEAST VISIBLE LOCATION. NO MC-CABLE TO LIGHT FIXTURES SHALL BE VISIBLE FROM ANY ANGLE.

4 RECESS NEW DEVICES, BACKBOXES, AND ASSOCIATED CONDUIT IN EXISTING WALLS UNLESS NOTED OTHERWISE. FISH AND/OR CHANNEL WALLS AS REQUIRED. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT OR RACEWAY SHALL BE ALLOWED. UNLESS SPECIFICALLY NOTED ON DRAWINGS.

5 ALL CABLING SHALL BE PLENUM RATED. ALL CABLING SHALL BE PLENUM RATED. REFER TO CONSUMERS ENERGY STAND CABLING COLOR SPECIFICATION.

GENERAL NOTES - FIRE ALARM

1 PROVIDE EXTENSION OWNERS EXISTING SIEMENS FIRE ALARM SYSTEM IN AREAS OF RENOVATION, REFER TO SPECIFICATIONS. FIRE ALARM DEVICES SHOWN ARE NOT INTENDED TO REPRESENT A COMPLETE ENGINEERED FIRE ALARM DESIGN. FIRE ALARM DEVICES SHOWN ON PLANS ARE INDICATED TO ILLUSTRATE GENERAL DESIGN INTENT TO ASSIST THE CONTRACTOR IN SCOPING, PRICING, AND COORDINATION WITH OTHER SYSTEMS. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL NECESSARY DEVICES AND ACCESSORIES FOR A COMPLETE SYSTEM, COMPLIANT WITH APPLICABLE CODES AND JURISDICTIONAL REQUIREMENTS, EVEN IF SUCH DEVICES ARE NOT INDICATED IN THESE DOCUMENTS.

2 THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR COORINDATING WITH MECHANICAL CONTRACTOR AND ALL OTHER TRADES NECESSARY FOR DOOR HOLDS, SMOKE DAMPERS, DUCT DETECTORS, FLOW / TAMPER SWITCHES AND ANY OTHER DEVICES.

3 NEW FIRE ALARM DEVICES ARE TO BE TIED INTO THE EXISTING FIRE ALARM SYSTEM. PROVIDE ALL REQUIRED EQUIPMENT FOR A COMPLETE INSTALLATION AND RECERTIFY THE EXISTING SYSTEM AFTER COMPLETION OF THE RENOVATION. RETAIN THE SERVICES OF A FACTORY REPRESENTATIVE FOR FIRE ALARM SYSTEM DESIGN AND CERTIFICATION. THE FIRE ALARM CONTRACTOR SHALL SUBMIT FINAL FIRE ALARM SHOP DRAWINGS AS A DELEGATED DESIGN SUBMITTAL TO THE AUTHORITY HAVING JURISDICTION.

4 THE FIRE ALARM CONTRACTOR SHALL RESPONSIBLE FOR FIELD VERIFYING EXISTING DEVICES AND CONDITIONS.

5 PROVIDE 120V CIRCUIT FROM NEAREST PANEL FOR ALL FIRE ALARM NAC PANELS. COORDINATE WITH FIRE ALARM CONTRACTOR FOR LOCATIONS AND NUMBER OF CIRCUITS.

6 ALL CABLING SHALL BE PLENUM RATED.

GENERAL NOTES - POWER

1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR NEW WORK OR WHERE DEVICES ARE REMOVED AND NOT REPLACED.

2 ELECTRICAL CONTRACTOR SHALL VERIFY VOLTAGE OF TRANSFORMER OR ANY MECHANICAL OR OTHER EQUIPMENT PRIOR TO ORDERING ELECTRICAL EQUIPMENT. FOR A PRIMARY TRANSFORMER, CONTRACTOR TEST AND CHECK EXISTING VOLTAGE OR GET LETTER FROM UTILITY STATING VOLTAGE AND CONFIGURATION OF INCOMING SERVICE PRIOR TO ORDERING EQUIPMENT.

3 ELECTRICAL CONTRACTOR SHALL COORDINATE WITH G SERIES SHEETS DEVICE COORDINATION DETAIL. DEVICES ARE TO ALIGN VERTICALLY AND HORIZONTALLY AND FOLLOW THE RULES OF THIS DETAIL CONSISTENTLY. A PRE-INSTALL DEVICE COORDINATION MEETING FOR DEVICE FINISHES AND LAYOUT MAY BE REQUIRED IN THE SPECIFICATION FOR THIS PROJECT.

4 PATCH ALL PENETRATIONS AS REQUIRED TO MAINTAIN FIRE RATING.

5 REFER TO INTERIOR ELEVATIONS, SECTIONS, ARCHITECTURAL ELEVATIONS AND RELATED DRAWINGS FOR EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS. WHERE DEVICES ARE MOUNTED UNDER OR ABOVE TACK BOARDS, DOORS, WINDOWS, OR ANY PIECE OF EQUIPMENT, THE ELECTRICAL DEVICE SHALL BE CENTERED AS SHOWN. COORDINATE LOCATION OF FURNITURE CONNECTIONS AND/OR RECEPTACLES AND DATA RACEWAYS WITH APPROVED FURNITURE SHOP DRAWINGS, FINAL CONNECTIONS TO FURNITURE BY ELECTRICAL CONTRACTOR.

6 ALL CONDUITS SHALL RUN AS NEAR TO DECK AS PERMITTED BY CODE. SOME CONDUITS WILL BE EXPOSED AND SHALL BE RUN IN A NEAT MANNER. MAINTAIN THE SAME SPACING WHEN CONDUITS ARE RUN TOGETHER. CONCEAL JUNCTION BOXES OVER LAY-IN CEILING AND USE EMT DROPS DOWN TO CLOUDS. LOCATE CONDUIT DROPS TO CLOUDS AND CEILING ELEMENTS IN LEAST VISIBLE LOCATION.

7 WHEN CEILINGS ARE REMOVED ELECTRICAL CONTRACTOR SHALL PROPERLY SUPPORT ALL CONDUIT AND LOW VOLTAGE WIRING AS REQUIRED PER NEC.

8 REMOVE CEILINGS AND GRID AS REQUIRED. REPLACE ANY DAMAGED CEILINGS.

9 ALL KITCHEN RECEPTACLES, BATHROOM RECEPTACLES, OUTDOOR RECEPTACLES, OUTLETS WITHIN 6' OF SINK AND ANY OTHER REQUIRED BY 210.8B TO BE GFCI PROTECTED PER NEC REQUIREMENTS. PROVIDE REMOTE GFCI TESTING DEVICE FOR INNACCESSIBLE GFCI DEVICES.

10 PROVIDE 120V CIRCUIT FROM NEAREST LIFE SAFETY PANEL FOR ALL FIRE ALARM NAC PANELS. COORDINATE WITH FIRE ALARM CONTRACTOR FOR LOCATIONS AND NUMBER OF CIRCUITS.

11 ALL LOW VOLTAGE CABLING SHALL BE RUN IN CONDUIT BETWEEN DEVICE AND CABLE TRAY OR TECHNOLOGY RACK. NO CABLING SHALL BE VISIBLE IN EXPOSED CEILING SPACES. EXPOSED CONDUIT SHALL BE PAINTED TO MATCH SURFACE IT IS SUPPORTED FROM. WIRING ROUTED IN ACCESSIBLE CEILING SPACES SHALL BE INDEPENDENTLY SUPPORTED WITH COMM HOOKS OR RINGS.

12 CONNECT POWER TO ALL VAV, TERMINAL UNITS AND MISCELLANEOUS MECHANICAL DAMPERS AND VALVES PROVIDED WITH LOW VOLTAGE TRANSFORMERS. PROVIDE AT LEAST A CIRCUIT FOR EVERY 4 UNITS TO BE ON A TRANSFORMER. COORDINATE EXACT LOCATIONS AND TRANSFORMER QUANTITIES WITH BUILDING AUTOMATION SYSTEM AND MECHANICAL CONTRACTORS AND REFER TO MECHANICAL CONTROLS AND SEQUENCE OF OPERATIONS DETAIL. THESE ITEMS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. DO NOT USE SPARE BREAKERS INDICATED IN PANEL SCHEDULES FOR THESE CIRCUITS, NOTIFY PANELBOARD MANUFACTURERS OF QUANTITIES OF THESE BREAKERS REQUIRED

13 ALL CONDUITS SHALL ENTER/EXIT THE BUILDING BELOW GRADE. PROVIDE TRENCHING AND DIRECTIONAL BORING AS REQUIRED. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT SHALL BE ALLOWED ON EXTERIOR OF BUILDING.

14 PROVIDE 120V CIRCUIT FROM NEAREST GENERATOR STANDBY PANEL FOR ALL BMS/BAS CONTROL PANELS. COORDINATE LOCATION AND NUMBER OF CIRCUITS WITH CONTROLS CONTRACTOR.

15 PROVIDE 4" HOUSEKEEPING PADS FOR SWITCHGEAR, TRANSFORMERS AND ALL FLOOR MOUNTED EQUIPMENT. PROVIDE FLEXIBLE CONNECTION TO TRANSFORMERS AND SIMILAR EQUIPMENT PER SPECIFICATIONS.

16 RECESS NEW DEVICES, BACKBOXES, AND ASSOCIATED CONDUIT IN EXISTING WALLS UNLESS NOTED OTHERWISE. FISH AND/OR CHANNEL WALLS AS REQUIRED. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT OR RACEWAY SHALL BE ALLOWED. UNLESS SPECIFICALLY NOTED ON DRAWINGS.

17 PROVIDE FINAL CONNECTION TO ALL OWNER/CONTRACTOR PROVIDED EQUIPMENT. COORDINATE RECEPTACLE SIZES AND TYPE WITH EQUIPMENT, ADJUST CIRCUIT SIZE AS REQUIRED.

18 FLOORBOX AND POKE THROUGH POWER AND RACEWAY TO FEED BACK UP TO CEILING OF ROOM THAT FLOORBOX SERVES.

19 ALL CABLING SHALL BE PLENUM RATED. REFER TO CONSUMERS ENERGY STAND CABLING COLOR SPECIFICATION.

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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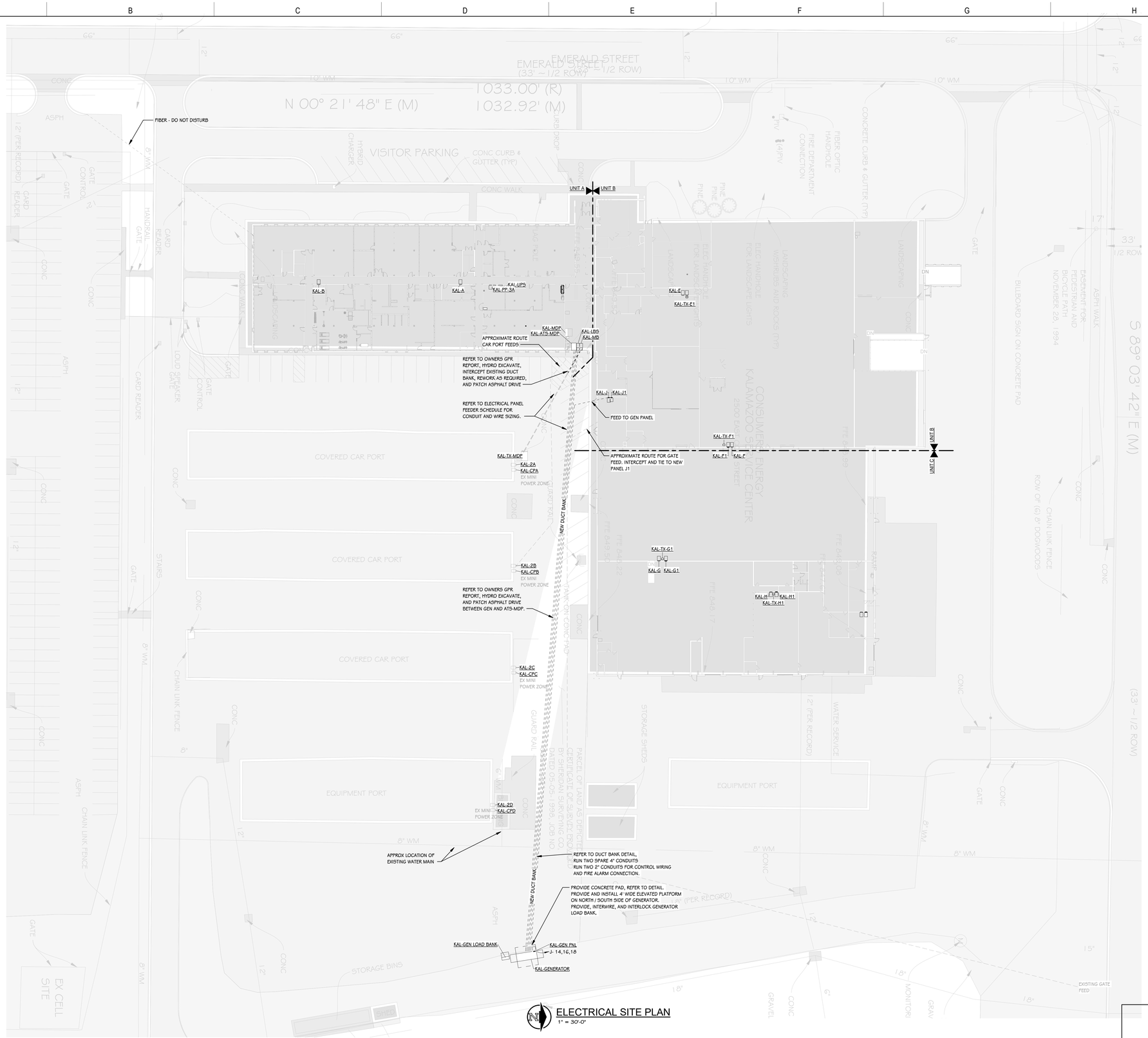
SHEET TITLE
ELECTRICAL SYMBOLS AND GENERAL NOTES

SCALE:	12" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	EG-001	D

22-133.010

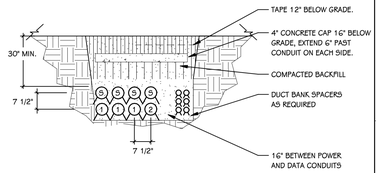


ELECTRICAL SITE PLAN
1" = 30'-0"

NOTES - ELECTRICAL - SITE

1. PROVIDE TRENCHING AND DIRECTIONAL BORING AS REQUIRED FOR ALL ELECTRICAL SITE WORK. REFER TO SITE / CIVIL UTILITY PLAN, CALL MISS DIG, AND RADAR SITE PRIOR TO ANY SITE TRENCHING OR DIRECTIONAL BORING.
2. ALL CONDUITS SHALL ENTER/EXIT THE BUILDING BELOW GRADE. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT SHALL BE ALLOWED.
3. ALL CONDUITS FOR COMMUNICATIONS AND FUTURE POWER SHALL HAVE PULL STRING.

REFER TO STRUCTURAL DRAWINGS FOR GENERATOR PAD



UNDERGROUND CAPPED CONDUIT
SCALE: NONE

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REFERENCE DRAWINGS

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KALAMAZOO, MICHIGAN

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SHEET TITLE
ELECTRICAL SITE PLAN

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
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KEYED NOTES - ELECTRICAL - DEMOLITION

1 REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT INCLUDING DISCONNECT, STARTER, AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE. COORDINATE WITH MECHANICAL.

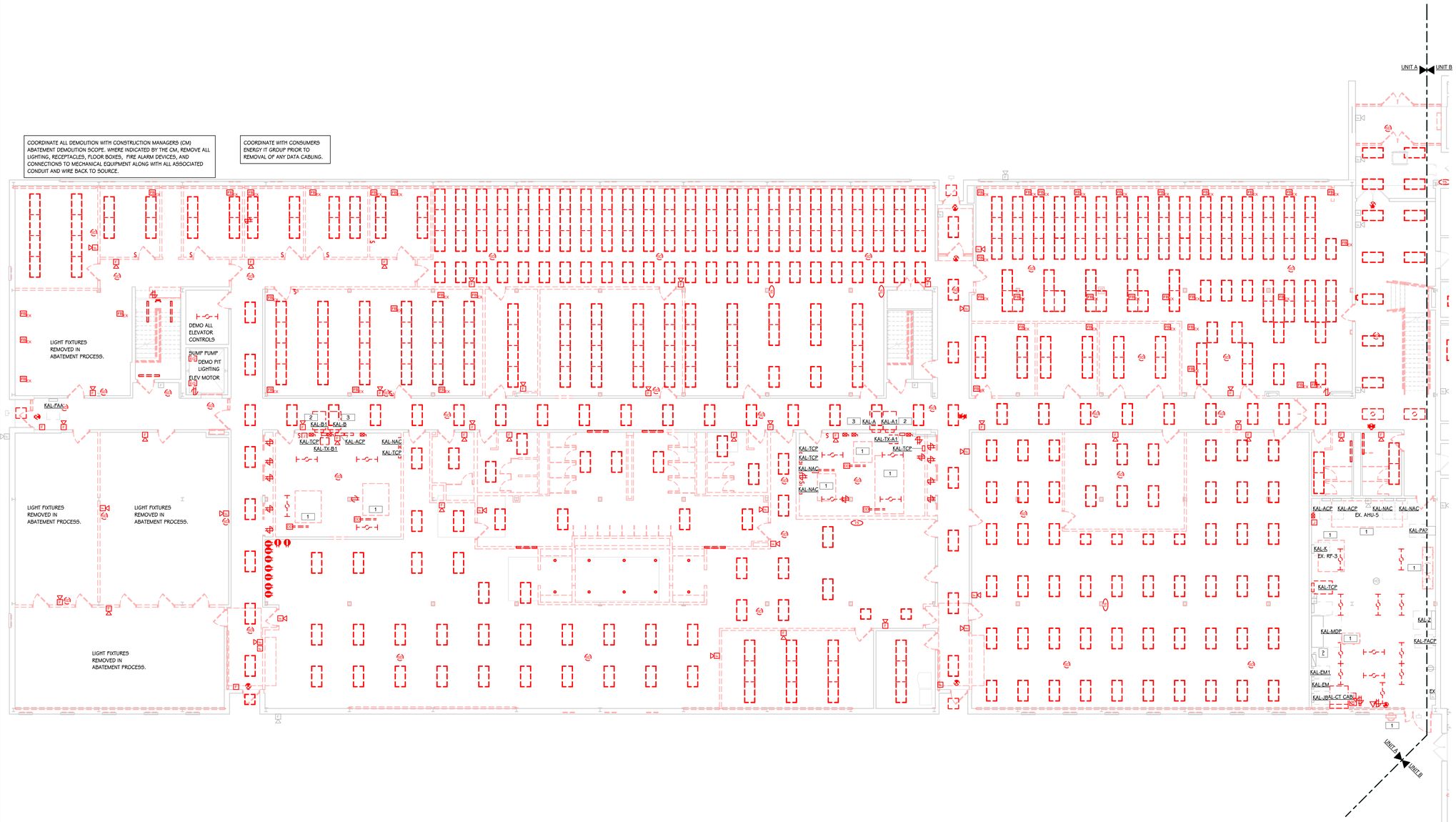
2 REMOVE EXISTING PANEL, ASSOCIATED FEEDER, AND ALL BRANCH CONDUIT AND WIRE BACK TO SOURCE. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK NECESSARY TO REWORK AND EXTEND ALL EXISTING CIRCUITS TO REMAIN TO NEW PANEL IN NEW LOCATION

3 REMOVE EXISTING PANEL AND PROVIDE NEW PANEL IN PLACE OF EXISTING. RECONNECT TO EXISTING FEEDER; REWORK AND EXTEND EXISTING FEEDER AS REQUIRED. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK NECESSARY TO REWORK AND EXTEND ALL EXISTING BRANCH WIRING NOT BEING DEMOLISHED TO NEW PANEL; REWORK AND EXTEND EXISTING BRANCH WIRING AS REQUIRED.

4 REMOVE RECEPTACLE, AND/OR JUNCTION BOX ALONG WITH ALL ASSOCIATED RACEWAY, ACCESSIBLE CONDUIT, AND WIRE BACK TO SOURCE.

COORDINATE ALL DEMOLITION WITH CONSTRUCTION MANAGERS (CM) ABATEMENT DEMOLITION SCOPE. WHERE INDICATED BY THE CM, REMOVE ALL LIGHTING, RECEPTACLES, FLOOR BOXES, FIRE ALARM DEVICES, AND CONNECTIONS TO MECHANICAL EQUIPMENT ALONG WITH ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.

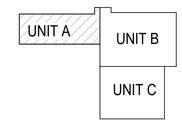
COORDINATE WITH CONSUMERS ENERGY IT GROUP PRIOR TO REMOVAL OF ANY DATA CABLING.



FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

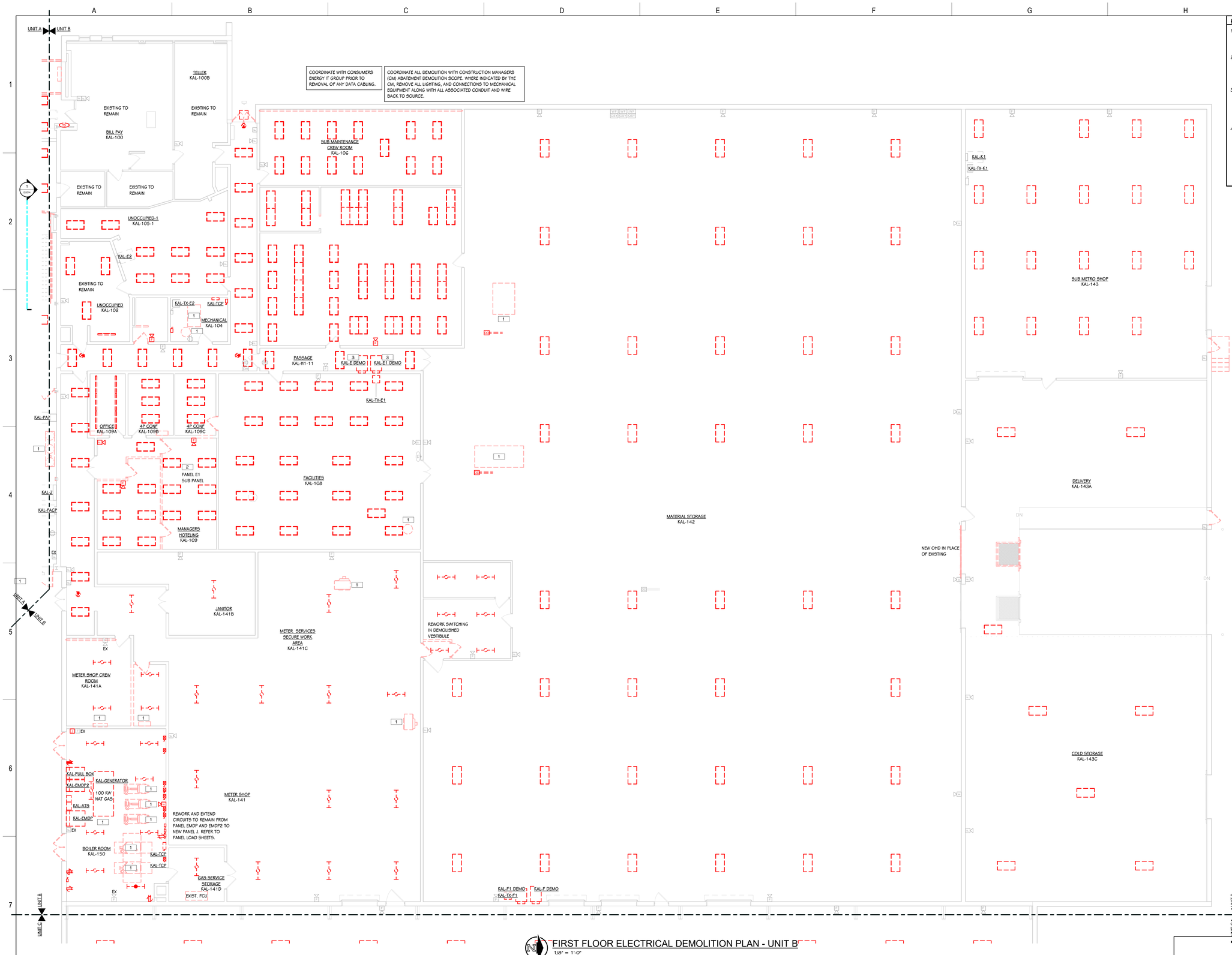
SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: ED-101A
REV: D

22-133.010



KEYED NOTES - ELECTRICAL - DEMOLITION

1. REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT INCLUDING DISCONNECT, STARTER, AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE. COORDINATE WITH MECHANICAL.
2. REMOVE EXISTING PANEL, ASSOCIATED FEEDER, AND ALL BRANCH CONDUIT AND WIRE BACK TO SOURCE. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK, NECESSARY TO REWORK AND EXTEND ALL EXISTING CIRCUITS TO REMAIN TO NEW PANEL IN NEW LOCATION
3. REMOVE EXISTING PANEL AND PROVIDE NEW PANEL IN PLACE OF EXISTING. RECONNECT TO EXISTING FEEDER; REWORK AND EXTEND EXISTING FEEDER AS REQUIRED. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK NECESSARY TO REWORK AND EXTEND ALL EXISTING BRANCH WIRING NOT BEING DEMOLISHED TO NEW PANEL; REWORK AND EXTEND EXISTING BRANCH WIRING AS REQUIRED.
4. REMOVE RECEPTACLE, AND/OR JUNCTION BOX ALONG WITH ALL ASSOCIATED RACEWAY, ACCESSIBLE CONDUIT, AND WIRE BACK TO SOURCE.

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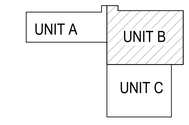
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT B
1/8" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

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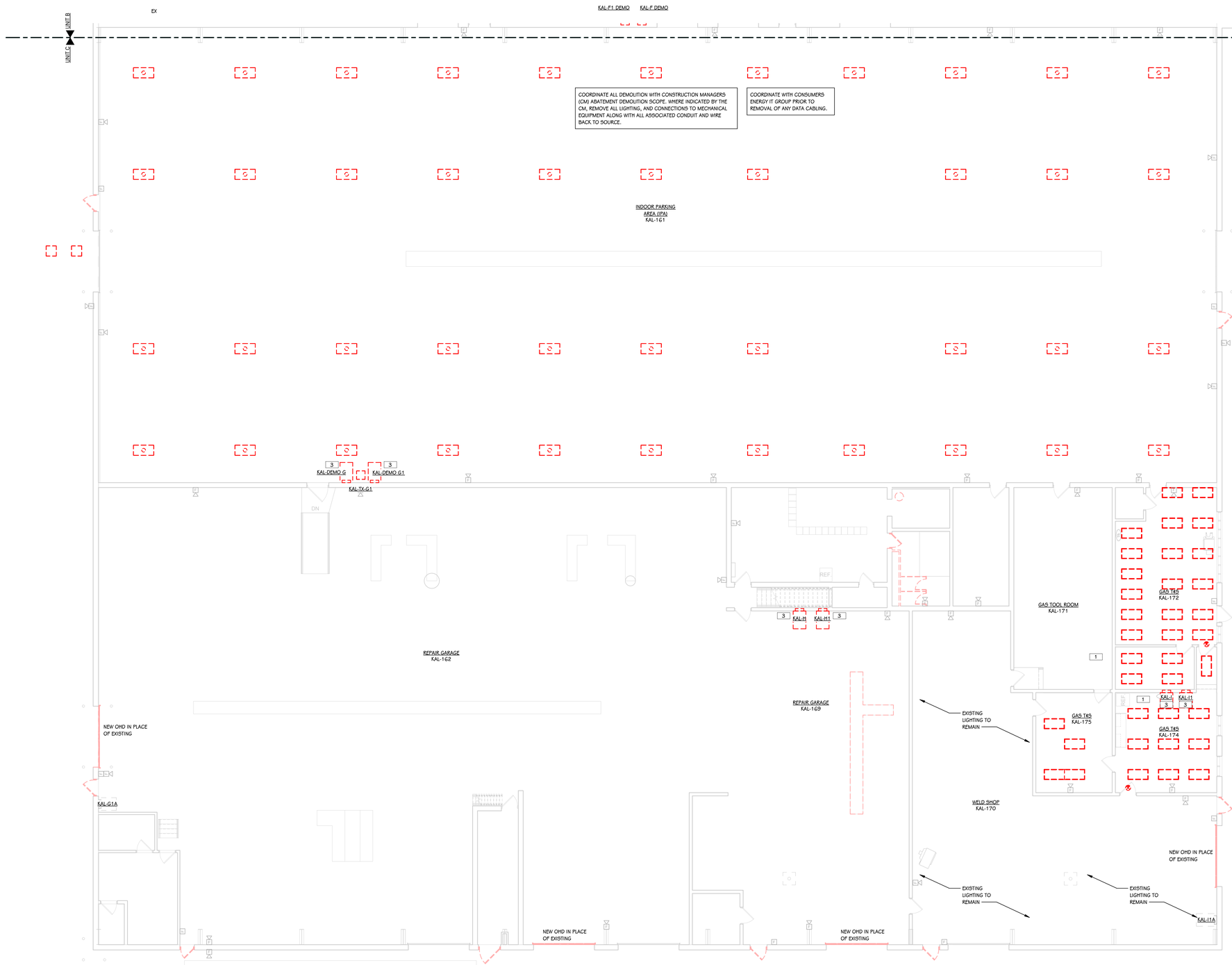
SHEET TITLE: FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: ED-101B
REV: D

22-133.010



FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - ELECTRICAL - DEMOLITION

1 REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT INCLUDING DISCONNECT, STARTER, AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE. COORDINATE WITH MECHANICAL.

2 REMOVE EXISTING PANEL, ASSOCIATED FEEDER, AND ALL BRANCH CONDUIT AND WIRE BACK TO SOURCE. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK NECESSARY TO REWORK AND EXTEND ALL EXISTING CIRCUITS TO REMAIN TO NEW PANEL IN NEW LOCATION

3 REMOVE EXISTING PANEL AND PROVIDE NEW PANEL IN PLACE OF EXISTING. RECONNECT TO EXISTING FEEDER; REWORK AND EXTEND EXISTING FEEDER AS REQUIRED. CONTRACTOR TO FIELD VERIFY AND PROVIDE ALL ELECTRICAL WORK NECESSARY TO REWORK AND EXTEND ALL EXISTING BRANCH WIRING NOT BEING DEMOLISHED TO NEW PANEL; REWORK AND EXTEND EXISTING BRANCH WIRING AS REQUIRED.

4 REMOVE RECEPTACLE, AND/OR JUNCTION BOX ALONG WITH ALL ASSOCIATED RACEWAY, ACCESSIBLE CONDUIT, AND WIRE BACK TO SOURCE.

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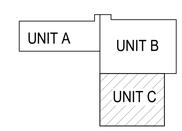
KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SHEET TITLE
FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT C

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	ED-101C	D

22-133.010

KEYED NOTES - ELECTRICAL - DEMOLITION

1 REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT INCLUDING DISCONNECT, STARTER, AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE. COORDINATE WITH MECHANICAL.

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4 REMOVE RECEPTACLE, AND/OR JUNCTION BOX ALONG WITH ALL ASSOCIATED RACEWAY, ACCESSIBLE CONDUIT, AND WIRE BACK TO SOURCE.

COORDINATE ALL DEMOLITION WITH CONSTRUCTION MANAGERS (CM) ABATEMENT DEMOLITION SCOPE. WHERE INDICATED BY THE CM, REMOVE ALL LIGHTING, RECEPTACLES, FLOOR BOXES, FIRE ALARM DEVICES, AND CONNECTIONS TO MECHANICAL EQUIPMENT ALONG WITH ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.

COORDINATE WITH CONSUMERS ENERGY IT GROUP PRIOR TO REMOVAL OF ANY DATA CABLING.

SECOND FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A
1/8" = 1'-0"

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KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-06-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

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SHEET TITLE
SECOND FLOOR ELECTRICAL DEMOLITION PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: ED-102A
REV: D

22-133.010

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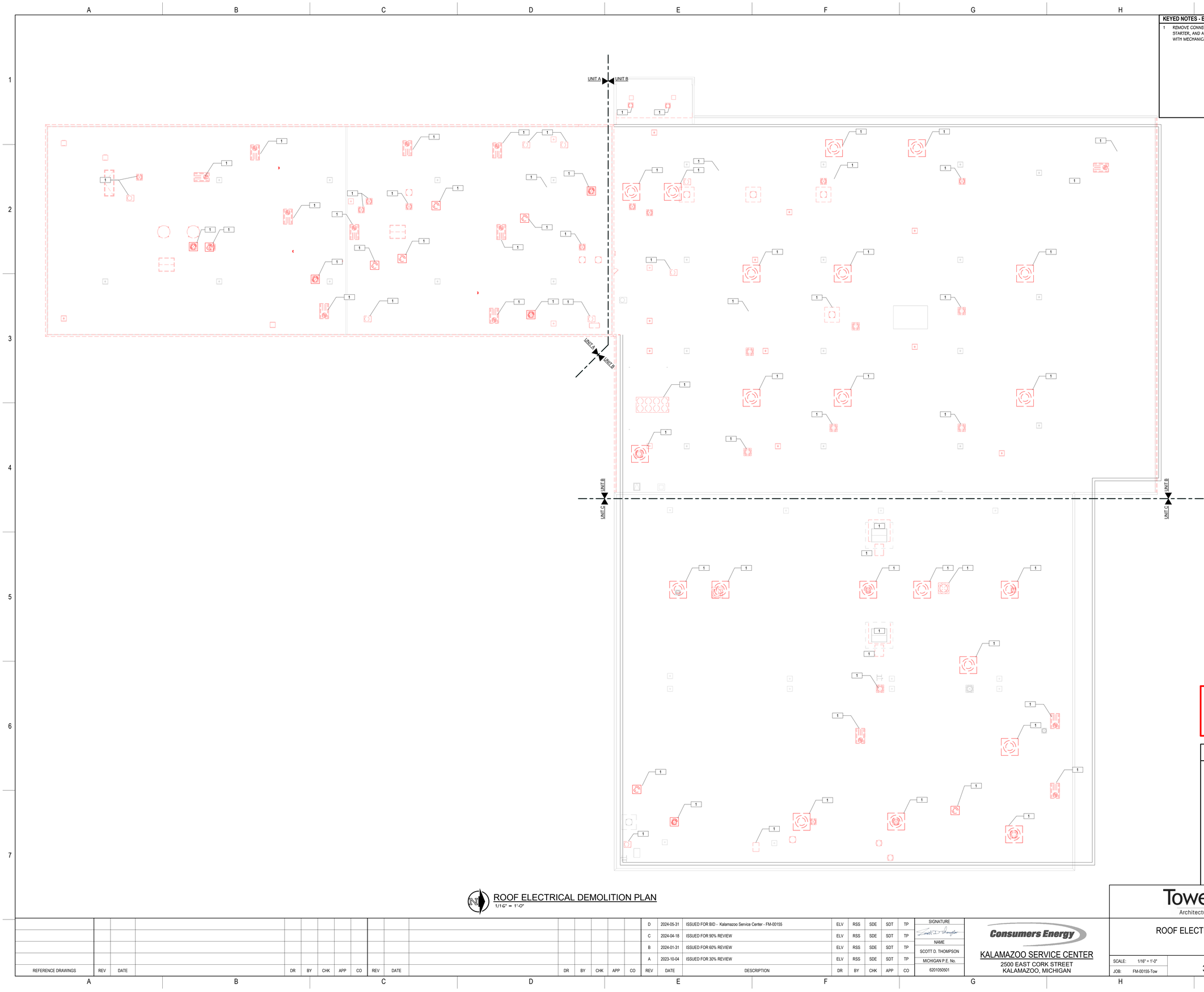

KEYED NOTES - ELECTRICAL - ROOF - DEMOLITION

1 REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT INCLUDING DISCONNECT, STARTER, AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE. COORDINATE WITH MECHANICAL.

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ROOF ELECTRICAL DEMOLITION PLAN
1/16" = 1'-0"

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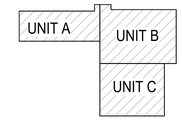

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

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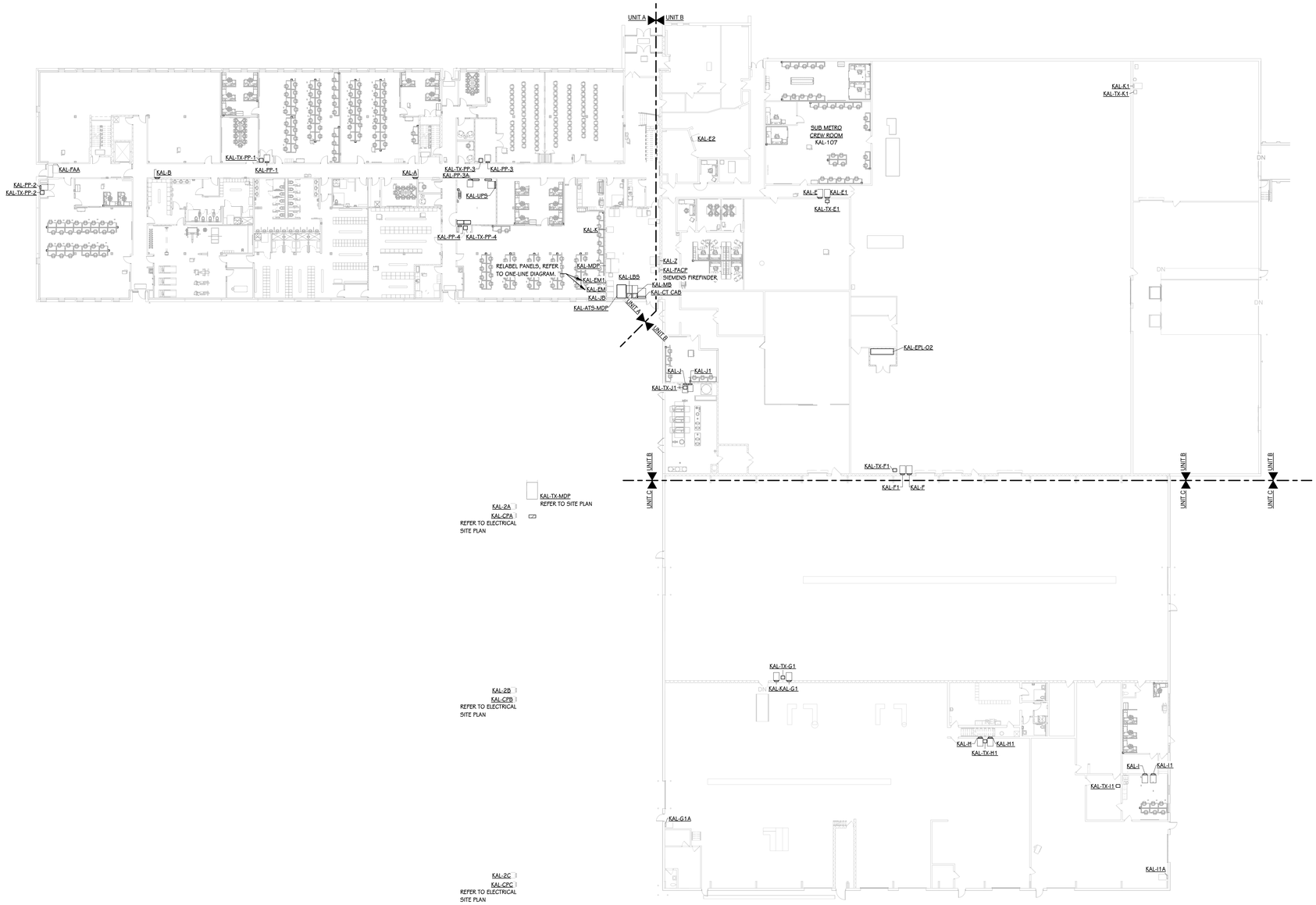
SHEET TITLE
ROOF ELECTRICAL DEMOLITION PLAN

SCALE:	1/16" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	ED-150	D

22-133.010



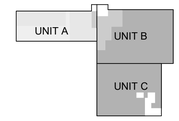
OVERALL FIRST FLOOR POWER PLAN
1" = 20'-0"

PHASING PLAN KEY

REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
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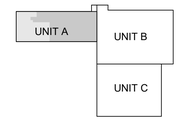
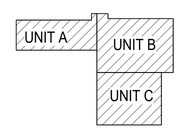


SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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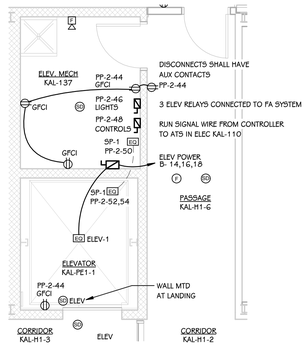
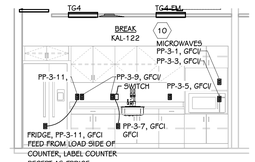
SHEET TITLE
OVERALL FIRST FLOOR POWER PLAN

SCALE:	1" = 20'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	E-101	D

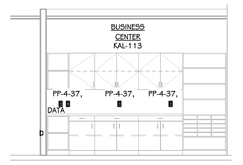
22-133.010



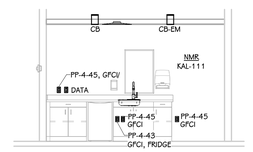
1 E-101A
ENLARGED ELEV MECH ROOM
1/4" = 1'-0"



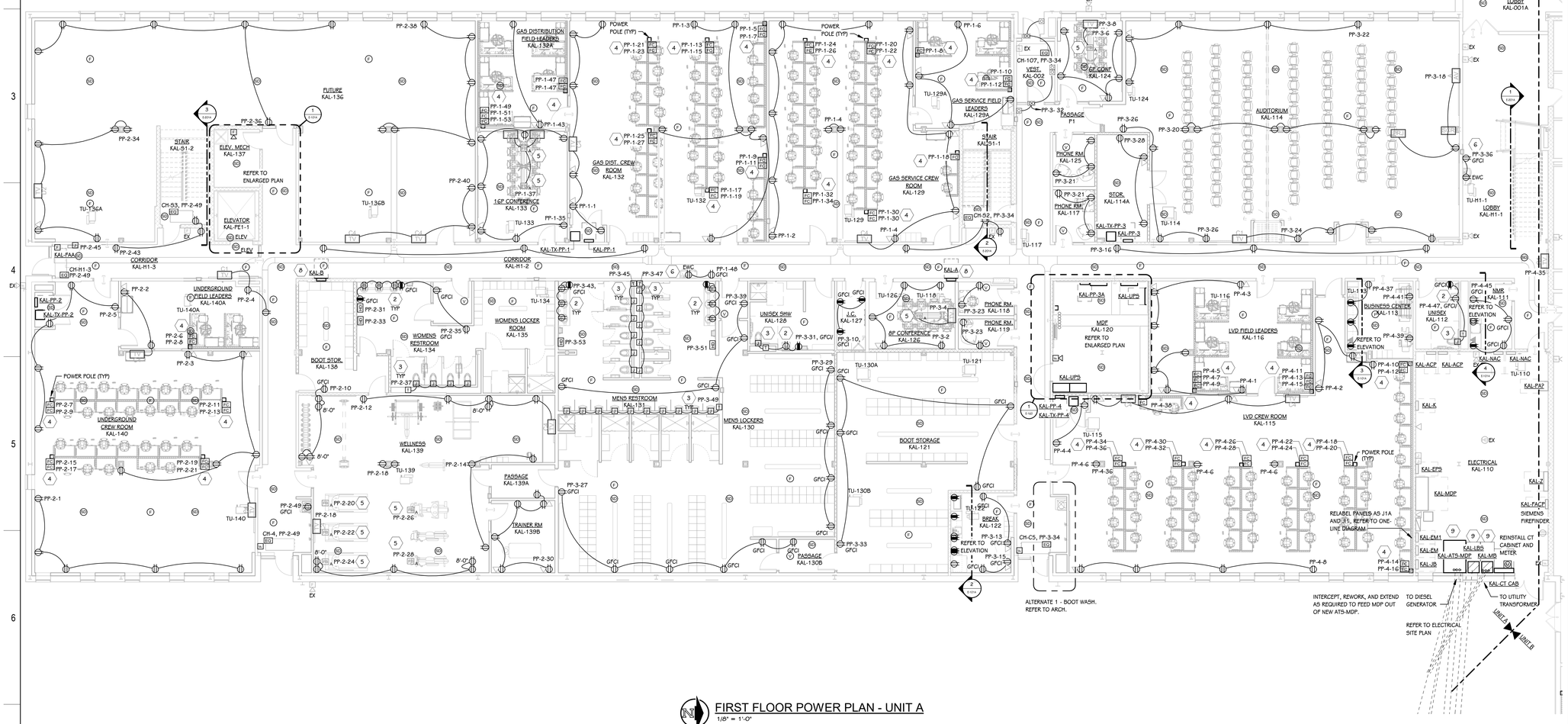
2 E-101A
BREAK ROOM
1/4" = 1'-0"



3 E-101A
BUSINESS CENTER
1/4" = 1'-0"



4 E-101A
NMR
1/4" = 1'-0"



FIRST FLOOR POWER PLAN - UNIT A
1/8" = 1'-0"

KEYED NOTES - ELECTRICAL - POWER

1 ROUTE ALL DATA CONDUITS DOWN THROUGH FIRST FLOOR TO NEAREST CABLE TRAY.

2 CONCEAL RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION. ALL RECEPTACLES SHALL BE GFCI TYPE.

3 LOW VOLTAGE TRANSFORMER AND BACKBOXES FOR FLUSH VALVES. COORDINATE LOCATION AND ADDITIONAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.

4 FURNITURE WIRING HARNESS AND POWER POLE PROVIDED BY FURNITURE VENDOR. EACH FURNITURE GROUP SHALL RECEIVE ONE TO FOUR 120V CIRCUITS INDICATED. CONNECT TO WIRING HARNESS WITH AT POWER POLE WITH JUNCTION BOX ABOVE ACCESSIBLE CEILING.

5 GPR AND SAW CUT / FLOOR CORE PRIOR TO INSTALLATION. COORDINATE FINAL LOCATION WITH DIMENSIONED FURNITURE PLANS PRIOR TO SAW CUTTING FLOOR OR INSTALLING FLOOR BOX.

6 FEED ELECTRIC WATER COOLER (EWC) FROM LOAD SIDE OF ADJACENT GFCI RECEPTACLE.

7 CONNECT NEW EQUIPMENT TO EXISTING CIRCUIT AT NEAREST ACTIVE JUNCTION BOX REMAINING FROM DEMOLITION. EXTEND AND REWORK EXISTING CIRCUIT AS REQUIRED. PROVIDE NEW DISCONNECTING MEANS AND RECEPTACLE WHERE INDICATED ON DRAWINGS OR FEEDER SCHEDULE.

8 PROVIDE NEW PANEL IN PLACE OF EXISTING. REFER TO PANEL LOAD SHEETS FOR NEW AND EXISTING LOADS. CUT AND PATCH AS REQUIRED. RECONNECT EXISTING FEEDER. CONNECT NEW AND EXISTING LOADS TO NEW PANEL. REWORK EXISTING CIRCUITS AS REQUIRED. EXTEND WIRING AS REQUIRED. CONTRACTOR TO FIELD VERIFY EXISTING BREAKER QUANTITY AND SIZES. PROVIDE ADDITIONAL BREAKERS AND ADJUST BREAKERS SIZES AS REQUIRED TO MATCH EXISTING. FIELD VERIFY AND IDENTIFY ALL EXISTING CIRCUITS TO REMAIN. RECESS NEW PANEL IF INDICATED ON DRAWINGS; REFER TO NEW PANELBOARD IN EXISTING WALL DETAIL.

9 GPR SLAB AND SAWCUT AS REQUIRED FOR NEW ELECTRICAL EQUIPMENT. INSTALL ON 4" CONCRETE MAINTENANCE PAD.

10 FEED WITH GFCI BREAKER IN PANELBOARD AND PROVIDE LABELING ON DEVICE INDICATING FED FROM GFCI BREAKER.

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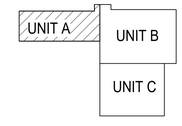

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SCALE: NO SCALE

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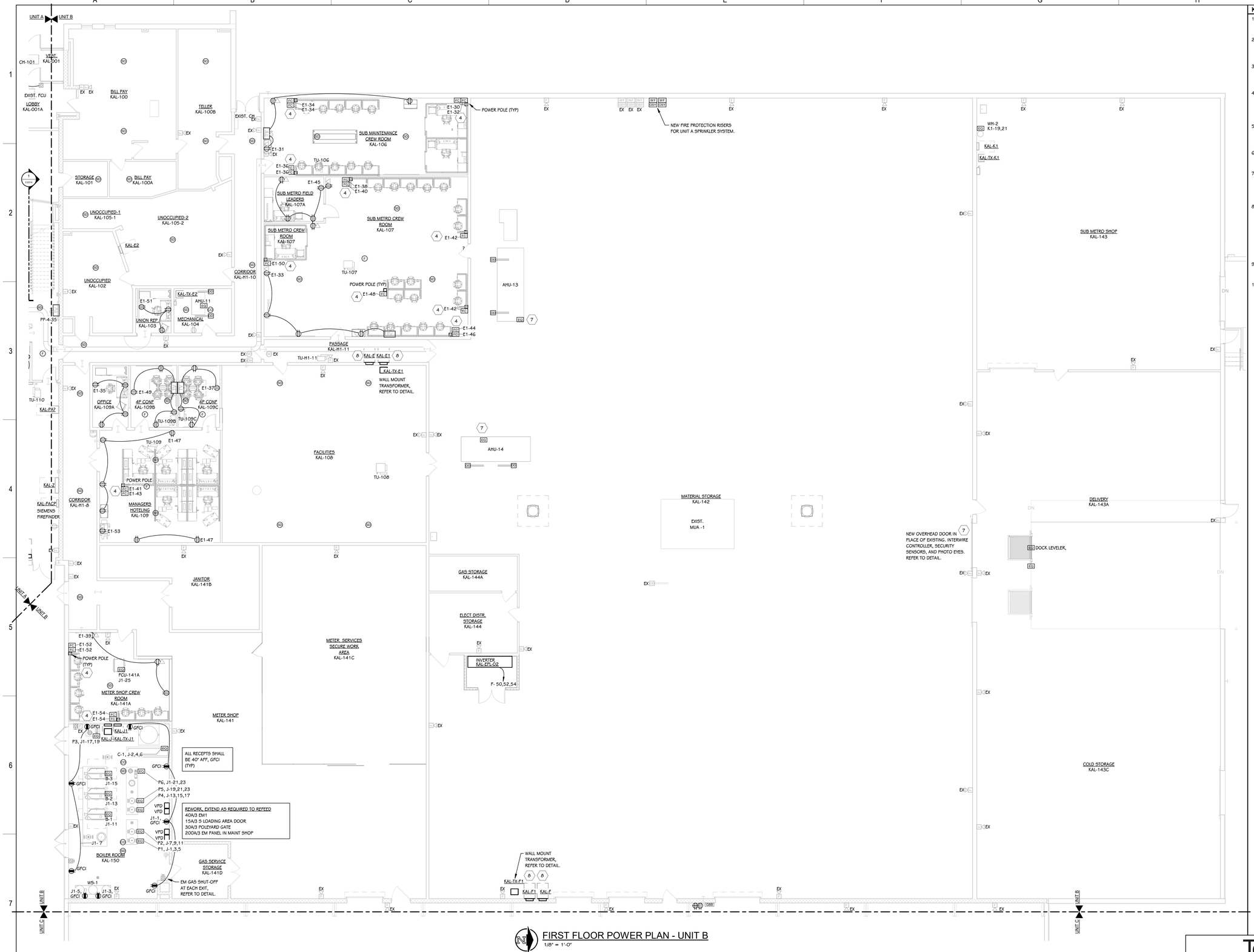
SHEET TITLE
FIRST FLOOR POWER PLAN - UNIT A

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	E-101A	D

22-133.010



FIRST FLOOR POWER PLAN - UNIT B

1/8" = 1'-0"

KEYED NOTES - ELECTRICAL - POWER

1 ROUTE ALL DATA CONDUITS DOWN THROUGH FIRST FLOOR TO NEAREST CABLE TRAY.

2 CONCEAL RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION. ALL RECEPTACLES SHALL BE GFCI TYPE.

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UNIT A | UNIT B | UNIT C

TRUE NORTH

KEY PLAN

SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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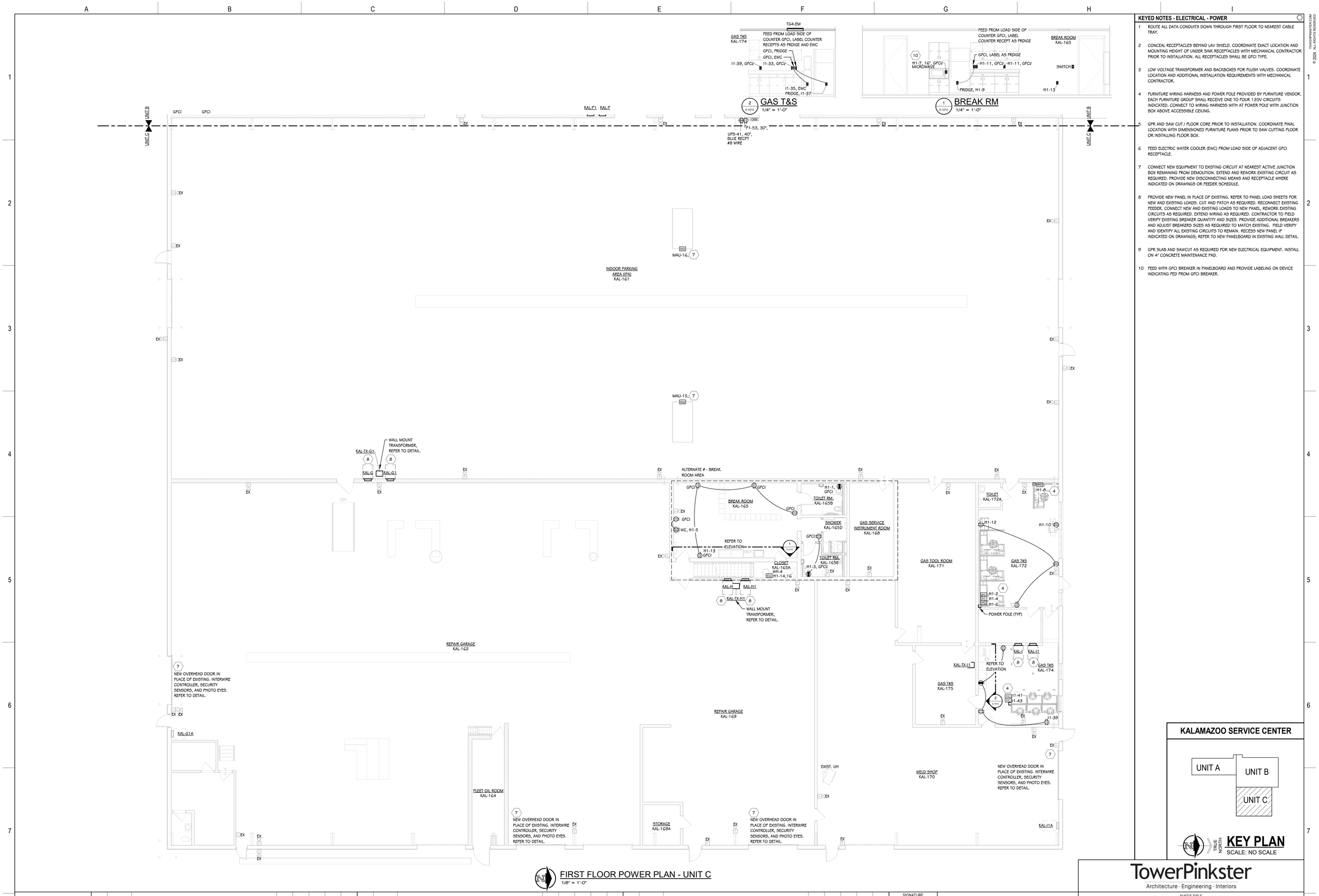
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR POWER PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-101B
REV: D

22-133.010



FIRST FLOOR POWER PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - ELECTRICAL - POWER

1 ROUTE ALL DATA CONDUITS DOWN THROUGH FIRST FLOOR TO NEAREST CABLE TRAY.

2 CONCEAL RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION. ALL RECEPTACLES SHALL BE GFCI TYPE.

3 LOW VOLTAGE TRANSFORMER AND BACKBOXES FOR FLUSH VALVES. COORDINATE LOCATION AND ADDITIONAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.

4 FURNITURE WIRING HARNESS AND POWER POLE PROVIDED BY FURNITURE VENDOR. EACH FURNITURE GROUP SHALL RECEIVE ONE TO FOUR 120V CIRCUITS INDICATED. CONNECT TO WIRING HARNESS WITH AT POWER POLE WITH JUNCTION BOX ABOVE ACCESSIBLE CEILING.

5 GPR AND SAW CUT / FLOOR CORE PRIOR TO INSTALLATION. COORDINATE FINAL LOCATION WITH DIMENSIONED FURNITURE PLANS PRIOR TO SAW CUTTING FLOOR OR INSTALLING FLOOR BOX.

6 FEED ELECTRIC WATER COOLER (EWC) FROM LOAD SIDE OF ADJACENT GFCI RECEPTACLE.

7 CONNECT NEW EQUIPMENT TO EXISTING CIRCUIT AT NEAREST ACTIVE JUNCTION BOX REMAINING FROM DEMOLITION. EXTEND AND REWORK EXISTING CIRCUIT AS REQUIRED. PROVIDE NEW DISCONNECTING MEANS AND RECEPTACLE WHERE INDICATED ON DRAWINGS OR FEEDER SCHEDULE.

8 PROVIDE NEW PANEL IN PLACE OF EXISTING. REFER TO PANEL LOAD SHEETS FOR NEW AND EXISTING LOADS. CUT AND PATCH AS REQUIRED. RECONNECT EXISTING FEEDER. CONNECT NEW AND EXISTING LOADS TO NEW PANEL. REWORK EXISTING CIRCUITS AS REQUIRED. EXTEND WIRING AS REQUIRED. CONTRACTOR TO FIELD VERIFY EXISTING BREAKER QUANTITY AND SIZES. PROVIDE ADDITIONAL BREAKERS AND ADJUST BREAKERS SIZES AS REQUIRED TO MATCH EXISTING. FIELD VERIFY AND IDENTIFY ALL EXISTING CIRCUITS TO REMAIN. RECESS NEW PANEL IF INDICATED ON DRAWINGS; REFER TO NEW PANELBOARD IN EXISTING WALL DETAIL.

9 GPR SLAB AND SAWCUT AS REQUIRED FOR NEW ELECTRICAL EQUIPMENT. INSTALL ON 4" CONCRETE MAINTENANCE PAD.

10 FEED WITH GFCI BREAKER IN PANELBOARD AND PROVIDE LABELING ON DEVICE INDICATING FED FROM GFCI BREAKER.

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KALAMAZOO SERVICE CENTER

UNIT A | UNIT B | UNIT C

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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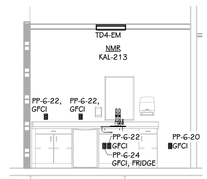
SHEET TITLE
FIRST FLOOR POWER PLAN - UNIT C

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-101C
REV: D

22-133.010

SECOND FLOOR POWER PLAN - UNIT A
1/8" = 1'-0"



222 NMR
1/4" = 1'-0"

KEYED NOTES - ELECTRICAL - POWER

1 ROUTE ALL DATA CONDUITS DOWN THROUGH FIRST FLOOR TO NEAREST CABLE TRAY.

2 CONCEAL RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION. ALL RECEPTACLES SHALL BE GFCI TYPE.

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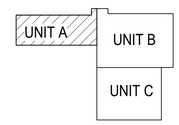

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
SECOND FLOOR POWER PLAN - UNIT A

SCALE:	As indicated	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	E-102A	D

22-133.010

KEYED NOTES - ELECTRICAL - ROOF - CONSTRUTION

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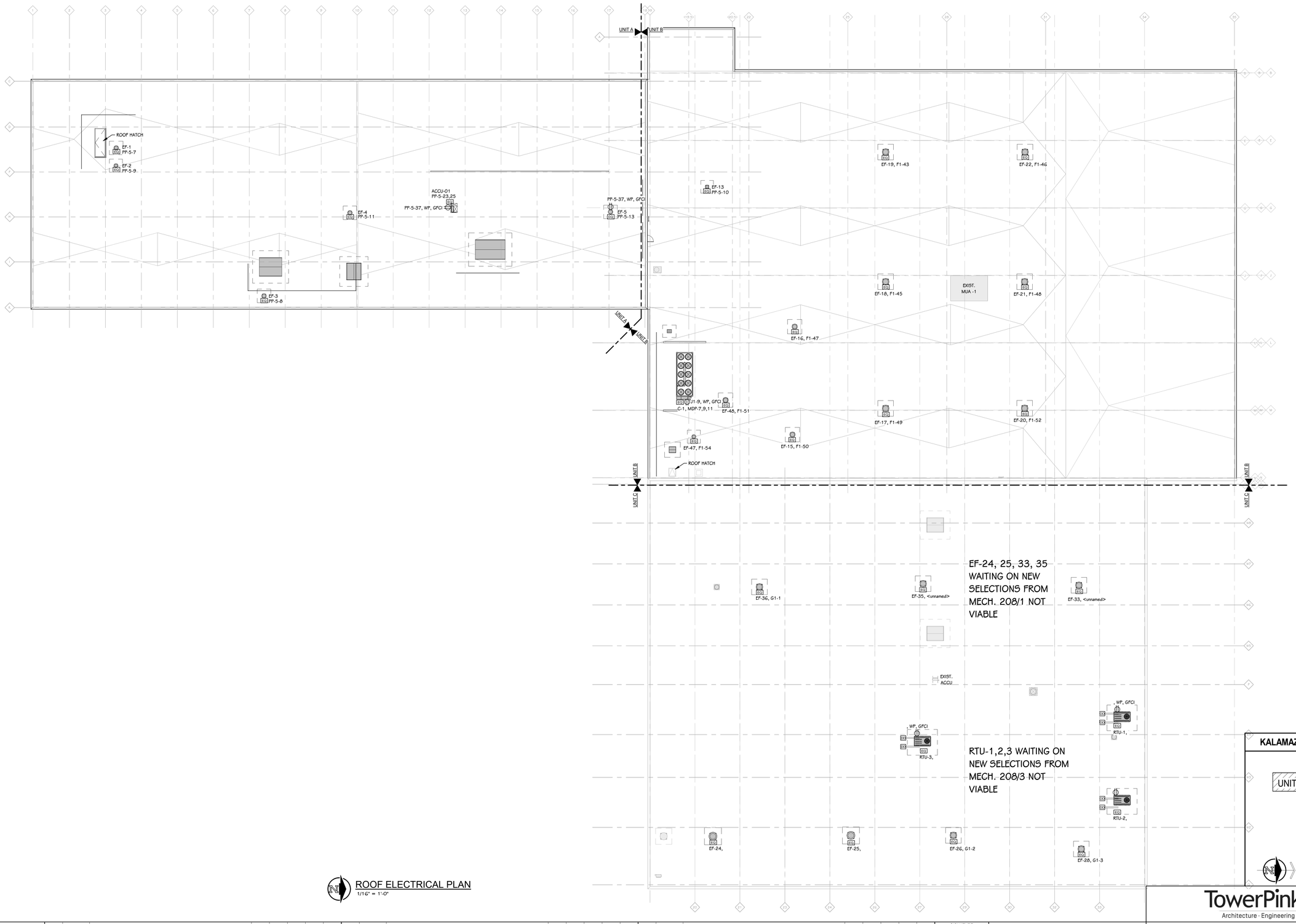
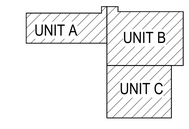


ROOF ELECTRICAL PLAN
1/16" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH
KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL ROOF POWER PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-150
REV: D

22-133.010

PANELBOARD " PP-3A" LOAD SCHEDULE

PANEL: PP-3A
LOCATION: MDF KAL-120 / Level 1
ADDED ACCESSORIES: SPD
MOUNTING: SURFACE
AMPS: 225 A MLO
FEED-THRU LUGS...
VOLTAGE: 208/120V, 3PH, 4W
FED FROM: PP-3
A.I.C. VALUE: 10 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - MDF KAL-120, WEST WALL	20	1	180 0			1	20	SPARE	2
3	RECEPTACLE - MDF KAL-120, WEST WALL	20	1		180 0		1	20	SPARE	4
5	RECEPTACLE - MDF KAL-120, WEST WALL	20	1			180 0	1	20	SPARE	6
7	RECEPTACLE - MDF KAL-120, SOUTH WALL	20	1	360 0			1	20	SPARE	8
9	RECEPTACLE - MDF KAL-120, SOUTH WALL	20	1		360 0		1	20	SPARE	10
11	RECEPTACLE - MDF KAL-120, EAST WALL	20	1			360 0	1	20	SPARE	12
13	RECEPTACLE - MDF KAL-120, NORTH WALL	20	1	360 0			1	20	SPARE	14
15	RECEPTACLE - MDF KAL-120, NORTH WALL	20	1		180 0		1	20	SPARE	16
17						0	1	20	SPARE	18
19				0			1	20	SPARE	20
21					0		1	20	SPARE	22
23						0	1	20	SPARE	24
25				0			1	20	SPARE	26
27					0		1	20	SPARE	28
29						0	1	20	SPARE	30
31				0			1	20	SPARE	32
33					0		1	20	SPARE	34
35						0	1	20	SPARE	36
37				0			1	20	SPARE	38
39					0		1	20	SPARE	40
41						0	1	20	SPARE	42
43				0			1	20	SPARE	44
45					0		1	20	SPARE	46
47	HVAC - MDF KAL-120, MINISPLIT CONDENSTATE...	20	1			0 0	1	20	SPARE	48
49	SURGE PROTECTIVE DEVICE (SPD)	30	3	0 0			1	20	SPARE	50
51	--	--	--		0 0		1	20	SPARE	52
53	--	--	--			0 0	1	20	SPARE	54
	TOTAL LOAD:			900 VA	720 VA	540 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			8 A	6 A	5 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
RECEPTACLE -	2160 VA	100.00%	2160 VA	**TOTAL CONNECTED LOAD:**	2160 VA
				TOTAL ESTIMATED DEMAND:	2160 VA
				TOTAL CONNECTED LOAD (A):	6 A
				TOTAL ESTIMATED DEMAND...	6 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

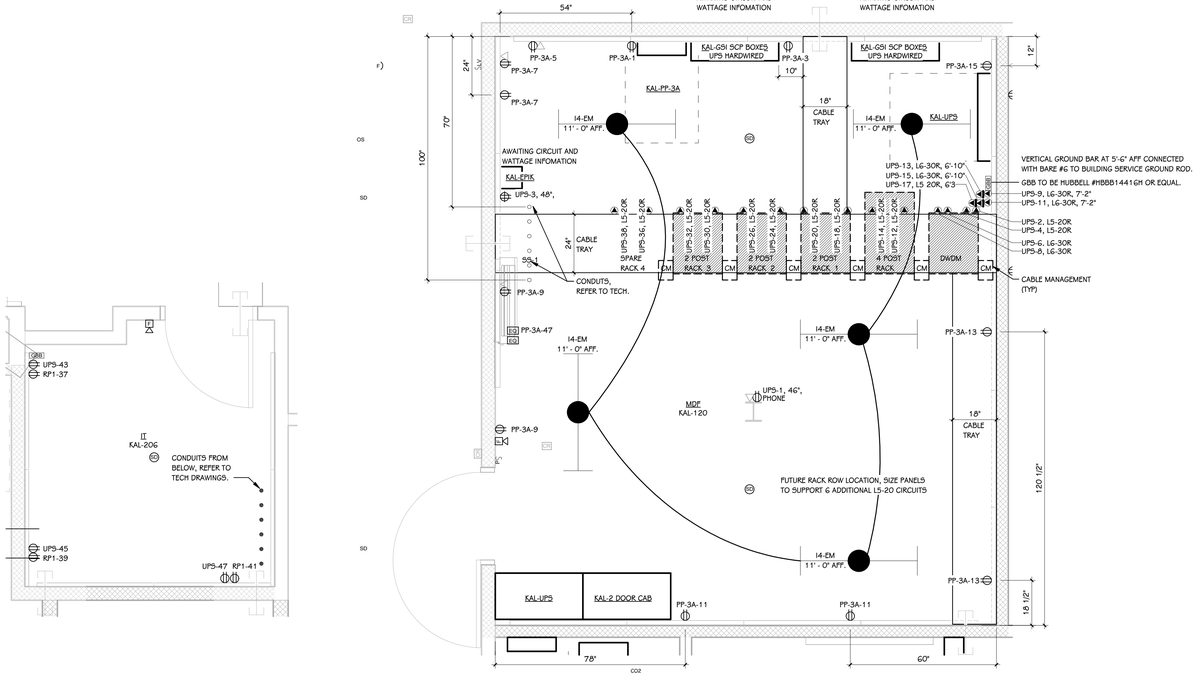
PANELBOARD " UPS" LOAD SCHEDULE

PANEL: UPS
LOCATION: MDF KAL-120 / Level 1
ADDED ACCESSORIES: SPD
MOUNTING: SURFACE
AMPS: 225 A MLO
FEED-THRU LUGS...
VOLTAGE: 208/120V, 3PH, 4W
FED FROM: PP-3
A.I.C. VALUE:
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - MDF KAL-120, PHONE	20	1	180 600			1	20	RECEPTACLE - MDF KAL-120, DWDM, L5-20R	2
3	RECEPTACLE - MDF KAL-120, EPIK?	20	1		180 600		1	20	RECEPTACLE - MDF KAL-120, DWDM, L5-20R	4
5	SPARE	20	1			0 1200	1	30	RECEPTACLE - MDF KAL-120, DWDM, L6-30R	6
7	SPARE	20	1	0 1200			1	30	RECEPTACLE - MDF KAL-120, DWDM, L6-30R	8
9	RECEPTACLE - MDF KAL-120, N WALL, L6-30R, 7'-2"	30	1		1200 0		1	20	SPARE	10
11	RECEPTACLE - MDF KAL-120, N WALL, L6-30R, 7'-2"	30	1			1200 600	1	20	RECEPTACLE - MDF KAL-120, 4 POST, L5-20R	12
13	RECEPTACLE - MDF KAL-120, N WALL, L6-30R,...	30	1	1200 600			1	20	RECEPTACLE - MDF KAL-120, 4 POST, L5-20R	14
15	RECEPTACLE - MDF KAL-120, N WALL, L6-30R,...	30	1		1200 0		1	20	SPARE	16
17	RECEPTACLE - MDF KAL-120, N WALL, L5 20R, 6'3	20	1			600 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 1, L5-20R	18
19	SPARE	20	1	0 600			1	20	RECEPTACLE - MDF KAL-120, 2 POST 1, L5-20R	20
21	SPARE	20	1		0 0		1	20	SPARE	22
23	SPARE	20	1			0 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 2, L5-20R	24
25	SPARE	20	1	0 600			1	20	RECEPTACLE - MDF KAL-120, 2 POST 2, L5-20R	26
27	SPARE	20	1		0 0		1	20	SPARE	28
29	SPARE	20	1			0 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 3, L5-20R	30
31	SPARE	20	1	0 600			1	20	RECEPTACLE - MDF KAL-120, 2 POST 3 L5-20R	32
33	SPARE	20	1		0 0		1	20	SPARE	34
35	SPARE	20	1			0 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 4 L5-20R	36
37	SPARE	20	1	0 600			1	20	RECEPTACLE - MDF KAL-120, 2 POST 4 L5-20R	38
39	SPARE	20	1		0 0		1	20	SPARE	40
41	RECEPTACLE - PARKING AREA (IPA) KAL-161	20	1			180 0	1	20	SPARE	42
43	RECEPTACLE - IT KAL-206	20	1	180 0			1	20	SPARE	44
45	RECEPTACLE - IT KAL-206	20	1		180 0		1	20	SPARE	46
47	RECEPTACLE - IT KAL-206	20	1			180 0	1	20	SPARE	48
49	SURGE PROTECTIVE DEVICE (SPD)	30	3	0 0			1	20	SPARE	50
51	--	--	--		0 0		1	20	SPARE	52
53	--	--	--			0 0	1	20	SPARE	54
	TOTAL LOAD:			6360 VA	3360 VA	6360 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			57 A	28 A	57 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	16080 VA	81.09%	13040 VA		
				TOTAL CONNECTED LOAD:	16080 VA
				TOTAL ESTIMATED DEMAND:	13040 VA
				TOTAL CONNECTED LOAD (A):	45 A
				TOTAL ESTIMATED DEMAND...	36 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.



2 E-160 ENLARGED IDF ELECTRICAL PLAN
1/2" = 1'-0"

1 E-160 ENLARGED MDF ELECTRICAL PLAN
1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
ENLARGED ELECTRICAL PLANS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-160
REV: D

22-133.010

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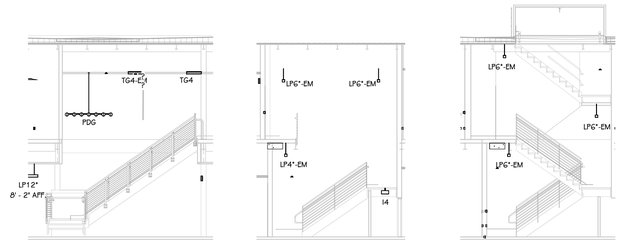
KEYED NOTES - ELECTRICAL - LIGHTING

1 PROVIDE LABELING IN PANEL TO INDICATE ROOM LIGHTING IS CONTROL BY OCCUPANCY SENSOR AND OCCUPANCY SENSOR CAN BY BYPASSED BY ROOM KEYED MAINTENANCE SWITCH.

2 PROVIDE LOW VOLTAGE KEYED SWITCHED PROGRAMMED TO OVERRIDE ROOM LIGHTING CONTROL. WHILE KEYED SWITCH IS "ON" ROOM LIGHTING FIXTURES SHALL NOT AUTOMATICALLY SWITCH OFF. FIXTURES SHALL BE MANUALLY SWITCHED ON AND OFF AS REQUIRED FOR ELECTRICAL PANEL MAINTENANCE. CUT IN NEW BACKBOX AND CONDUIT AS REQUIRED, REFER TO GENERAL NOTES.



1 E-201A — STAIR S1 — 1/8" = 1'-0"

2 E-201A — STAIR S2 — 1/8" = 1'-0"

3 E-201A — STAIR S3 — 1/8" = 1'-0"

ALTERNATE NO - 2

BASE BID SHALL BE PENDANT INDUSTRIAL LIGHT FIXTURES, NO OCCUPANCY SENSOR CONTROL, MANUAL SINGLE POLE 3-WAY SWITCHES
ALTERNATE SHALL BE RECESSED TROFFERS, OCCUPANCY SENSORS, AND LOW VOLTAGE LIGHTING SWITCHES.

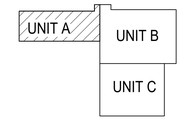
ALTERNATE 3 - NEW RECESSED LINEARS IN NEW CANOPY. REFER TO ARCH.

NEW FOLDING PARTITIONS GOING IN. ADD DOOR CONTACT ROOM LIGHTING CONTOL

FIRST FLOOR LIGHTING PLAN - UNIT A

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT A

SCALE:	1/8" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	E-201A	D

22-133.010

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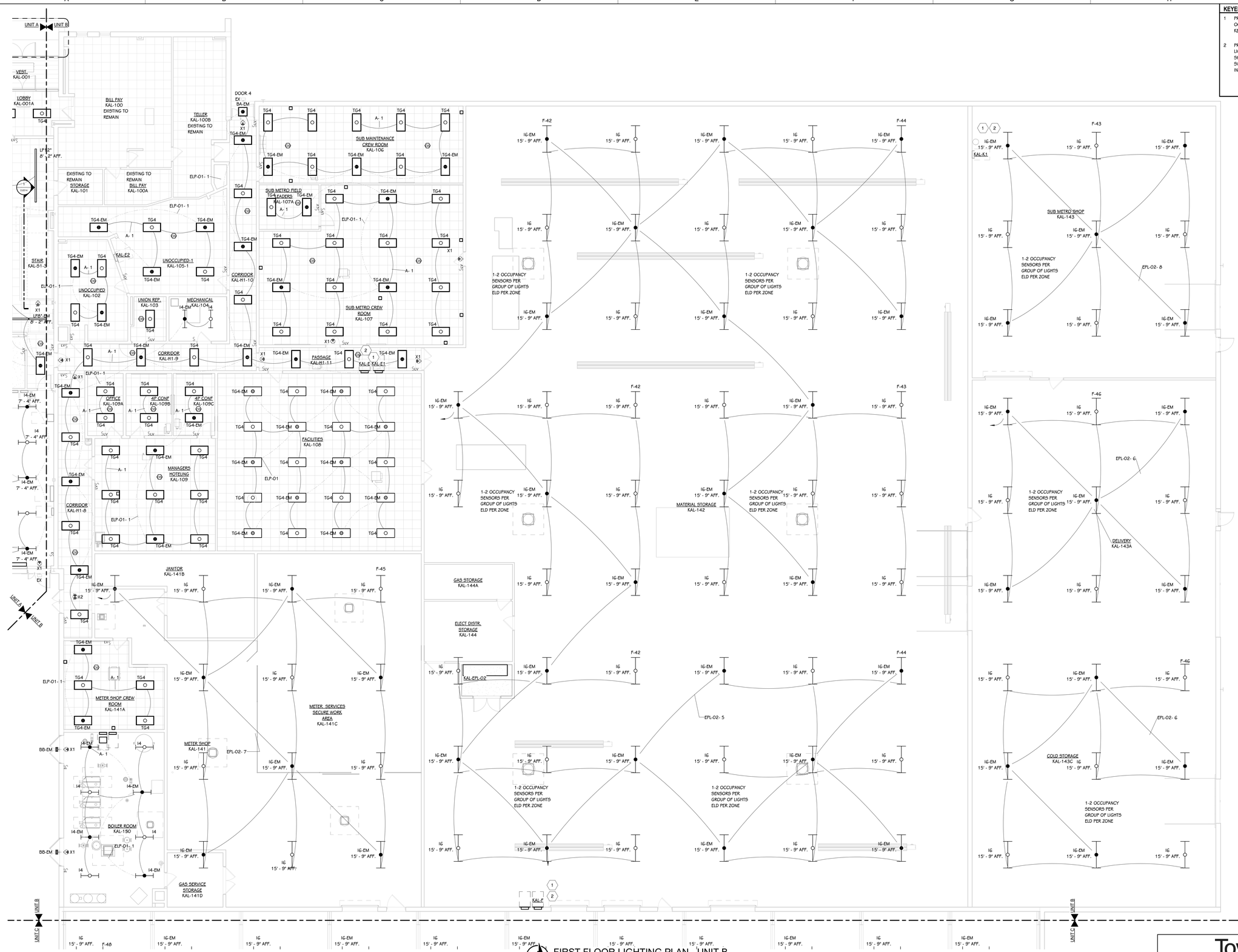
KEYED NOTES - ELECTRICAL - LIGHTING

1 PROVIDE LABELING IN PANEL TO INDICATE ROOM LIGHTING IS CONTROL BY OCCUPANCY SENSOR AND OCCUPANCY SENSOR CAN BY BYPASSED BY ROOM KEYED MAINTENANCE SWITCH.

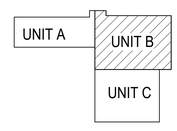
2 PROVIDE LOW VOLTAGE KEYED SWITCHED PROGRAMMED TO OVERRIDE ROOM LIGHTING CONTROL. WHILE KEYED SWITCH IS "ON" ROOM LIGHTING FIXTURES SHALL NOT AUTOMATICALLY SWITCH OFF. FIXTURES SHALL BE MANUALLY SWITCHED ON AND OFF AS REQUIRED FOR ELECTRICAL PANEL MAINTENANCE. CUT IN NEW BACKBOX AND CONDUIT AS REQUIRED, REFER TO GENERAL NOTES.



FIRST FLOOR LIGHTING PLAN - UNIT B

1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-201B
REV: D

22-133.010

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KEYED NOTES - ELECTRICAL - LIGHTING

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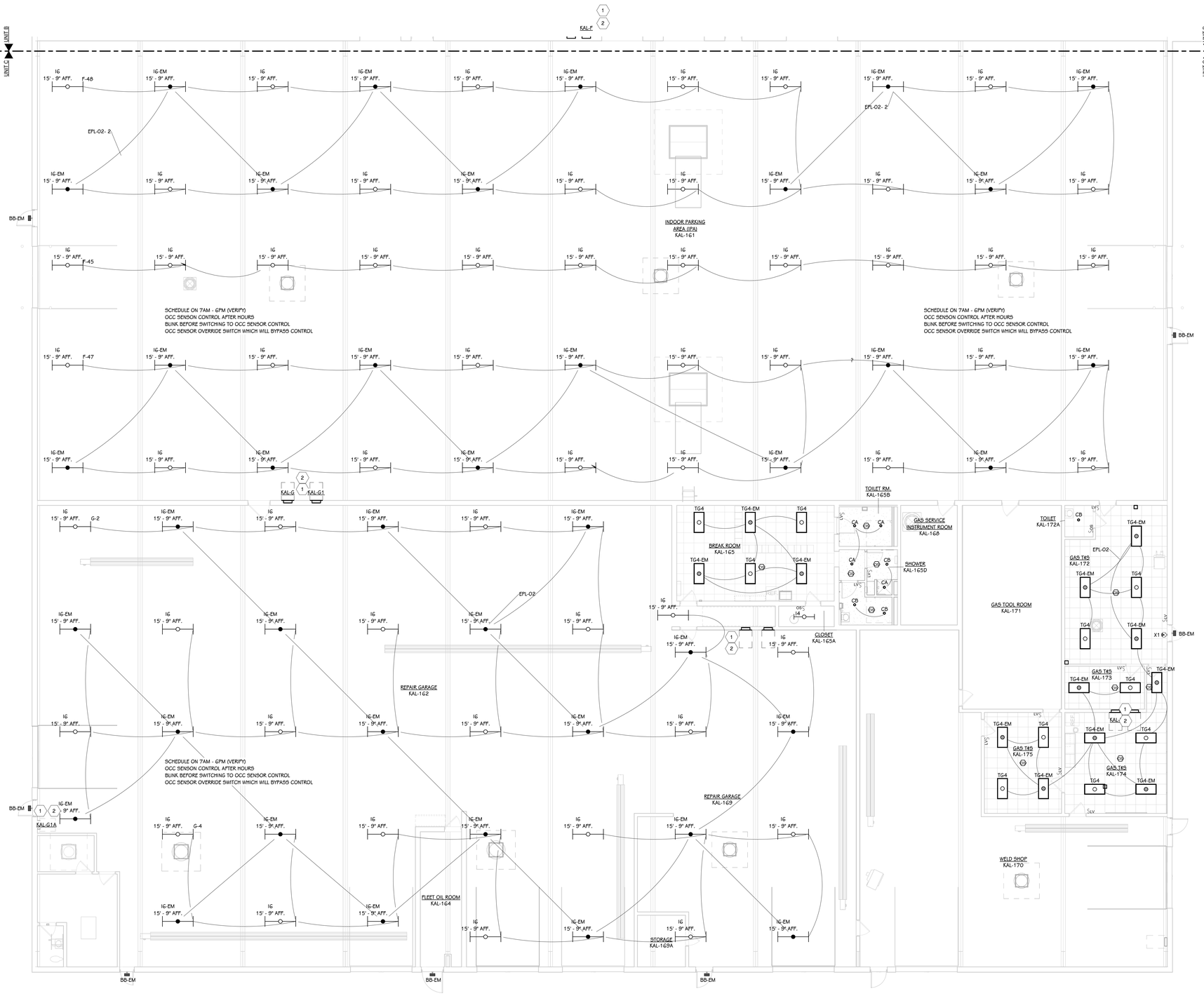
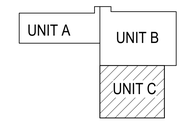


FIRST FLOOR LIGHTING PLAN - UNIT C
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



KEY PLAN
SCALE: NO SCALE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

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KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

SHEET TITLE: FIRST FLOOR LIGHTING PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-201C
REV: D

22-133.010

KEYED NOTES - ELECTRICAL - LIGHTING

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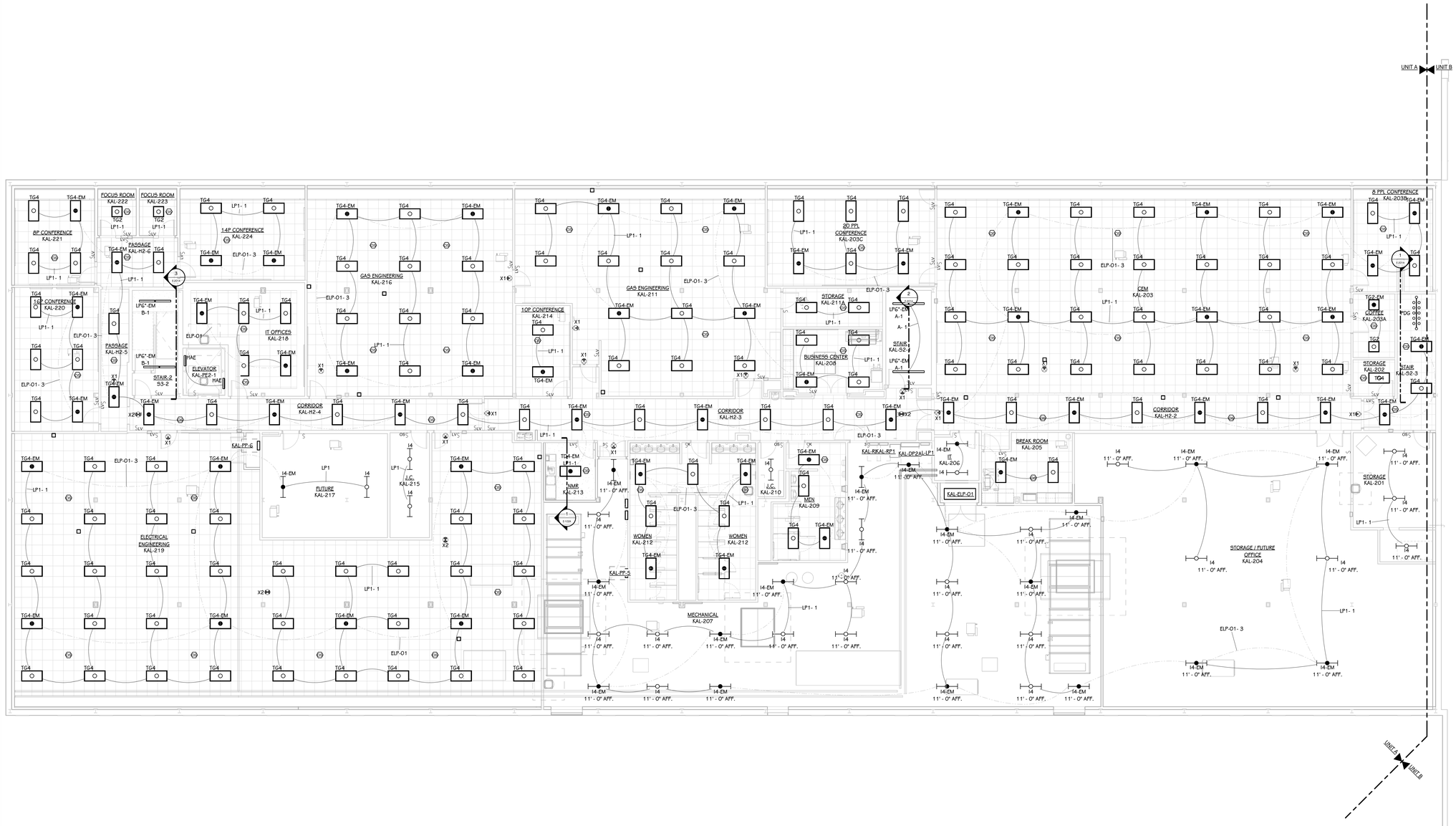
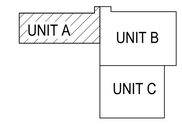


SECOND FLOOR LIGHTING PLAN - UNIT A
1/8" = 1'-0"

KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	ELV	RSS	SDE	SDT	TP
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS | REV | DATE | DR | BY | CHK | APP | CO

SIGNATURE
NAME: SCOTT D. THOMPSON
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SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-202A
REV: D

22-133.010

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ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION

SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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REFERENCE DRAWINGS

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KALAMAZOO, MICHIGAN

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SHEET TITLE
ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION

SCALE:	12" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	E-401	D

22-133.010

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UTILITY 480V
KAL-TX-MDP 750KVA 480Y/277V
REFER TO GROUNDING DETAIL.
KAL-MB SERVICE RATED LSI ELECTRONIC TRIP MAIN BREAKER.
KAL-LBS LOAD BREAK SWITCH (800A/3P DISCONNECT)
KAL-ATS-MDP OPEN TRANSITION, 4 POLE AUTOMATIC TRANSFER SWITCH (ATS)
REMOTE ARC-FLASH SWITCH. LOCATE OUTSIDE OF ARC-FLASH BOUNDARY.
SCHNEIDER ELECTRIC POWERLOGIC ION7400 METER
CUMMINS CATERPILLAR
KAL-GEN (DIESEL GENERATOR) 500 KW (625 KVA) 480Y/277V, 3Ø, 4W
24 HOUR TANK 48 HOUR TANK AS ADD ALTERNATE
100% RATED BREAKERS
PERMANENT GENERATOR
PORTABLE GENERATOR CONNECTION
LOAD BANK CONNECTION SHUNT TRIP
SPARE
PROVIDE 3 DAYS OF BACKUP GENERATOR WHILE NEW GENERATOR / ATS IS BEING INSTALLED.
DUAL CAM CONNECTION GENERATOR SWITCH TO TEST LOAD BANK AND HOOK UP TEMPORARY GENERATOR SIMULTANEOUSLY. TRYSTAR DBD3-6 OR EQUAL
TEMPORARY GENERATOR CONNECTION REQUIREMENTS:
- MARK TEMP CONNECTION WITH PHASE ROTATION AND BONDING REQUIREMENTS.
- PROVIDE CONTACT TO GENERATOR ANNUNCIATOR PANEL TO MONITOR PERMANENT GENERATOR IS DISCONNECTED.

NOTE:
REFER TO PANEL FEEDER SCHEDULE FOR EACH PANEL, TRANSFORMER AND ATS FEEDER SIZE.
REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EACH EQUIPMENT FEEDER SIZE.
DISCONNECT SIZES TO BE NEXT NOMINAL SIZE UP FROM FEEDER BREAKER SIZE.

SERVICE ENTRANCE SPD SCHEDULE

VOLTAGE	SWITCHBOARD AMPS	SQUARED SPD MODEL	SURGE RATING	PROTECTION MODES	MAX WIRE	MIN BREAKER
480Y/277V Wye	Up to 2000A	5URGELOGIC HL2IMA24C	240kA/Mode	L-N, L-G, N-G	4/0	60A

*FOR ALL SERVICE ENTRANCE, GENERATOR ENTRANCE AND OTHER HIGH RISK ELECTRICAL ENTRANCE/EXITS. ALL SERVICE ENTRANCE DEVICES TO HAVE TIME STAMP EVENT MONITORING. MOUNT DEVICES WITHIN 10" OF PANELSWITCHBOARD BUS.

BRANCH PANEL SPD SCHEDULE

VOLTAGE	PANEL AMPS	SQUARED SPD MODEL	SURGE RATING	PROTECTION MODES	BREAKER AMPS
120/240V	Up to 400A	5URGELOGIC 55P025BA08D	80kA/Mode	L-N, L-G, N-G	30A
208Y/120V Wye	Up to 400A	5URGELOGIC 55P025BA08D	80kA/Mode	L-N, L-G, N-G	30A
480Y/277V Wye	Up to 400A	5URGELOGIC HL21MA12C1	120kA/Mode	L-N, L-G, N-G	30A

*FOR CASCADED PROTECTION DIRECTLY DOWNSTREAM OF SERVICE ENTRANCE AND ALL SUB PANELS. ALL SPD DEVICES TO HAVE TIME STAMP EVENT MONITORING. MOUNT DEVICES WITHIN 10" OF PANELSWITCHBOARD BUS.

REFER TO CONSUMERS ENERGY SPECIFICATION FOR CABLE COLORING STANDARDS
YELLOW - CORPORATE SECURITY
VOILET - ELECTRICAL / LIGHTING CONTROLS / HVAC
WHITE - DATA PLENUM COAX / SOUND MASKING
GRAY - AV DIGITAL SIGNAGE
BLUE - DATA STANDARD CATG
ORANGE - DATA 600 MHZ RADIO OR ANALOG
BLACK - DATA WIFI
RED - FIRE AND SPECIFICALLY DESIGNED LIFE SAFETY
PINK - RESERVED FOR ONE OFF PROJECT NEEDS
GREEN - RESERVED FOR FUTURE

ALL NORMAL EQUIPMENT DEVICE TAGS SHALL BE BLACK BACKGROUND WITH WHITE TEXT
ALL EMERGENCY EQUIPMENT DEVICE TAGS SHALL BE RED BACKGROUND WITH WHITE TEXT
LINE1: KAL-EQUIPMENT NAME
LINE2: 480Y/277V OR 208Y/120V OR APPLICABLE VOLTAGE
LINE3: FED FROM KAL-PANEL-CKT #, PANEL LOCATION

PANEL LABEL NOMENCLATURE:
KAL-ER1-##
- CIRCUIT BREAKER NUMBER
1 - SEQUENCE OR AREA
R - PANEL NAME
E - EMERGENCY (WHERE INDICATED FOR EMERGENCY
KAL - PREFIX FOR ALL PANELS AND EQUIPMENT

TRANSFORMER/ATS LABEL NOMENCLATURE:
KAL-TX-R1A
NAME OF PANEL SERVED FROM SECONDARY
TX - TRANSFORMER PREFIX, ATS - AUTO TRANSFER SWITCH

EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE
EQUIPMENT SUPPLIER TO COORDINATE AND PROVIDE UPDATED SETTINGS FOR ALL ELECTRONIC TRIP BREAKERS. REFER TO COORDINATION STUDY AND ARC-FLASH STUDY SPECIFICATIONS
INTERCEPT, REWORK, AND EXTEND AS REQUIRED TO FEED MDP OUT OF NEW ATS-MDP.
KAL-MDP (EXISTING) 480Y/277V, 3Ø, 4W DEMAND: 426A MIN IC RATING: 30 KAIC
PROVIDE NEW BREAKER IN EXISTING SQUARE-D QED SWITCHBOARD (TYP)
PROVIDE NEW LABELING FOR EXISTING PANEL AND TRANSFORMER (TYP). KAL-PANEL NAME
TIE BREKER INTOE SCHNEIDER ELECTRIC ECOSTRUXURE POWER MONITORING EXPERT
DEMAND: 235A
EQUIP C-1 CHILLER
TO CLOCKS INTERFACE
PANEL KAL K
SPARE
KAL-2 (EXISTING) 480Y/277V, 3Ø, 4W MIN IC RATING: 30 KAIC
SPACE
EXISTING EQUIP BATTERY CHARGER
EXISTING EQUIP BATTERY CHARGER
KAL-TX-K1 480V 120/208V
PANEL KAL K1
EXISTING EQUIP RTU SUB METRO
SPARE
RELABEL AS KAL-DP2A
FIELD VERIFY AND LABEL PANELS KAL-PANEL NAME
KAL-TX-E2 480V 208Y/120V
PANEL KAL E2
PANEL KAL CARPORT5
TO NO LABEL 1
TO NO LABEL 2
TO SPACE
TO SPACE
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
KAL-A 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
5PD
KAL-B 480Y/277V, 3Ø, 4W DEMAND: 76A MIN IC RATING: 18 KAIC
5PD
KAL-TX-PP-3 750KVA 480V 208Y/120V
KAL-TX-PP-4 45kVA 480V 208Y/120V
PANEL KAL PP-3
PANEL KAL PP-4
KAL-TX-PP-1 45kVA 480V 208Y/120V
KAL-TX-PP-2 45kVA 480V 208Y/120V
EXISTING EQUIP ELEV
PANEL KAL PP-1
PANEL KAL PP-2
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
KAL-E 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
UPS AND DISTRIBUTION PANEL. CONTRACTOR PROVIDED AND INSTALLED, REFER TO SPECIFICATIONS.
PANEL KAL UPS
PANEL KAL PP-3A
PROVIDE NEW LABELING FOR EXISTING PANEL AND TRANSFORMER (TYP). KAL-PANEL NAME
KAL-DP2A (EXISTING) 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
REUSE AND REORGANIZE EXISTING BREAKERS AS REQUIRED.
PROVIDE NEW BREAKERS IN EXISTING SQUARE-D I-LINE PANELBOARD (TYP)
DEMAND: 25A
DEMAND: 22A
DEMAND: 22A
DEMAND: 22A
DEMAND: 22A
SPACE
SPACE
KAL-TX-PP-5 45kVA 480V 208Y/120V
EQUIP ERU-1
EQUIP AHU-1 5F
EQUIP AHU-1 RF
EQUIP AHU-2 5F
EQUIP AHU-2 RF
PANEL KAL PP-5
KAL-TX-RP1 4 RP2 480V 208Y/120V
PANEL KAL LP1
EXISTING EQUIP NO LABEL
PANEL KAL RP1
PANEL KAL RP12
PROVIDE NEW LABELING FOR EXISTING PANEL AND TRANSFORMER (TYP). KAL-PANEL NAME
KAL-TX-PP-G 45kVA 480V 208Y/120V
PANEL KAL INVERTER EPL-01
PANEL KAL PP-G
KAL-TX-E1 37.5KVA 480V 120/240V
PANEL KAL E1
EXISTING EQUIP AHU-14
EXISTING EQUIP EF
EXISTING EQUIP OH DOOR
EXISTING EQUIP AHU-13
EXISTING EQUIP AHU-11
EQUIP NO LABEL
EQUIP RTU-X
EQUIP NO LABEL
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
KAL-G 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
KAL-TX-PY 480V
KAL-TX-G1 37.5KVA 480V 120/240V
EQUIP AHE BREAK RM AC
EQUIP FLOOR CLEANER CHARGER
PANEL KAL POLE YARD
EQUIP HOIST
EQUIP AIR COMP
PANEL KAL G1A
PANEL KAL G1
EQUIP CARPORT
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
CONNECT TO EXISTING FEEDER. MATCH EXISTING WIRING, EXTEND AND REWORK AS REQUIRED.
KAL-F 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
KAL-TX-F1 37.5KVA 480V 120/240V
PANEL KAL F1
PANEL KAL INVERTER EPL-02
EQUIP LDG DOOR5
EQUIP GMU 344
KAL-H 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
KAL-TX-H1 37.5KVA 480V 120/240V
PANEL KAL H1
EQUIP NO LABEL
EQUIP NO LABEL
EQUIP DRILL5 SAW5
EQUIP CRANE
EQUIP NO LABEL
EQUIP WELDER RECEPT
EQUIP GAS WELDER
EQUIP HOIST9 1HJ
EQUIP WELDER
KAL-I 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
KAL-TX-I1 37.5KVA 480V 120/240V
PANEL KAL I1
EQUIP AHU-15
EQUIP GAMU-9
EQUIP AHU-T5
EQUIP HOIST-6
EQUIP WELD SHOP
PANEL KAL I1A
KAL-J 480Y/277V, 3Ø, 4W MIN IC RATING: 18 KAIC
PANEL KAL GEN PNL
SPARE
SPARE
SPARE
SPARE
PANEL KAL POLEYARD GATE OPERATORS
KAL-TX-J1 45kVA 480V 208Y/120V
KAL-J1 208Y/120V, 3Ø, 4W MIN IC RATING: 10 KAIC
EQUIP OH DOOR
REWORK FEEDERS AS REQUIRED TO FEED OUT OF NEW PANEL IN NEW LOCATION.
PANEL KAL EM1
PANEL KAL EM3
RENAME PANEL AS KAL-J1B
RENAME PANEL AS KAL-J1A

ELECTRICAL ONE-LINE DIAGRAM - NEW CONSTRUCTION
SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
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SHEET TITLE
ELECTRICAL ONE-LINE DIAGRAM - NEW CONSTRUCTION

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-402
REV: D

22-133.010

ELECTRICAL TRANSFORMER SCHEDULE

TRANSFORMER NAME	FED FROM	SIZE	PRIMARY VOLTAGE (V)	BREAKER / POLES	TRANSFORMER G.E.C.	PRIMARY FEEDER # OF SET(S)	PRIMARY FEEDER WIRE	PRIMARY FEEDER GROUND	PRIMARY FEEDER EMT	SECONDARY FEEDER LOAD NAME	SECONDARY FEEDER SECONDARY OCP	SECONDARY FEEDER # OF SETS	SECONDARY FEEDER WIRE	SECONDARY FEEDER GROUND	SECONDARY FEEDER EMT
TX-E1	E	37.5 kVA	480 V	100 A / 2	1 #6	1 SET	2 #1	#8 GND.	1 1/2"	E1	200 A	1 SET	3 #3/0	#4 G.E.C.	2 1/2"
TX-F1	F	37.5 kVA	480 V	100 A / 2	1 #6	1 SET	2 #1	#8 GND.	1 1/2"	F1	200 A	1 SET	3 #3/0	#4 G.E.C.	2 1/2"
TX-G1	G	37.5 kVA	480 V	100 A / 2	1 #6	1 SET	2 #1	#8 GND.	1 1/2"	G1	200 A	1 SET	3 #3/0	#4 G.E.C.	2 1/2"
TX-H1	H	37.5 kVA	480 V	100 A / 2	1 #6	1 SET	2 #1	#8 GND.	1 1/2"	H1	200 A	1 SET	3 #3/0	#4 G.E.C.	2 1/2"
TX-I1	I	37.5 kVA	480 V	100 A / 2	1 #6	1 SET	2 #1	#8 GND.	1 1/2"	I1	200 A	1 SET	3 #3/0	#4 G.E.C.	2 1/2"
TX-J1	J	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #1	#8 GND.	1 1/2"	J1	125 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-1	B	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #4	#8 GND.	1 1/4"	PP-1	125 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-2	B	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #4	#8 GND.	1 1/4"	PP-2	125 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-3	A	75 kVA	480 V	125 A / 3	1 #2	1 SET	3 #1/0	#6 GND.	2"	PP-3	225 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-4	A	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #4	#8 GND.	1 1/4"	PP-4	125 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-5	DP2A	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #4	#8 GND.	1 1/4"	PP-5	125 A	1 SET	4 #1/0	#6 G.E.C.	2"
TX-PP-6	DP2A	45 kVA	480 V	70 A / 3	1 #4	1 SET	3 #4	#8 GND.	1 1/4"	PP-6	125 A	1 SET	4 #1/0	#6 G.E.C.	2"

ELECTRICAL PANEL FEEDER SCHEDULE

DESCRIPTION	FED FROM	CURRENT (FLA)	DEMAND (FLA)	BREAKER / POLES	FEEDER # OF SETS	FEEDER WIRE	FEEDER GROUND	FEEDER EMT	ACCUM VOLT DROP %	NOTES
480 V										
ATS-MDP	GENERATOR	519 A	484 A	800 A / 3	3 SETS	4 #500 KCMIL	#3/0 GND.	3 1/2"	0.0%	1, 2
ATS-MDP	LBS	519 A	484 A	800 A / 3	3 SETS	4 #300 KCMIL	#3/0 GND.	3"	0.0%	1, 2
EPL-01	DP2A	8 A	5 A	15 A / 3	1 SET	4 #12	#12 GND.	3/4"	0.0%	1, 2
EPL-02	F	18 A	18 A	30 A / 3	1 SET	4 #10	#10 GND.	3/4"	0.0%	1, 2
GEN PNL	J	6 A	6 A	100 A / 3	1 SET	4 #1	#6 GND.	2"	0.0%	1, 2
LBS	MB	519 A	484 A	800 A / 3	3 SETS	4 #300 KCMIL	#3/0 GND.	3"	0.0%	1, 2
MB	TX-MDP	519 A	484 A	800 A / 3	3 SETS	4 #300 KCMIL	#3/0 GND.	3"	0.0%	1, 2
MDP	ATS-MDP	519 A	484 A	800 A / 3	3 SETS	4 #300 KCMIL	#3/0 GND.	3"	0.0%	1, 2
208 V										
PP-3A	PP-3	6 A		80 A / 3	1 SET	4 #3	#8 GND.	1 1/4"	0.0%	1, 2
UPS	PP-3	45 A		80 A / 3	1 SET	4 #3	#8 GND.	1 1/4"	0.0%	1, 2

GENERAL: CONDUIT SIZES BASED ON EMT. UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

1 CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS (UNLESS OTHERWISE INDICATED WITH AN "AL" FOR ALUMINUM). UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

2 G.E.C. = GROUNDING ELECTRODE CONDUCTOR FOR SEPARATELY DERIVED SYSTEM (PER SET, USE EQUIVALENT CMIL AND GEC FROM 250.66)

3 GND. = EQUIPMENT GROUNDING CONDUCTOR (E.G.C.)

ELECTRICAL MECH FEEDER SCHEDULE

DESCRIPTION	FED FROM	DISCONNECT MEANS	CURRENT (FLA)	BREAKER/POLES	FEEDER # OF SETS	FEEDER WIRE	FEEDER GROUND	FEEDER EMT	ACCUM VOLT DROP %	NOTES
480 V										
HVAC - AHU-1 RF	DP2A	FDS	22 A	40 A/3	1 SET	3 #8	#10 GND.	3/4"	0.0%	
HVAC - AHU-1 SF	DP2A	FDS	22 A	40 A/3	1 SET	3 #8	#10 GND.	3/4"	0.0%	
HVAC - AHU-2 RF	DP2A	FDS	22 A	30 A/3	1 SET	3 #8	#10 GND.	3/4"	0.0%	
HVAC - AHU-2 SF	DP2A	FDS	22 A	30 A/3	1 SET	3 #8	#10 GND.	3/4"	0.0%	
HVAC - C-1 CHILLER	MDP	FDS	235 A	300 A/3	1 SET	3 #350 KCMIL	#4 GND.	3"	0.0%	4
HVAC - CH-102	J	FDS	25 A	35 A/3	1 SET	3 #8	#10 GND.	3/4"	0.0%	
HVAC - ERU-1	DP2A	FDS	25 A	60 A/3	1 SET	3 #4	#10 GND.	1 1/4"	0.0%	
HVAC - P1	J	VFD	8 A	15 A/3	1 SET	3 #12	#12 GND.	3/4"	0.0%	
HVAC - P2	J	VFD	8 A	15 A/3	1 SET	3 #12	#12 GND.	3/4"	0.0%	
HVAC - P4	J	VFD	11 A	20 A/3	1 SET	3 #12	#12 GND.	3/4"	0.0%	
HVAC - P5	J	VFD	11 A	20 A/3	1 SET	3 #12	#12 GND.	3/4"	0.0%	
POWER - ELEV-1	B	FDS	27 A	60 A/3	1 SET	4 #4	#10 GND.	1 1/4"	0.0%	1
240 V										
HVAC - WH-2	K1	FDS	10 A	20 A/2	1 SET	3 #12	#12 GND.	3/4"		
HVAC - WH-4	H1	FDS	10 A	20 A/2	1 SET	3 #12	#12 GND.	3/4"		
208 V										
HVAC - ACCU-01	PP-5	FDS	18 A	40 A/2	1 SET	2 #8	#10 GND.	3/4"	0.0%	3
HVAC - ELEVATOR SUMP PUMP	PP-2	SP CONTROLLER	6 A	20 A/2	1 SET	2 #12	#12 GND.	3/4"	0.0%	
HVAC - P3	J1	STARTER / DISC	3 A	15 A/2	1 SET	2 #12	#12 GND.	3/4"	0.0%	
HVAC - P6	J1	STARTER / DISC	3 A	15 A/2	1 SET	2 #12	#12 GND.	3/4"	0.0%	

GENERAL: CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS UNLESS OTHERWISE NOTED. UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

1 PROVIDE DRY CONTACT FROM GENERATOR ATS TO ELEVATOR CONTROLLER TO INDICATE GENERATOR RUNNING ON EMERGENCY POWER.

2 PROVIDE RAINTIGHT DISCONNECT AT EQUIPMENT ON ROOF AND REMOTE STARTER IN ELECTRICAL ROOM.

3 PROVIDE CONNECTION TO ROOFTOP EQUIPMENT AND INTERCONNECT BETWEEN OUTSIDE UNIT AND INTERIOR UNIT. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE RAINTIGHT DISCONNECT ON EXTERIOR UNIT.

4 PROVIDE COPPER CONDUCTORS ONLY FOR CHILLER, ALUMINUM CONDUCTORS ARE NOT ACCEPTABLE FOR USE WITH CHILLER CONNECTIONS. DO NOT INCLUDE CHILLER FEEDS IN ANY ALUMINUM FEEDER ALTERNATES (VOLUNTARY OR ON DRAWINGS).

TERMINAL UNITS

LEVEL	COUNT
FIRST FLOOR	47
ROOF	13
SECOND FLOOR	23
T.O. GARAGE	6
T.O. STORES	29
Grand total: 118	

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	ELV	RSS	SDE	SDT	TP
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	DR	BY	CHK	APP	CO

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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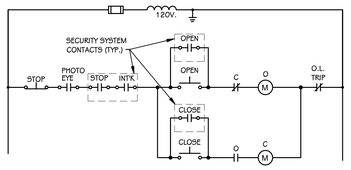
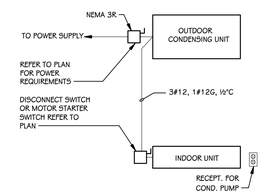
SHEET TITLE
ELECTRICAL CONNECTION SCHEDULES

SCALE:
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-403
REV: A

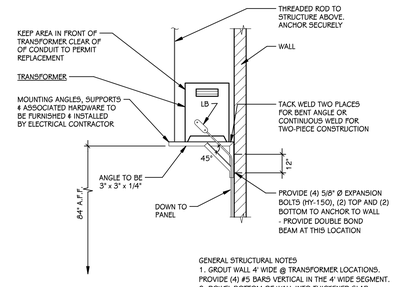
22-133.010



OVERHEAD DOOR CONTROL
SCALE: NONE

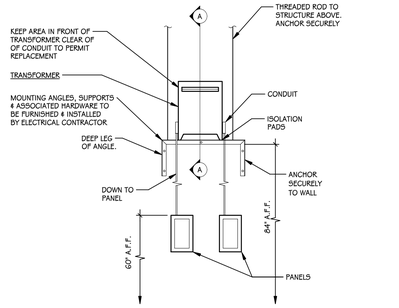


TYPICAL AC SPLIT SYSTEM
SCALE: NONE

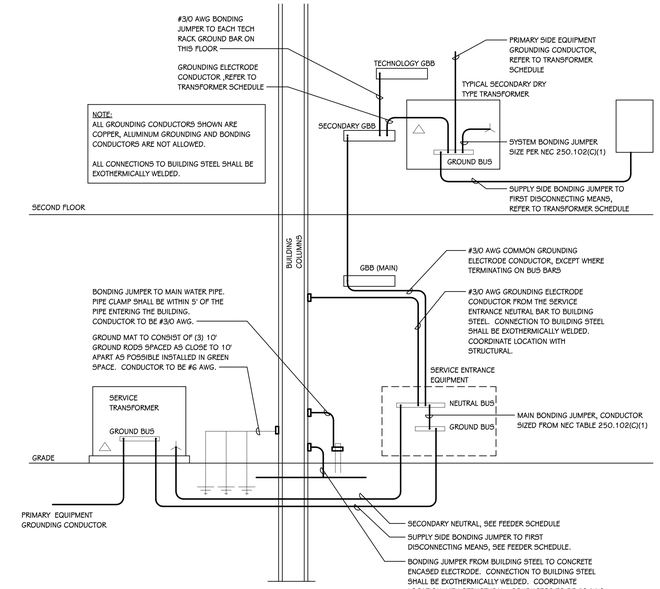


SECTION "AA"
SCALE: NONE

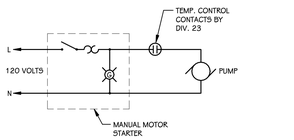
GENERAL STRUCTURAL NOTES
1. GROUT WALL 4" WIDE @ TRANSFORMER LOCATIONS. PROVIDE (4) #5 BARS VERTICAL IN THE 4" WIDE SEGMENT.
2. DOWEL BOTTOM OF WALL INTO THICKENED SLAB (FOOTING) WITH THE SAME (4) #5 BARS.
3. BRACE TOP OF WALL TO STRUCTURE ABOVE. WHEN UNDER THE PLANK, PROVIDE (2) WELD PLATES IN THE PLANK AND WELD AN 8"x8"x1/2"x4" ANGLE ON EACH SIDE OF THE WALL. WHEN METAL DECK ABOVE USE THE STRUCTURAL DETAIL.



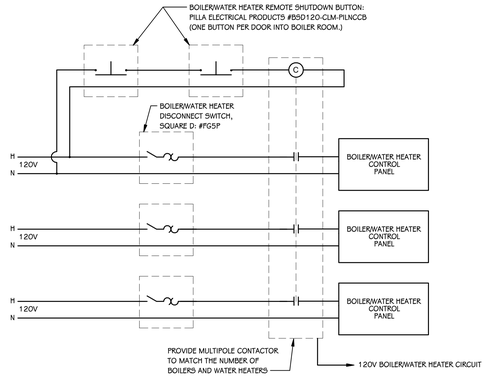
WALL MOUNTED TRANSFORMER AND PANEL DETAIL
SCALE: NONE



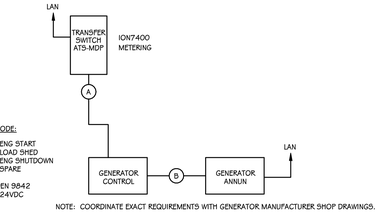
GROUNDING DIAGRAM
SCALE: NONE



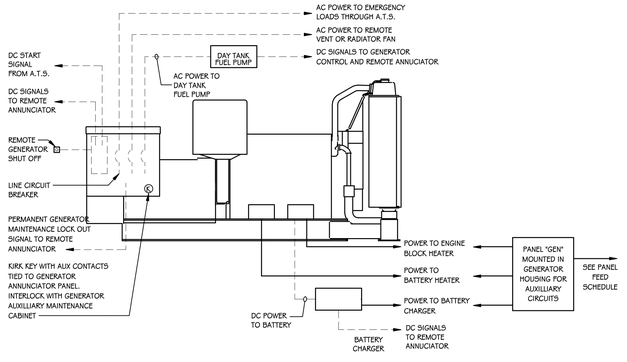
CIRCULATOR PUMP CONTROL
SCALE: NONE



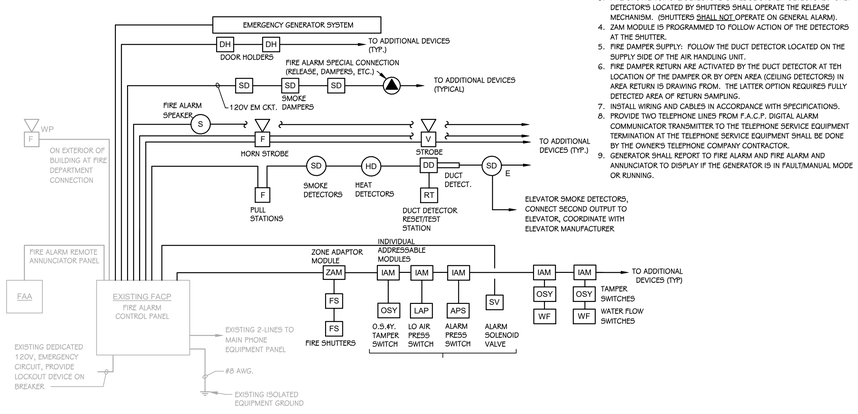
BOILER/WATER HEATER SHUTDOWN DETAIL
SCALE: NONE



TYPICAL GENERATOR CONTROLWIRING DIAGRAM
SCALE: NONE

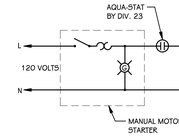


GENERATOR SET CONTROL AND ACCESSORY WIRING
SCALE: NONE

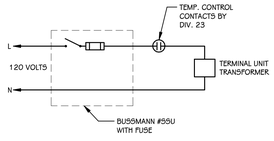


FIRE ALARM SYSTEM RISER DIAGRAM
SCALE: NONE

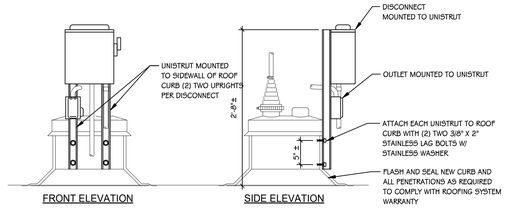
FIRE ALARM SYSTEM NOTES:
1. REFERENCE SPECIFICATION SECTION 283100 FOR ADDITIONAL REQUIREMENTS.
2. FIRE SHUTTERS SHALL BE WIRED THRU A CORNELL MODEL #58A RELEASING MECHANISM (OR FIREFLY EQUIV.) AND RELEASED BY A ZAM MODULE FOR RELIABLE "FAIL-SAFE" OPERATION.
3. FIRE SHUTTER SMOKE DETECTORS SHALL BE SYSTEM DETECTORS. ONLY DETECTOR'S LOCATED BY SHUTTERS SHALL OPERATE THE RELEASE MECHANISM. (SHUTTERS SHALL NOT OPERATE ON GENERAL ALARM).
4. ZAM MODULE IS PROGRAMMED TO FOLLOW ACTION OF THE DETECTORS AT THE SHUTTER.
5. FIRE DAMPER SUPPLY: FOLLOW THE DUCT DETECTOR LOCATED ON THE SUPPLY SIDE OF THE AIR HANDLING UNIT.
6. FIRE DAMPER RETURN ARE ACTIVATED BY THE DUCT DETECTOR AT TEH LOCATION OF THE DAMPER OR BY OPEN AREA (CEILING DETECTORS) IN AREA RETURN IS DRAWING FROM. THE LATTER OPTION REQUIRES FULLY DETECTED AREA OF RETURN SAMPLING.
7. INSTALL WIRING AND CABLES IN ACCORDANCE WITH SPECIFICATIONS.
8. PROVIDE TWO TELEPHONE LINES FROM F.A.C.P. DIGITAL ALARM COMMUNICATOR TRANSMITTER TO THE TELEPHONE SERVICE EQUIPMENT TERMINATION AT THE TELEPHONE SERVICE EQUIPMENT SHALL BE DONE BY THE OWNER'S TELEPHONE COMPANY CONTRACTOR.
9. GENERATOR SHALL REPORT TO FIRE ALARM AND FIRE ALARM AND ANNUNCIATOR TO DISPLAY IF THE GENERATOR IS IN FAULT/MANUAL MODE OR RUNNING.



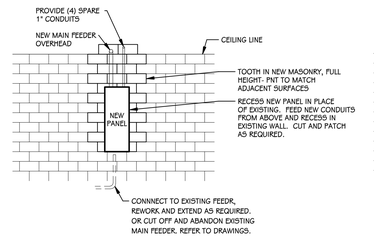
UNIT HEATER CONTROL
SCALE: NONE

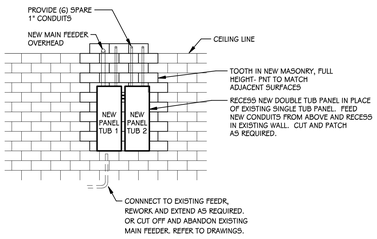


TERMINAL UNIT (TU) CONTROL
SCALE: NONE



DISCONNECT MOUNTING DETAIL - ROOF
SCALE: NONE





PANELBOARD IN EXISTING WALL DETAIL
SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy

KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
POWER DETAILS

SCALE: As indicated
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-411
REV: D

22-133.010

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REFER TO CONSUMERS ENERGY SPECIFICATION FOR CABLE COLORING STANDARDS

YELLOW - CORPORATE SECURITY
VOILET - ELECTRICAL / LIGHTING CONTROLS / HVAC
WHITE - DATA PLENUM COAX / SOUND MASKING
GRAY - AV DIGITAL SIGNAGE
BLUE - DATA STANDARD CAT6
ORANGE - DATA 800 MHZ RADIO OR ANALOG
BLACK - DATA WIFI
RED - FIRE AND SPECIFICALLY DESIGNED LIFE SAFETY
PINK - RESERVED FOR ONE OFF PROJECT NEEDS
GREEN - RESERVED FOR FUTURE

LIGHT FIXTURE TYPE NAME NOMENCLATURE:

FIXTURE STYLE		CEILING TYPE
TROFFER (2X4, 2X2)	T | D	DRYWALL (GYP BOARD)
RECESSED LINEAR	R | G	GRID CEILING (LAY-IN)
RECESSED DOWNLIGHT (CAN)	C | O	OPEN EXPOSED CEILING
LINEAR PENDANT	L | W	WOOD CEILING
WALL MOUNTED	W | M	METAL CEILING
PENDANT CYLINDER	PC	
PENDANT DECORATIVE	PD	

(RECESSED LINEAR 8' EXAMPLE)

RA8*-EM
LP3A-9

- R - FIXTURE STYLE
- A - FIXTURE SERIES
- 8 - FIXTURE LENGTH OR DIAMETER
- * - CUSTOM LENGTH
- EM - EMERGENCY
- ## - PANEL/CIRCUIT NUMBER

(RECESSED DOWNLIGHT IN WOOD CEILING EXAMPLE)

CD-W-EM
LP3A-9

- C - FIXTURE STYLE
- A - FIXTURE SERIES
- W - CEILING TYPE
- EM - EMERGENCY
- ## - PANEL/CIRCUIT NUMBER

CUSTOM MULTI-SEGMENT LINEAR LIGHT FIXTURE NOMENCLATURE:

(RECESSED EXAMPLE)

RAB 8'-0"
4'-0"
4'-0"
RISE/DROP SEGMENT LENGTH
SEGMENT LENGTH

- R - FIXTURE STYLE
- A - FIXTURE SERIES
- B - VARIATION OF FIXTURE SHAPES/LENGTH
- SEGMENT LENGTH

LIGHT FIXTURE SCHEDULE

TYPE	SERIES	DESCRIPTION	MOUNTING	CEILING TYPE	COLOR TEMP	DRIVER	MANUFACTURER	NOTES
BA	BA	2X4 TROFFER, 2' - 0" LONG	RECESSED		4000K		ACUITY LITHONIA 2X2 TROFFER IN PLACE OF EXISTING NEED TO VERIFY DIMENSIONS	1, 2, 6
BB	BB	WALL PACK	WALL		4000K	DALI	ACUITY LITHONIA #DSXW1LED-20C-530-40K-TFTM-MVOLT-(COLOR)	1, 2
CA	CA	6" DOWNLIGHT - SHOWER	RECESSED		4000K	DALI	ACUITY GOTHAM #EVO SHOWER 3000LM WD	1, 2
CB	CB	6" DOWNLIGHT	RECESSED		4000K	DALI	ACUITY GOTHAM #EVO 3000LM WD	1, 2
HAE	HAE	8" SURFACE LINEAR, 4' - 0" LONG	SURFACE		4000K	DALI	ACUITY LUMINAIRE LED #VERTEX CLF7-8'-MIN10-50W-40K-MVOLT-OP-(COLOR)-EMB722-DALI	1, 2
I4	I4	INDRUSTRAL PENDANT, 4' - 0" LONG	SURFACE / AIRCRAFT CABLE		4000K	DALI	ACUITY LITHONIA #TZL1N-L48-7000LM-FST-MVOLT-40K-80CRI-(COLOR)	1, 2
IG	IG	2XG HIGH BAY, 6' - 0" LONG	SURFACE / AIRCRAFT CABLE		4000K	DALI	ACUITY LITHONIA: IBG 30000LM SEF AFL GND MVOLT GZ10 40K 80CRI DWH	1, 2
LP<vanes>*	LP	PENDANT LINEAR	AIRCRAFT CABLE		4000K	DALI	ACUITY MARK LIGHTING #54PID-LLP-LENGTH PER DRAWINGS-80CRI-800L-80CRI-140K-140OLMF-SCT-MIN10-FLL-MVOLT-(COLOR)-DALI	1, 2, 3
PDG	PDG	PENDANT GLOBE	AIRCRAFT CABLE		4000K	DALI	WEST ELM LIGHTING #OMBRE CLUSTER OR EQUAL, MIRRORED	1, 2
RD4"	RD	4" RECESSED LINEAR - DRYWALL, 4' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD6"	RD	4" RECESSED LINEAR - DRYWALL, 6' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD7.5"	RD	4" RECESSED LINEAR - DRYWALL, 7' - 6" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD10"	RD	4" RECESSED LINEAR - DRYWALL, 10' - 0 1/4" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD11"	RD	4" RECESSED LINEAR - DRYWALL, 10' - 11 1/2" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD12"	RD	4" RECESSED LINEAR - DRYWALL, 12' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD14"	RD	4" RECESSED LINEAR - DRYWALL, 13' - 11 1/2" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD16"	RD	4" RECESSED LINEAR - DRYWALL, 16' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD20"	RD	4" RECESSED LINEAR - DRYWALL, 20' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD28"	RD	4" RECESSED LINEAR - DRYWALL, 28' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
RD30"	RD	4" RECESSED LINEAR - DRYWALL, 30' - 0" LONG	RECESSED		4000K	DALI	ACUITY MARK LIGHTING #SL4L-LOP-LENGTH PER DRAWINGS-FLP-(GB OR WFL)-80CRI-40K-800LMF-277V-DALI	1, 2, 3, 4, 6
TG2	TG2	2X2 TROFFER, 2' - 0" LONG	RECESSED		4000K	DALI	LITHONIA #2RTL2-*-40L-MVOLT-(DIMMING)-(COLOR TEMP)-	1, 2, 6
TG4	TG4	2X4 TROFFER, 4' - 0" LONG	RECESSED		4000K	DALI	LITHONIA #2RTL4-*-40L-MVOLT-(DIMMING)-(COLOR TEMP)-	1, 2, 6
X1	X1	EXIT SIGN - SINGLE FACE	UNIVERSAL		N/A	N/A	LITHONIA #LQC-W-1-(COLOR)	1, 2, 5
X2	X2	EXIT SIGN - DOUBLE FACE	UNIVERSAL		N/A	N/A	LITHONIA #LQC-W-2-(COLOR)	1, 2, 5

* FIELD COORDINATE AND FIELD MEASURE FOR CUSTOM LENGTH FIXTURES, LENGTHS PROVIDED ARE ROUNDED AND DEPEND ON FIELD CONDITIONS.

1 ALL LED FIXTURES TO HAVE WARRANTY TO MEET OR EXCEED WARRANTY INCLUDED IN BASIS OF DESIGN. FIXTURES LISTED AS EQUALS SHALL MEET DELIVERED LUMENS, CRI, EFFICACY AND OPTIONS OF THAT SPECIFIED. REFER TO SPECIFICATIONS 265100 AND 265600 FOR ADDITIONAL REQUIREMENTS.

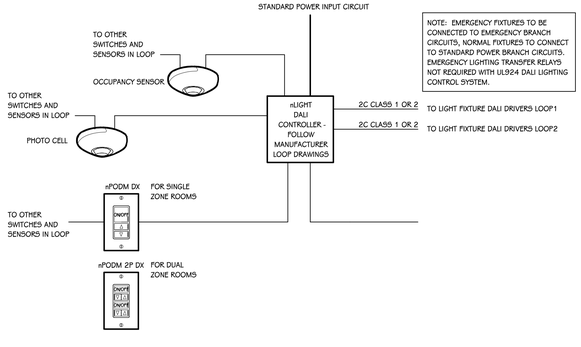
2 THE MOUNTING DESCRIPTION IS GENERAL. REFER TO SHOP DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SPECIFIC MOUNTING DETAILS.

3 ONLY SUBMIT ONE SET OF LINEAR FIXTURE INFORMATION PER FIXTURE SERIES WHERE VARIOUS LENGTH FIXTURES OF SAME SERIES ARE USED.

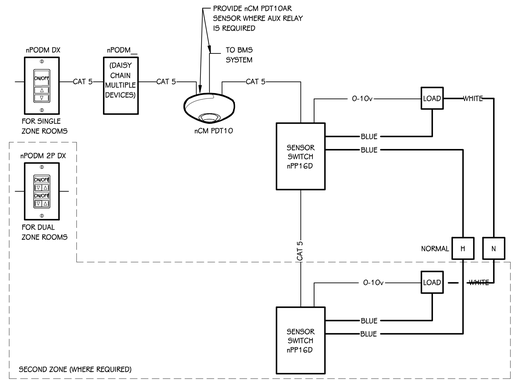
4 FIXTURE LENGTH PER LIGHTING FLOOR PLANS. FIELD VERIFY BEFORE ORDERING AND COORDINATE WITH FRAMING CONTRACTOR FOR HOLD DIMENSIONS.

5 EXIT SIGNS DIRECTIONAL ARROWS TO BE CONFIRMED ON PLANS PRIOR TO ORDERING. ARROWS ON GRAPHICS MAY NOT MATCH THOSE OF DESCRIPTION DUE TO FACE DIRECTION IN REFERENCE.

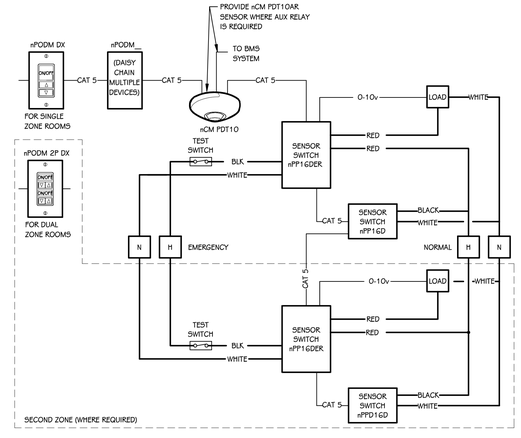
6 FIXTURES WITH THE CENTER CIRCLE SHADED SHALL BE CONNECTED TO INVERTER EMERGENCY POWER. NORMAL AND EM POWER SHALL BE COMPLETELY SEPARATED WITH UL924 EM LIGHTING CONTROL TAKING PLACE AT DALI LIGHTING CONTROLLERS.



TYPICAL DALI CONTROL DIAGRAM
SCALE: NONE



OCCUPANCY SENSOR WIRING DIAGRAM
SCALE: NONE



EMERGENCY
OCCUPANCY SENSOR WIRING DIAGRAM
SCALE: NONE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	ELV	RSS	SDE	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	ELV	RSS	SDE	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
LIGHTING SCHEDULES AND DETAILS

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-421
REV: D

22-133.010

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BREAKERS WITH BOLD AND UNDERLINE SHALL BE CONNECTED TO OWNER'S EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL BREAKERS IN EXISTING PANELS TO MONITOR. PROVIDE CURRENT TRANSFORMERS (CTS) IN EACH PANEL AS REQUIRED TO MONITOR EACH INDIVIDUAL BREAKER ALONG WITH ALL NECESSARY HEAD END EQUIPMENT, CABLING, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE INSTALLATION. CONNECT SYSTEM TO BUILDING GAS AND WATER SERVICES ALONG WITH SUB-METERING CALLED OUT ON MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS. CATE CABLING IS BY OWNER, CONDUIT PATHWAYS AND ALL REQUIRED 120V POWER TO CONTROLLERS SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO SCHNEIDER ELECTRIC SHOP DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

PANELBOARD " A" LOAD SCHEDULE

PANEL: A — **LOCATION:** CORRIDOR KAL-H1-2 / Level 1 — **ADDED ACCESSORIES:** SPD
MOUNTING: FLUSH — **AMPS:** 250 A MLO — **FEED-THRU LUGS...**
VOLTAGE: 480/277V, 3PH, 4W — **FED FROM:** MDP — **A.I.C. VALUE:** BY EQUIP MANUF.
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**LIGHTING -**	20	1	6697	14920					3	125	TX-PP-3	2
3	**LIGHTING -**	20	1			0	14340			--	--	--	4
5	SPARE	20	1					0	17020	--	--	--	6
7	SPARE	20	1	0	8560					3	70	TX-PP-4	8
9	SPARE	20	1			0	12560			--	--	--	10
11	SPARE	20	1					0	8040	--	--	--	12
13	SPARE	20	1	0	--					1	--	SPACE	14
15	SPARE	20	1			0	--			1	--	SPACE	16
17	SPARE	20	1					0	--	1	--	SPACE	18
19	SPARE	20	1	0	--					1	--	SPACE	20
21	SPARE	20	1			0	--			1	--	SPACE	22
23	SPARE	20	1					0	--	1	--	SPACE	24
25	SPARE	20	1	0	--					1	--	SPACE	26
27	SPARE	20	1			0	--			1	--	SPACE	28
29	SPARE	20	1					0	--	1	--	SPACE	30
31	SPARE	20	1	0	--					1	--	SPACE	32
33	SPARE	20	1			0	--			1	--	SPACE	34
35	SPARE	20	1					0	--	1	--	SPACE	36
37	SURGE PROTECTIVE DEVICE (SPD)	30	3	0	--					1	--	SPACE	38
39	--	--	--			0	--			1	--	SPACE	40
41	--	--	--					0	--	1	--	SPACE	42
		TOTAL LOAD:		30177 VA		26900 VA		25060 VA					
		ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A					
		TOTAL AMPS:		110 A		98 A		90 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
LIGHTING -	6697 VA	100.00%	6697 VA	**TOTAL CONNECTED LOAD:**	82137 VA
Other	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	53527 VA
POWER -	7500 VA	100.00%	7500 VA	**TOTAL CONNECTED LOAD (A):**	99 A
RECEPTACLE -	67220 VA	57.44%	38610 VA	**TOTAL ESTIMATED DEMAND...**	64 A
TECHNOLOGY -	720 VA	100.00%	720 VA		

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " B" LOAD SCHEDULE

PANEL: B — **LOCATION:** CORRIDOR KAL-H1-2 / Level 1 — **ADDED ACCESSORIES:** SPD
MOUNTING: FLUSH — **AMPS:** 250 A MLO — **FEED-THRU LUGS...**
VOLTAGE: 480/277V, 3PH, 4W — **FED FROM:** MDP — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**LIGHTING -**	20	1	5328	9840					3	70	TX-PP-1	2
3	**LIGHTING -**	20	1			0	8420			--	--	--	4
5	SPARE	20	1					0	7340	--	--	--	6
7	SPARE	20	1	0	10560					3	70	TX-PP-2	8
9	SPARE	20	1			0	11920			--	--	--	10
11	SPARE	20	1					0	9500	--	--	--	12
13	SPARE	20	1	0	7482					3	60	**POWER - ELEV-1**	14
15	SPARE	20	1			0	7482			--	--	**--**	16
17	SPARE	20	1					0	7482	--	--	**--**	18
19	SPARE	20	1	0	--					1	--	SPACE	20
21	SPARE	20	1			0	--			1	--	SPACE	22
23	SPARE	20	1					0	--	1	--	SPACE	24
25	SPARE	20	1	0	--					1	--	SPACE	26
27	SPARE	20	1			0	--			1	--	SPACE	28
29	SPARE	20	1					0	--	1	--	SPACE	30
31	SPARE	20	1	0	--					1	--	SPACE	32
33	SPARE	20	1			0	--			1	--	SPACE	34
35	SPARE	20	1					0	--	1	--	SPACE	36
37	SURGE PROTECTIVE DEVICE (SPD)	30	3	0	--					1	--	SPACE	38
39	--	--	--			0	--			1	--	SPACE	40
41	--	--	--					0	--	1	--	SPACE	42
		TOTAL LOAD:		33210 VA		27822 VA		24322 VA					
		ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A					
		TOTAL AMPS:		122 A		102 A		88 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	1200 VA	100.00%	1200 VA		
LIGHTING -	5328 VA	100.00%	5328 VA	**TOTAL CONNECTED LOAD:**	85355 VA
POWER -	27947 VA	100.00%	27947 VA	**TOTAL ESTIMATED DEMAND:**	66355 VA
RECEPTACLE -	48000 VA	60.42%	29000 VA	**TOTAL CONNECTED LOAD (A):**	103 A
TECHNOLOGY -	2880 VA	100.00%	2880 VA	**TOTAL ESTIMATED DEMAND...**	80 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " E" LOAD SCHEDULE

PANEL: E — **LOCATION:** PASSAGE KAL-H1-11 / Level 1 — **ADDED ACCESSORIES:** SPD
MOUNTING: FLUSH — **AMPS:** 400 A MLO — **FEED-THRU LUGS...**
VOLTAGE: 480/277V, 3PH, 4W — **FED FROM:** MDP — **A.I.C. VALUE:** 18 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	SPARE	20	1	0	0					1	20	SPARE	2
3	SPARE	20	1			0	0			1	20	SPARE	4
5	SPARE	20	1					0	0	1	20	SPARE	6
7	SPARE	20	1	0	0					1	20	SPARE	8
9	SPARE	20	1			0	0			1	20	SPARE	10
11	SPARE	20	1					0	0	1	20	SPARE	12
13	SPARE	20	1	0	0					1	20	SPARE	14
15	SPARE	20	1			0	0			1	20	SPARE	16
17	SPARE	20	1					0	0	1	20	SPARE	18
19	**EXISTING - AHU-13**	20	3	0	0					3	20	**EXISTING - AHU-14**	20
21	**--**	--	--			0	0			--	--	**--**	22
23	**--**	--	--					0	0	--	--	**--**	24
25	TX-E1	100	2	10000	0					3	30	SPARE	26
27	--	--	--			8280	0			--	--	--	28
29	--	--	--					0	0	--	--	--	30
31	**EXISTING - EXISTING MAU**	30	3	0	0					3	20	EXISTING - OVERHEAD DOORS N STORE RM	32
33	**--**	--	--			0	0			--	--	--	34
35	**--**	--	--					0	0	--	--	--	36
37	**EXISTING - NO LABEL**	50	3	0	0					3	100	**EXISTING - AHU-11**	38
39	**--**	--	--			0	0			--	--	**--**	40
41	**--**	--	--					0	0	--	--	**--**	42
43	SPACE	--	1	--	--					1	--	SPACE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49	SPACE	--	1	--	--					1	--	SPACE	50
51	SPACE	--	1			--	--			1	--	SPACE	52
53	SPACE	--	1					--	--	1	--	SPACE	54
		TOTAL LOAD:		10000 VA		8280 VA		0 VA					
		ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A					
		TOTAL AMPS:		41 A		35 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	17560 VA	78.47%	13780 VA		
TECHNOLOGY -	720 VA	100.00%	720 VA	**TOTAL CONNECTED LOAD:**	18280 VA
				TOTAL ESTIMATED DEMAND:	14500 VA
				TOTAL CONNECTED LOAD (A):	22 A
				TOTAL ESTIMATED DEMAND...	17 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

INVERTER "PANEL ELP-01" LOAD SCHEDULE

INVERTER: ELP-01 — **LOCATION:** INVERTER ROOM KAL-207A / SECOND...
MOUNTING: SURFACE — **AMPS:** 60 A MLO
VOLTAGE: 480/277V, 3PH, 4W — **FED FROM:** DP2A — **A.I.C. VALUE:** 18 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EM LIGHTING -	20	1	3811	370					1	20	EM LIGHTING -	2
3	EM LIGHTING -	20	1			2109	0			1	20	SPARE	4
5	SPARE	20	1					0	0	1	20	SPARE	6
		TOTAL LOAD:		4181 VA		2109 VA		0 VA					
		TOTAL AMPS:		16 A		9 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EM LIGHTING -	6290 VA	100.00%	6290 VA		
				TOTAL CONNECTED LOAD:	6290 VA
				TOTAL ESTIMATED DEMAND:	6290 VA
				TOTAL CONNECTED LOAD (A):	8 A
				TOTAL ESTIMATED DEMAND...	8 A

NOTES:

INVERTER "PANEL EPL-02" LOAD SCHEDULE

INVERTER: EPL-02 — **LOCATION:** INVERTER ROOM KAL-144B / Level 1
MOUNTING: SURFACE — **AMPS:** 100 A MLO
VOLTAGE: 480/277V, 3PH, 4W — **FED FROM:** F — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EM LIGHTING - Room KAL-162, KAL-169	20	1	3382	3560					1	20	EM LIGHTING - INDOOR PARKING AREA (IPA)...	2
3	EM LIGHTING - BREAK ROOM KAL-165	20	1			111	333			1	20	EM LIGHTING - Room KAL-175, KAL-174, KAL-172, 166	4
5	EM LIGHTING -	20	1					4094	1602	1	20	EM LIGHTING -	6
7	EM LIGHTING -	20	1	1246	890					1	20	EM LIGHTING -	8
9													10
11													12
		TOTAL LOAD:		9078 VA		444 VA		5696 VA					
		TOTAL AMPS:		36 A		2 A		23 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
LIGHTING -	9968 VA	100.00%	9968 VA		
EM LIGHTING -	5250 VA	100.00%	5250 VA	**TOTAL CONNECTED LOAD:**	15218 VA
				TOTAL ESTIMATED DEMAND:	15218 VA
				TOTAL CONNECTED LOAD (A):	18 A
				TOTAL ESTIMATED DEMAND...	18 A

NOTES:

PANELBOARD " E1" LOAD SCHEDULE

PANEL: E1 — **LOCATION:** PASSAGE KAL-H1-11 / Level 1 — **ADDED ACCESSORIES:** SPD
MOUNTING: FLUSH — **AMPS:** 200 A MB — **FEED-THRU LUGS...**
VOLTAGE: 120/240, 1PH, 3W — **FED FROM:** TX-E1 — **A.I.C. VALUE:** 10 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	SPARE	20	1	0	0			1	20	EXISTING - NO LABEL	2
3	EXISTING - MAIL RM	20	1			0	0	1	20	EXISTING - SPOT LIGHT LOADING DOCK	4
5	SPARE	20	1	0	0			1	20	EXISTING - NO LABEL	6
7	EXISTING - RM 108	20	1			0	0	1	20	EXISTING - RECEPT MAILROOM	8
9	**EXISTING - CAB HEATER**	20	1	0	0			1	20	EXISTING - RECEPT REEL METER SHOP	10
11	EXISTING - CORD REEL METER SHOP	20	1			0	0	1	20	EXISTING - NO LABEL	12
13	EXISTING - RECEPT STORE ROOM ELEC CAGE	20	1	0	0			1	20	EXISTING - RECEPT STORERM 106 107 HALL	14
15	EXISTING - RECEPT METER SHOP	20	1			0	0	1	20	EXISTING - RECEPT MAILROOM & HALL	16
17	**EXISTING - AHU14 CONTROLS**	20	1	0	0			1	20	EXISTING - RECEPT MAILROOM & HALL	18
19	EXISTING - RECEPT METER SHOP	20	1			0	0	1	20	EXISTING - RECEPT MAILROOM & HALL	20
21	EXISTING - LOGO	20	1	0	0			2	20	**EXISTING SNOW MELT**	22
23	**EXISTING - NO LABEL**	40	2			0	0	--	--	**--**	24
25	**--**	--	--	0	0			2	20	**EXISTING SNOW MELT**	26
27	**EXISTING - SNOW MELT**	20	2			0	0	--	--	**--**	28
29	**--**	--	--	0	500			1	20	RECEPTACLE - SUB MAINT CREW ROOM KAL-106,...	30
31	SUB MAINTENANCE CREW ROOM 142	20	1			900	500	1	20	RECEPTACLE - SUB MAINT CREW ROOM KAL-106,...	32
33	SUB METRO CREW ROOM KAL-107	20	1	1080	1000			1	20	RECEPTACLE - SUB MAINT CREW ROOM KAL-106,...	34
35	RECEPTACLE - OFFICE KAL-109A	20	1			720	1000	1	20	RECEPTACLE - SUB MAINT CREW ROOM KAL-106,...	36
37	RECEPTACLE - 4P CONF KAL-109C	20	1	1080	500			1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, SW	38
39	RECEPTACLE - METER SHOP CREW ROOM 149	20	1			540	500	1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, SW	40
41	RECEPTACLE - MANAGERS HOTEL KAL-109, FURN	20	1	500	1000			1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, N	42
43	RECEPTACLE - MANAGERS HOTEL KAL-109, FURN	20	1			500	500	1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, NE	44
45	RECEPTACLE - Room KAL-107, KAL-107A	20	1	1080	500			1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, NE	46
47	RECEPTACLE - MANAGERS HOTELING 147	20	1			1080	500	1	20	RECEPTACLE - SUB METRO CREW RM KAL-107,...	48
49	RECEPTACLE - 4P CONF KAL-109B	20	1	1080	500			1	20	RECEPTACLE - SUB METRO CREW RM KAL-107, S	50
51	RECEPTACLE - UNION REP. 140	20	1			540	1000	1	20	RECEPTACLE - METER SHOP CREW RM KAL-141A,...	52
53	RECEPTACLE - MANAGERS HOTEL KAL-109,...	20	1	180	1000			1	20	RECEPTACLE - METER SHOP CREW RM KAL-141A,...	54
55	SURGE PROTECTIVE DEVICE (SPD)	30	2			0	--	1	--	SPACE	56
57	--	--	--	0	--			1	--	SPACE	58
		TOTAL LOAD:		10000 VA		8280 VA					
		ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA					
		TOTAL AMPS:		83 A		69 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	17560 VA	78.47%	13780 VA		
TECHNOLOGY -	720 VA	100.00%	720 VA	**TOTAL CONNECTED LOAD:**	18280 VA
				TOTAL ESTIMATED DEMAND:	14500 VA
				TOTAL CONNECTED LOAD (A):	76 A
				TOTAL ESTIMATED DEMAND...	60 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
ELECTRICAL PANEL LOAD SHEETS

SCALE:
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-501
REV: A

22-133.010

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BREAKERS WITH BOLD AND UNDERLINE SHALL BE CONNECTED TO OWNER'S EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL BREAKERS IN EXISTING PANELS TO MONITOR. PROVIDE CURRENT TRANSFORMERS (CTS) IN EACH PANEL AS REQUIRED TO MONITOR EACH INDIVIDUAL BREAKER ALONG WITH ALL NECESSARY HEAD END EQUIPMENT, CABLING, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE INSTALLATION. CONNECT SYSTEM TO BUILDING GAS AND WATER SERVICES ALONG WITH SUB-METERING CALLED OUT ON MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS. CAT6 CABLING IS BY OWNER. CONDUIT PATHWAYS AND ALL REQUIRED 120V POWER TO CONTROLLERS SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO SCHNEIDER ELECTRIC SHOP DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

PANELBOARD " F" LOAD SCHEDULE

PANEL: F — **MOUNTING:** FLUSH — **VOLTAGE:** 480/277V, 3PH, 4W
LOCATION: MATERIAL STORAGE KAL-142 / — **AMPS:** 400 A MLO — **FED FROM:** MDP
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EXISTING - LOAD. AREA W. BAY N. END (117)	20	1	0	0					1	20	EXISTING - NIGHT LIGHTS IN LOAD. AREA 2-N. E...	2
3	EXISTING - LOAD. AREA W. BAY CENTER (117)	20	1			0	0			1	20	EXISTING - NIGHT LITE (1) METER SHOP	4
5	EXISTING - TOOL ROOM ELECTRIC	20	1					0	0	1	20	EXISTING - LIGHTS IN ROOMS 119C-D-E	6
7	EXISTING - LOAD. AREA CENTER BAY S. END (117)	20	1	0	0					1	20	EXISTING - LIGHTS S.W. SIDE OF METER SHOP...	8
9	EXISTING - LOAD. AREA CENTER BAY CENTER...	20	1			0	0			1	20	EXISTING - LIGHTS IN METER SHOP	10
11	EXISTING - LOAD. AREA CENTER BAY N. END (117)	20	1					0	0	1	20	EXISTING - LIGHTS METER SHOP (CENTER)	12
13	EXISTING - LOAD. AREA E. BAY S. END (117)	20	1	0	0					1	20	EXISTING - LIGHTS IN APPLI. REPAIR CAGE AREA	14
15	EXISTING - LOAD. AREA E. BAY CENTER (117)	20	1			0	0			1	20	EXISTING - LIGHTS N. END METER SHOP	16
17	EXISTING - LOAD. AREA E. BAY N. END (117)	20	1					0	0	1	20	EXISTING - STORES S.E. CORNER (100)	18
19	EXISTING - STORES E. CENTER (100)	20	1	0	0					1	20	EXISTING - STORES N. END (100)	20
21	EXISTING - GMU #3 & #4	20	3			0	0			1	20	EXISTING - LOAD AREA W. BAY S. END (117)	22
23	--	--	--					0	0	3	20	EXISTING - SUBMETRO	24
25	--	--	--	0	0					--	--	--	26
27	EXISTING - TRANSFORMER PANEL F1	20	2			0	0			--	--	--	28
29	--	--	--					0	0	3	20	EXISTING - NEW CIRC. PUMP BOILER ROOM	30
31	EXISTING - LDG. AREA DOORS	20	3	0	0					--	--	--	32
33	--	--	--			0	0			--	--	--	34
35	--	--	--					0	0	3	20	EXISTING - CIRCULATING PUMPS #1, #2, #3, #4	36
37				0						--	--	--	38
39						0				--	--	--	40
41								4094	1	20	LIGHTING -		42
43		20	1	3204	3204					1	20	LIGHTING -	44
45		20	1			4272	3204			1	20		46
47		20	1					3916	3916	1	20		48
49	TX-F1	100	3	180	9078					3	30	EPL-02	50
51	--	--	--			0	444			--	--	--	52
53	--	--	--					0	5696	--	--	--	54

TOTAL LOAD: 15666 VA — 7920 VA — 17622 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA — 0 A
TOTAL AMPS: 61 A — 29 A — 68 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
LIGHTING -	29192 VA	100.00%	29192 VA	TOTAL CONNECTED LOAD:	41208 VA
RECEPTACLE -	180 VA	100.00%	180 VA	TOTAL ESTIMATED DEMAND:	41208 VA
EM LIGHTING -	11836 VA	100.00%	11836 VA	TOTAL CONNECTED LOAD (A):	50 A
				TOTAL ESTIMATED DEMAND...	50 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL F1" LOAD SCHEDULE

PANEL: F1 — **MOUNTING:** FLUSH — **VOLTAGE:** 120/240, 1PH, 3W
LOCATION: MATERIAL STORAGE KAL-142 / Level 1 — **AMPS:** 200 A MB — **FED FROM:** TX-F1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EXISTING - LIGHTING COLD STORAGE W. FLOOD	20	1	0	0			1	20	EXISTING - RECEP BOILER ROOM / HW PUMPS /...	2
3	EXISTING - LIGHTING COLD STORAGE E. FLOOD	20	1			0	0	1	20	EXISTING - RECEP BOILER ROOM + METER SHOP...	4
5	EXISTING - LIGHTING COLD STORAGE	20	1	0	0			1	20	EXISTING -	6
7	EXISTING - UNIT HEATER #4 METER SHOP DOOR	20	1			0	0	1	20	EXISTING -	8
9	EXISTING - RECEP METER SHOP ON I-BEAM	20	1	0	0			1	20	EXISTING -	10
11	EXISTING - LIGHTING CONTACTOR METER SHOP	20	1			0	0	1	20	EXISTING -	12
13	EXISTING - LIGHTING CONTACTOR	20	1	0	0			1	20	EXISTING - RECEP METER SHOP	14
15	EXISTING - RECEP METER SHOP / INDUSTRIAL GA...	20	1			0	0	1	20	RECEP METER SHOP / JANITOR CAGE	16
17	EXISTING - RECEP EAST STOREROOM / WIRE..	20	1	0	0			1	20	EXISTING - A/C METER SHOP OFFICES	18
19	EXISTING - RECEP NE STOREROOM DROP CORD	20	1			0	0	2	20	EXISTING - BLOCK HEATER	20
21	EXISTING - RECEP IPA / MIDDLE BANK OF HEATER...	20	1	0	0			--	--	--	22
23	EXISTING - RECEP IPA E. WALL / DOCK LIGHTING	20	1			0	0	1	20	EXISTING - ICE MACHINE	24
25	EXISTING - RECEP N. STOREROOM	20	1	0	0			1	20	EXISTING - EF 33, 35 / REDIANT HEATERS IPA	26
27	EXISTING - 240V METER SHOP DISCONNECT	60	2			0	0	1	20	EXISTING - ICE MACHINE / S. HEATERS IPA	28
29	--	--	--	0	0			1	20	EXISTING - ICE MACHINE	30
31	EXISTING -	20	2			0	0	2	20	EXISTING - 120/240V METER SHOP TEST BENCH	32
33	--	--	--	0	0			--	--	--	34
35	EXISTING - A/C IN MAINT. SHOP	20	2			0	0	2	20	EXISTING - GENERATOR BATTEY CHARGE	36
37	--	--	--	0	0			--	--	--	38
39	EXISTING -	30	2			0	0	1	20	EXISTING - RECEP. N. STOREROOM / COLD...	40
41	--	--	--	0	0			1	20	EXISTING -	42
43	HVAC - EF-19	20	1			0					44
45	HVAC - EF-18	20	1	0	0			1	20	HVAC - EF-22	46
47	HVAC - EF-16	20	1			0	0	1	20	HVAC - EF-21	48
49	HVAC - EF-17	20	1	0	0			1	20	HVAC - EF-15	50
51	HVAC - EF-48	20	1			0	0	1	20	HVAC - EF-20	52
53	RECEPTACLE - IPA KAL-161 - TECH RACK	20	1	180	0			1	20	HVAC - EF-47	54

TOTAL LOAD: 180 VA — 0 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA
TOTAL AMPS: 2 A — 0 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
RECEPTACLE -	180 VA	100.00%	180 VA	TOTAL CONNECTED LOAD:	180 VA
				TOTAL ESTIMATED DEMAND:	180 VA
				TOTAL CONNECTED LOAD (A):	1 A
				TOTAL ESTIMATED DEMAND...	1 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " G" LOAD SCHEDULE

PANEL: G — **MOUNTING:** FLUSH — **VOLTAGE:** 480/277V, 3PH, 4W
LOCATION: INDOOR PARKING AREA (IPA) KAL-161... — **AMPS:** 400 A MLO — **FED FROM:** MDP
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	TX-G1	100	3	0	4094					1	20		2
3	--	--	--			0	2492			1	20		4
5	--	--	--					0					6
7													8
9													10
11													12
13													14
15													16
17													18
19													20
21													22
23													24
25													26
27													28
29													30
31													32
33													34
35													36
37													38
39													40
41													42
43													44
45													46
47													48
49													50
51													52
53													54

TOTAL LOAD: 4094 VA — 2492 VA — 0 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA — 0 A
TOTAL AMPS: 16 A — 10 A — 0 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
LIGHTING -	3204 VA	100.00%	3204 VA	TOTAL CONNECTED LOAD:	6586 VA
EM LIGHTING -	3382 VA	100.00%	3382 VA	TOTAL ESTIMATED DEMAND:	6586 VA
				TOTAL CONNECTED LOAD (A):	8 A
				TOTAL ESTIMATED DEMAND...	8 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL G1" LOAD SCHEDULE

PANEL: G1 — **MOUNTING:** FLUSH — **VOLTAGE:** 120/240, 1PH, 3W
LOCATION: INDOOR PARKING AREA (IPA) KAL-161... — **AMPS:** 200 A MB — **FED FROM:** TX-G1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	HVAC - EF-36	20	1	0	0			1	20	HVAC - EF-26	2
3	HVAC - EF-28	20	1			0					4
5											6
7											8
9											10
11											12
13											14
15											16
17											18
19											20
21											22
23											24
25											26
27											28
29											30
31											32
33											34
35											36
37											38
39											40
41											42
43											44
45											46
47											48
49											50
51											52
53											54

TOTAL LOAD: 0 VA — 0 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA
TOTAL AMPS: 0 A — 0 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
				TOTAL CONNECTED LOAD:	0 VA
				TOTAL ESTIMATED DEMAND:	0 VA
				TOTAL CONNECTED LOAD (A):	0 A
				TOTAL ESTIMATED DEMAND...	0 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " H" LOAD SCHEDULE

PANEL: H — **MOUNTING:** FLUSH — **VOLTAGE:** 480/277V, 3PH, 4W
LOCATION: REPAIR GARAGE KAL-169 / Level 1 — **AMPS:** 250 A MLO — **FED FROM:**
ADDED ACCESSORIES: — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	TX-H1	100	3	4050						2
3	--	--	--		3690					4
5	--	--	--			0				6
7										8
9										10
11										12
13										14
15										16
17										18
19										20
21										22
23										24
25										26
27										28
29										30
31										32
33										34
35										36
37										38
39										40
41										42
43										44
45										46
47										48
49										50
51										52
53										54

TOTAL LOAD: 4050 VA — 3690 VA — 0 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA — 0 A
TOTAL AMPS: 17 A — 15 A — 0 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	2500 VA	100.00%	2500 VA		
RECEPTACLE -	5240 VA	100.00%	5240 VA	TOTAL CONNECTED LOAD:	7740 VA
				TOTAL ESTIMATED DEMAND:	7740 VA
				TOTAL CONNECTED LOAD (A):	9 A
				TOTAL ESTIMATED DEMAND...	9 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL H1" LOAD SCHEDULE

PANEL: H1 — **MOUNTING:** FLUSH — **VOLTAGE:** 120/240, 1PH, 3W
LOCATION: REPAIR GARAGE KAL-169 / Level 1 — **AMPS:** 200 A MB — **FED FROM:** TX-H1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:** 10 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - TOILET RM. KAL-165B	20	1	180	500	1	20	RECEPTACLE - GAS T&S KAL-172, POWER POLE SE	2
3	RECEPTACLE - TOILET RM KAL-165E	20	1		360	1	20	RECEPTACLE - GAS T&S KAL-172, POWER POLE SE	4
5	RECEPTACLE - BREAK RM KAL-165, EWC	20	1	360	500	1	20	RECEPTACLE - GAS T&S KAL-172, POWER POLE SE	6
7	RECEPTACLE - BREAK RM KAL-165, MICROWAVE	20	1		180	1	20	RECEPTACLE - GAS T&S KAL-172, POWER POLE,...	8
9	RECEPTACLE - BREAK RM KAL-165, FRIDGE	20	1	360	180	1	20	RECEPTACLE - GAS T&S KAL-172, PRINTER	10
11	RECEPTACLE - BREAK RM KAL-165, COUNTER	20	1		360	1	20	RECEPTACLE - GAS T&S KAL-172	12
13	RECEPTACLE - BREAK ROOM KAL-165	20	1	720	1250	2	20	HVAC - WH-4	14
15						1250	--	--	16
17									18
19									20
21									22
23									24
25									26
27									28
29									30
31									32
33									34
35									36
37									38
39									40
41									42
43									44
45									46
47									48
49									50
51	SPARE	30	2		0				52
53	--	--	--	0					54

TOTAL LOAD: 4050 VA — 3690 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE): 0 VA — 0 VA
TOTAL AMPS: 34 A — 31 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	2500 VA	100.00%	2500 VA		
RECEPTACLE -	5240 VA	100.00%	5240 VA	TOTAL CONNECTED LOAD:	7740 VA
				TOTAL ESTIMATED DEMAND:	7740 VA
				TOTAL CONNECTED LOAD (A):	32 A
				TOTAL ESTIMATED DEMAND...	32 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

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REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
ELECTRICAL PANEL LOAD SHEETS

SCALE:	DRAWING NUMBER	SHEET	REV
JOB: FM-00155-Tow	3084-KAL-SC01	E-502	A

22-133.010

BREAKERS WITH BOLD AND UNDERLINE SHALL BE CONNECTED TO OWNER'S EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL BREAKERS IN EXISTING PANELS TO MONITOR. PROVIDE CURRENT TRANSFORMERS (CTS) IN EACH PANEL AS REQUIRED TO MONITOR EACH INDIVIDUAL BREAKER ALONG WITH ALL NECESSARY HEAD END EQUIPMENT, CABLING, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE INSTALLATION. CONNECT SYSTEM TO BUILDING GAS AND WATER SERVICES ALONG WITH SUB-METERING CALLED OUT ON MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS. CATE CABLING IS BY OWNER, CONDUIT PATHWAYS AND ALL REQUIRED 120V POWER TO CONTROLLERS SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO SCHNEIDER ELECTRIC SHOP DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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PANELBOARD " I" LOAD SCHEDULE

PANEL: I — **MOUNTING:** FLUSH — **VOLTAGE:** 480/277V, 3PH, 4W
LOCATION: GAS T&S KAL-174 / Level 1 — **AMPS:** 250 A MLO — **FED FROM:** MDP
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**EXISTING - LIGHTING**	20	1	0	0					1	20	**EXISTING - LIGHTING**	2
3	**EXISTING - LIGHTING**	20	1			0	0			1	20	**EXISTING - LIGHTING**	4
5	**EXISTING - LIGHTING**	20	1					0	0	1	20	**EXISTING - LIGHTING**	6
7	SPARE	20	1	0	0					1	20	SPARE	8
9	SPARE	20	1			0	0			1	20	SPARE	10
11	SPARE	20	1					0	0	1	20	SPARE	12
13	**EXISTING - AHU 15**	20	3	0	0					3	20	**EXISTING - AHU-T&S**	14
15	**--**	--	--			0	0			--	--	**--**	16
17	**--**	--	--					0	0	--	--	**--**	18
19	**EXISTING - GMU 9**	20	3	0	0					3	20	EXISTING - HOIST 6	20
21	**--**	--	--			0	0			--	--	--	22
23	**--**	--	--					0	0	--	--	--	24
25	TX-I1	100	2	1040	0					3	100	EXISTING - WELDING SHOP	26
27	--	--	--			1580	0			--	--	--	28
29	--	--	--					0	0	--	--	--	30
31													32
33													34
35													36
37													38
39													40
41													42
43													44
45													46
47													48
49													50
51													52
53													54
	TOTAL LOAD:			1040 VA		1580 VA		0 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA		0 A					
	TOTAL AMPS:			4 A		6 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	2620 VA	100.00%	2620 VA		
				TOTAL CONNECTED LOAD:	2620 VA
				TOTAL ESTIMATED DEMAND:	2620 VA
				TOTAL CONNECTED LOAD (A):	3 A
				TOTAL ESTIMATED DEMAND...	3 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL I1" LOAD SCHEDULE

PANEL: I1 — **MOUNTING:** FLUSH — **VOLTAGE:** 120/240, 1PH, 3W
LOCATION: GAS T&S KAL-174 / Level 1 — **AMPS:** 200 A MB — **FED FROM:** TX-I1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EXISTING - NO LABEL	20	1	0	0			1	20	EXISTING - RECEPT CORD WELD SHOP	2
3	EXISTING - NO LABEL	20	1			0	0	1	20	EXISTING - NO LABEL	4
5	EXISTING - RECEPT GAS T&S CREW RM	20	1	0	0			1	20	EXISTING - RECEPT CORD WELD SHOP	6
7	EXISTING - NO LABEL	20	1			0	0	1	20	EXISTING - RECEPT CORD WELD SHOP	8
9	EXISTING - NO LABEL	20	1	0	0			1	20	EXISTING - NO LABEL	10
11	EXISTING - RECEPT WELD SHOP	20	1			0	0	1	20	EXISTING - NO LABEL	12
13	EXISTING - RECEPT GAS T&S LOCKER	20	1	0	0			1	20	EXISTING - RECEPT GAS T&S STORAGE	14
15	**EXISTING - WATER HEATER GAS T&S**	20	1			0	0	1	20	EXISTING - RECEPT GAS T&S OFFICE	16
17	EXISTING - NO LABEL	20	1	0	0			1	20	EXISTING - RECEPT GAS T&S OFFICE BATHROOM	18
19	EXISTING - RECEPT GAS T&S HANDHELDS	20	1			0	0	1	20	EXISTING - NO LABEL	20
21	SPARE	20	1	0	0			2	60	EXISTING - WELDER	22
23	EXISTING -	20	1			0	0	--	--	--	24
25	EXISTING -	20	1	0	0			2	20	PANEL I2	26
27	EXISTING -	20	1			0	0	--	--	--	28
29	EXISTING -	100	2	0	0			1	20	SPARE	30
31	--	--	--			0	0	1	20	SPARE	32
33	RECEPTACLE - GAS T&S KAL-174	20	1	180	0			1	20	SPARE	34
35	RECEPTACLE - GAS T&S KAL-174, EWC	20	1			360	0	1	20	SPARE	36
37	RECEPTACLE - FRIDGE	20	1	360	0			1	20	SPARE	38
39	RECEPTACLE - GAS T&S-1 174-1	20	1			720	0	1	20	SPARE	40
41	RECEPTACLE - GAS T&S KAL-174, FURNITURE	20	1	500	0			1	20	SPARE	42
43	RECEPTACLE - GAS T&S KAL-174, FURNITURE	20	1			500	0	1	20	SPARE	44
45	SPARE	20	1	0	0			1	20	SPARE	46
47	SPARE	20	1			0	0	1	20	SPARE	48
49	SPARE	20	1	0	0			1	20	SPARE	50
51	SURGE PROTECTIVE DEVICE (SPD)	30	2			0	0	1	20	SPARE	52
53	--	--	--	0	0			1	20	SPARE	54
	TOTAL LOAD:			1040 VA		1580 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA					
	TOTAL AMPS:			9 A		13 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	2620 VA	100.00%	2620 VA		
				TOTAL CONNECTED LOAD:	2620 VA
				TOTAL ESTIMATED DEMAND:	2620 VA
				TOTAL CONNECTED LOAD (A):	11 A
				TOTAL ESTIMATED DEMAND...	11 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL J" LOAD SCHEDULE

PANEL: J — **MOUNTING:** SURFACE — **VOLTAGE:** 480/277V, 3PH, 4W
LOCATION: BOILER ROOM KAL-150 / Level 1 — **AMPS:** 250 A MLO — **FED FROM:**
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
METERING
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**HVAC - P1**	15	3	2106	6900					3	35	**HVAC - CH-102**	2
3	**--**	--	--			2106	6900			--	--	**--**	4
5	**--**	--	--					2106	6900	--	--	**--**	6
7	**HVAC - P2**	15	3	2106	2325					3	70	TX-J1	8
9	**--**	--	--			2106	675			--	--	--	10
11	**--**	--	--					2106	810	--	--	--	12
13	**HVAC - P4**	20	3	3048	1667					3	100	GEN PNL	14
15	**--**	--	--			3048	1667			--	--	--	16
17	**--**	--	--					3048	1667	--	--	--	18
19	**HVAC - P5**	20	3	3048	0					1	20	SPARE	20
21	**--**	--	--			3048	0			1	20	SPARE	22
23	**--**	--	--					3048	0	1	20	SPARE	24
25	SPACE	--	1	--	0					1	20	SPARE	26
27	SPACE	--	1			--	0			1	20	SPARE	28
29	SPACE	--	1					--	0	1	20	SPARE	30
31	SPACE	--	1	--	0					1	40	EXISTING FEED - PNL EM1 (RELABEL J1A)	32
33	SPACE	--	1			--	0			--	--	--	34
35	SPACE	--	1					--	0	--	--	--	36
37	SPACE	--	1	--	0					3	15	EXISTING FEED - S LOADING AREA DOOR	38
39	SPACE	--	1			--	0			--	--	--	40
41	SPACE	--	1					--	0	--	--	--	42
43	SPACE	--	1	--	0					3	30	EXISTING FEED - POLEYARD GATE	44
45	SPACE	--	1			--	0			--	--	--	46
47	SPACE	--	1					--	0	--	--	--	48
49	SURGE PROTECTIVE DEVICE (SPD)	30	3	0	0					3	200	EXISTING FEED - PNL EM (RELABEL AS J1B)	50
51	--	--	--			0	0			--	--	--	52
53	--	--	--	0	0					--	--	--	54
	TOTAL LOAD:			21201 VA		19551 VA		19686 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA		0 A					
	TOTAL AMPS:			77 A		71 A		71 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	53638 VA	100.00%	53638 VA		
POWER -	5000 VA	100.00%	5000 VA	**TOTAL CONNECTED LOAD:**	60438 VA
RECEPTACLE -	1800 VA	100.00%	1800 VA	**TOTAL ESTIMATED DEMAND:**	60438 VA
				TOTAL CONNECTED LOAD (A):	73 A
				TOTAL ESTIMATED DEMAND...	73 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL J1" LOAD SCHEDULE

PANEL: J1 — **MOUNTING:** SURFACE — **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: BOILER ROOM KAL-150 / Level 1 — **AMPS:** 125 A MB — **FED FROM:** TX-J1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - BOILER ROOM - NORTH	20	1	720	0					1	20	SPARE	2
3	RECEPTACLE - BOILER ROOM WATER SOFTENER	20	1			180	0			1	20	SPARE	4
5	RECEPTACLE - BOILER ROOM WATER SOFTENER	20	1					180	0	1	20	SPARE	6
7	RECEPTACLE - BOILER ROOM - SOUTH	20	1	540	0					1	20	SPARE	8
9	RECEPTACLE - CHILLER ROOF	20	1			180	0			1	20	SPARE	10
11	**MECH - BOILER ROOM B-1**	20	1					0	0	1	20	SPARE	12
13	**MECH - BOILER ROOM B-2**	20	1	0	0					1	20	SPARE	14
15	**MECH - BOILER ROOM B-3**	20	1			0	0			1	20	SPARE	16
17	**HVAC - P3**	15	2					315	0	1	20	SPARE	18
19	**--**	--	--	315	0					1	20	SPARE	20
21	**HVAC - P6**	--	2			315	0			1	20	SPARE	22
23	**--**	--	--					315	0	1	20	SPARE	24
25	**HVAC - FCU-141A**	20	1	750	0					1	20	SPARE	26
27						0				1	20	SPARE	28
29								0	1	1	20	SPARE	30
31				0						1	20	SPARE	32
33						0				1	20	SPARE	34
35								0	1	1	20	SPARE	36
37	SURGE PROTECTION DEVICE (SPD)	30	3	0	0					1	20	SPARE	38
39	--	--	--			0	0			1	20	SPARE	40
41	--	--	--					0	0	1	20	SPARE	42
	TOTAL LOAD:			2325 VA		675 VA		810 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA		0 A					
	TOTAL AMPS:			20 A		6 A		7 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	2010 VA	100.00%	2010 VA		
RECEPTACLE -	1800 VA	100.00%	1800 VA	**TOTAL CONNECTED LOAD:**	3810 VA
				TOTAL ESTIMATED DEMAND:	3810 VA
				TOTAL CONNECTED LOAD (A):	11 A
				TOTAL ESTIMATED DEMAND...	11 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL PP-1" LOAD SCHEDULE

PANEL: PP-1 — **MOUNTING:** SURFACE — **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: ELEC. KAL-132B / Level 1 — **AMPS:** 125 A MB — **FED FROM:** TX-PP-1
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - GAS DIST. CREW RM KAL-132	20	1	1440	1080					1	20	RECEPTACLE - GAS SERV CREW ROOM KAL-129	2
3	RECEPTACLE - GAS DIST. CREW RM KAL-132	20	1			1260	1620			1	20	RECEPTACLE - GAS SERV CREW ROOM KAL-129	4
5	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP NW	20	1					500	720	1	20	RECEPTACLE - GAS SERV FLD LDRS KAL-129A	6
7	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP NW	20	1	500	500					1	20	RECEPTACLE - GAS SERV FLD LDRS KAL-129A, PP S	8
9	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP NE	20	1			500	500			1	20	RECEPTACLE - GAS SERV FLD LDRS KAL-129A, PP N	10
11	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP NE	20	1					500	500	1	20	RECEPTACLE - GAS SERV FLD LDRS KAL-129A, PP N	12
13	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP W	20	1	500	0					1	20	SPARE	14
15	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP W	20	1			500	0			1	20	SPARE	16
17	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP E	20	1					500	500	1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP N	18
19	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP E	20	1	500	500					1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP W1	20
21	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP SW	20	1			500	500			1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP W1	22
23	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP SW	20	1					500	500	1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP W2	24
25	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP SE	20	1	500	500					1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP W2	26
27	RECEPTACLE - GAS DIST. CREW RM KAL-132, PP SE	20	1			500	500			1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP E1	28
29	SPARE	20	1					0	500	1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP E1	30
31	SPARE	20	1	0	500					1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP E2	32
33	SPARE	20	1			0	500			1	20	RECEPTACLE - GAS SERV CREW RM KAL-129, PP E2	34
35	RECEPTACLE - 16P CONFERENCE KAL-133	20	1					1260	0	1	20	SPARE	36
37	RECEPTACLE - 16P CONFERENCE KAL-133	20	1	1920	0					1	20	SPARE	38
39	SPARE	20	1			0	0			1	20	SPARE	40
41	SPARE	20	1					0	0	1	20	SPARE	42
43	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A	20	1	360	540					1	20	RECEPTACLE - CORR KAL-H1-2, KAL-S1-1	44
45	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A, PP	20	1			500	540			1	20	RECEPTACLE - CORRIDOR KAL-H1-2	46
47	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A, PP	20	1					500	360	1	20	**RECEPTACLE - COR KAL-H1-2, ELEC WATER...**	48
49	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A, PP	20	1	500	0					1	20	SPARE	50
51	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A, PP	20	1			500	0			1	20	SPARE	52
53	RECEPTACLE - GAS DIST FIELD LDRS KAL-132A, PP	20	1					500	0	1	20	SPARE	54
55	SURGE PROTECTIVE DEVICE (SPD)	30	3	0									56
57	--	--	--			0							58
59	--	--	--					0					60
	TOTAL LOAD:			9840 VA		8420 VA		7340 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA		0 A					
	TOTAL AMPS:			83 A		72 A		61 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	24880 VA	70.10%	17440 VA		
TECHNOLOGY -	720 VA	100.00%	720 VA		
				TOTAL CONNECTED LOAD:	25600 VA
				TOTAL ESTIMATED DEMAND:	18160 VA
				TOTAL CONNECTED LOAD (A):	71 A
				TOTAL ESTIMATED DEMAND...	50 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL PP-2" LOAD SCHEDULE

PANEL: PP-2 — **MOUNTING:** SURFACE — **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: ELEC. KAL-140B / Level 1 — **AMPS:** 125 A MB — **FED FROM:** TX-PP-2
ADDED ACCESSORIES: SPD — **FEED-THRU LUGS...** — **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - CREW ROOM KAL-140	20	1	900	720					1	20	FIELD LEADERS KAL-140A	2
3	RECEPTACLE - CREW ROOM KAL-140	20	1			1260	720			1	20	FIELD LEADERS KAL-140A	4
5	RECEPTACLE - CREW ROOM KAL-140	20	1					900	500	1	20	RECEPTACLE - FIELD LEADERS KAL-140A PWR POLE	6
7	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1	500	500					1	20	RECEPTACLE - FIELD LEADERS KAL-140A PWR POLE	8
9	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1			500	900			1	20	RECEPTACLE - WELLNESS KAL-139, S, BOOT STOR	10
11	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1					500	1260	1	20	RECEPTACLE - WELLNESS KAL-139, W	12
13	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1	500	540					1	20	RECEPTACLE - WELLNESS KAL-139, N	14
15	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1			500	900			1	20	RECEPTACLE - WELLNESS KAL-139, E	16
17	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1					500	720	1	20	RECEPTACLE - WELLNESS KAL-139, S, COLUMN	18
19	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1	500	600					1	20	RECEPTACLE - WELLNESS KAL-139, S FB1	20
21	RECEPTACLE - CREW ROOM KAL-140, PWR POLE	20	1			500	600			1	20	RECEPTACLE - WELLNESS KAL-139, S FB2	22
23	SPARE	20	1					0	600	1	20	RECEPTACLE - WELLNESS KAL-139, S FB3	24
25	SPARE	20	1	0	600					1	20	RECEPTACLE - WELLNESS KAL-139, N FB1	26
27	SPARE	20	1			0	600			1	20	RECEPTACLE - WELLNESS KAL-139, N FB2	28
29	SPARE	20	1					0	1080	1	20	RECEPTACLE - TRAINER RM KAL-139B	30
31	POWER - WOMENS RESTROOM KAL-134	20	1	1500	0					1	20	SPARE	32
33	POWER - WOMENS RESTROOM KAL-134	20	1			1500	1260			1	20	RECEPTACLE - FUTURE KAL-136, SE	34
35	RECEPTACLE - WOMENS RESTROOM KAL-134	20	1					1260	1080	1	20	RECEPTACLE - FUTURE KAL-136, W	36
37	POWER - WOMENS RESTROOM KAL-134, FLUSH...	20	1	500	1080					1	20	RECEPTACLE - FUTURE KAL-136, NW	38
39	SPARE	20	1			0	1080			1	20	RECEPTACLE - FUTURE KAL-136, NE	40
41	SPARE	20	1					0	0	1	20	SPARE	42
43	RECEPTACLE - COR KAL-H1-3, KAL-S1-2	20	1	540	900					1	20	**RECEPTACLE - ELEV PIT, ELEV EQUIP ROOM**	44
45	POWER - FIRE ALARM PANEL FAA	20	1			500	500			1	20	**POWER - ELEV. LIGHTS**	46
47	SPARE	20	1					0	500	1	20	**POWER - ELEV. CONTROLS**	48
49	**HVAC - CH-4**	20	1	180	500					1	20	**POWER - ELEV. SP-1 CONTROLLER**	50
51	**HVAC - TERMINAL UNITS**	20	1			0	600			2	20	**HVAC - ELEVATOR SUMP PUMP**	52
53	**HVAC - TERMINAL UNITS**	20	1					0	600	--	--	**--**	54
55	SURGE PROTECTIVE DEVICE (SPD)	30	3	0									56
57	--	--	--			0							58
59	--	--	--					0					60
	TOTAL LOAD:			10560 VA		11920 VA		9500 VA					
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA		0 VA		0 A					
	TOTAL AMPS:			89 A		101 A		79 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	1200 VA	100.00%	1200 VA		
POWER -	5500 VA	100.00%	5500 VA	**TOTAL CONNECTED LOAD:**	31980 VA
RECEPTACLE -	23120 VA	71.63%	16560 VA	**TOTAL ESTIMATED DEMAND:**	25420 VA
TECHNOLOGY -	2160 VA	100.00%	2160 VA	**TOTAL CONNECTED LOAD (A):**	89 A
				TOTAL ESTIMATED DEMAND...	71 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

BREAKERS WITH BOLD AND UNDERLINE SHALL BE CONNECTED TO OWNER'S EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL BREAKERS IN EXISTING PANELS TO MONITOR. PROVIDE CURRENT TRANSFORMERS (CTS) IN EACH PANEL AS REQUIRED TO MONITOR EACH INDIVIDUAL BREAKER ALONG WITH ALL NECESSARY HEAD END EQUIPMENT, CABLING, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE INSTALLATION. CONNECT SYSTEM TO BUILDING GAS AND WATER SERVICES ALONG WITH SUB-METERING CALLED OUT ON MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS. CAT6 CABLING IS BY OWNER. CONDUIT PATHWAYS AND ALL REQUIRED 120V POWER TO CONTROLLERS SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO SCHNEIDER ELECTRIC SHOP DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

PANELBOARD "PANEL PP-3" LOAD SCHEDULE

PANEL: PP-3 | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: STOR. KAL-114A / Level 1 | **AMPS:** 225 A MB | **FED FROM:** TX-PP-3
ADDED ACCESSORIES: SPD | **FEED-THRU LUGS...** | **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - BREAK KAL-122, MICROWAVE 1	20	1	180	900		1	20	RECEPTACLE - 8P CONFERENCE KAL-126	2
3	RECEPTACLE - BREAK KAL-122, MICROWAVE 2	20	1		180	960	1	20	RECEPTACLE - 8P CONFERENCE KAL-126	4
5	RECEPTACLE - BREAK KAL-122, COUNTER 1	20	1			180 900	1	20	RECEPTACLE - 6P CONF KAL-124	6
7	RECEPTACLE - BREAK KAL-122, DISPOSAL	20	1	180	960		1	20	RECEPTACLE - 6P CONF KAL-124	8
9	RECEPTACLE - BREAK KAL-122, COUNTER 2	20	1		360	540	1	20	RECEPTACLE - J.C. KAL-127	10
11	RECEPTACLE - FRIDGE	20	1			360 0	1	20	SPARE	12
13	RECEPTACLE - BREAK KAL-122, SODA	20	1	360	0		1	20	SPARE	14
15	RECEPTACLE - BREAK KAL-122, VENDING	20	1		360	540	1	20	RECEPTACLE - CORRIDOR KAL-H1-2	16
17	SPARE	20	1			0 1980	1	20	RECEPTACLE - AUDITORIUM KAL-114, N, AV	18
19	SPARE	20	1	0	1080		1	20	RECEPTACLE - AUDITORIUM KAL-114, COLUMNS	20
21	RECEPTACLE - PHONE RMs KAL-125, KAL-117	20	1		1080	900	1	20	RECEPTACLE - AUDITORIUM KAL-114, W	22
23	RECEPTACLE - PHONE RMs KAL-119, KAL-118	20	1			720 1080	1	20	RECEPTACLE - AUDITORIUM KAL-114, E	24
25	SPARE	20	1	0	720		1	20	RECEPTACLE - AUDITORIUM KAL-114, SE	26
27	RECEPTACLE - MEN'S LOCKERS KALL-130M, 130B	20	1		1080	540	1	20	RECEPTACLE - STOR. KAL-114A	28
29	RECEPTACLE - MENS LOCKERS KAL-130	20	1			720 1000	1	20	POWER - VEST KAL-001 DOOR OPERATORS	30
31	RECEPTACLE - UNISEX SHW KAL-128, FLUSH VALVE	20	1	460	1000		1	20	POWER - VEST KAL-002 DOOR OPERATORS	32
33	RECEPTACLE - BOOT STORAGE KAL-121	20	1		900	0	1	20	**HVAC - CH-107, CH-S2, CH-101**	34
35	SPARE	20	1			0 360	1	20	**RECEPTACLE - LOBBY KAL-H1-1, EWC**	36
37	SPARE	20	1	0	6360		3	80	**UPS**	38
39	RECEPTACLE - MENS RESTROOM KAL-131, GEN	20	1		720	3360	--	--	--	40
41	RECEPTACLE - MENS RESTROOM KAL-131, N SINKS	20	1			720 6360	--	--	--	42
43	RECEPTACLE - MENS RESTROOM KAL-131, S SINKS	20	1	720	0		1	20	SPARE	44
45	POWER - MENS RESTROOM KAL-131, FLUSH...	20	1		600	0	1	20	SPARE	46
47	POWER - MENS RESTROOM KAL-131, FLUSH...	20	1			600 0	1	20	SPARE	48
49	POWER - MENS RESTROOM KAL-131, FLUSH...	20	1	1100	900		3	80	PP-3A	50
51	POWER - MENS RESTROOM KAL-131, HAND DRYER	20	1		1500	720	--	--	--	52
53	POWER - MENS RESTROOM KAL-131, HAND DRYER	20	1			1500 540	--	--	--	54
55	SURGRE PROTECTIVE DEVICE (SPD)	20	1	0						56
57										58
59										60
	TOTAL LOAD:			14920 VA	14340 VA	17020 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			125 A	120 A	143 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA	**TOTAL CONNECTED LOAD:**	46280 VA
POWER -	7400 VA	100.00%	7400 VA	**TOTAL ESTIMATED DEMAND:**	31840 VA
RECEPTACLE -	38880 VA	62.86%	24440 VA	**TOTAL CONNECTED LOAD (A):**	128 A
				TOTAL ESTIMATED DEMAND...	88 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " PP-3A" LOAD SCHEDULE

PANEL: PP-3A | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: MDF KAL-120 / Level 1 | **AMPS:** 225 A MLO | **FED FROM:** PP-3
ADDED ACCESSORIES: SPD | **FEED-THRU LUGS...** | **A.I.C. VALUE:** 10 KAIC
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - MDF KAL-120, WEST WALL	20	1	180	0		1	20	SPARE	2
3	RECEPTACLE - MDF KAL-120, WEST WALL	20	1		180	0	1	20	SPARE	4
5	RECEPTACLE - MDF KAL-120, WEST WALL	20	1			180 0	1	20	SPARE	6
7	RECEPTACLE - MDF KAL-120, SOUTH WALL	20	1	360	0		1	20	SPARE	8
9	RECEPTACLE - MDF KAL-120, SOUTH WALL	20	1		360	0	1	20	SPARE	10
11	RECEPTACLE - MDF KAL-120, EAST WALL	20	1			360 0	1	20	SPARE	12
13	RECEPTACLE - MDF KAL-120, NORTH WALL	20	1	360	0		1	20	SPARE	14
15	RECEPTACLE - MDF KAL-120, NORTH WALL	20	1		180	0	1	20	SPARE	16
17						0	1	20	SPARE	18
19				0			1	20	SPARE	20
21					0		1	20	SPARE	22
23						0	1	20	SPARE	24
25				0			1	20	SPARE	26
27					0		1	20	STOR. KAL-114A	28
29						0	1	20	SPARE	30
31				0			1	20	SPARE	32
33					0		1	20	SPARE	34
35						0	1	20	SPARE	36
37				0			1	20	SPARE	38
39					0		1	20	SPARE	40
41						0	1	20	SPARE	42
43				0			1	20	SPARE	44
45					0		1	20	SPARE	46
47	HVAC - MDF KAL-120, MINISPLIT CONDENSTATE...	20	1			0 0	1	20	SPARE	48
49	SURGE PROTECTIVE DEVICE (SPD)	30	3	0	0		1	20	SPARE	50
51	--	--	--		0	0	1	20	SPARE	52
53	--	--	--			0 0	1	20	SPARE	54
	TOTAL LOAD:			900 VA	720 VA	540 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			8 A	6 A	5 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	0 VA	0.00%	0 VA		
RECEPTACLE -	2160 VA	100.00%	2160 VA	**TOTAL CONNECTED LOAD:**	2160 VA
				TOTAL ESTIMATED DEMAND:	2160 VA
				TOTAL CONNECTED LOAD (A):	6 A
				TOTAL ESTIMATED DEMAND...	6 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL PP-4" LOAD SCHEDULE

PANEL: PP-4 | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: ELEC. KAL-115A / Level 1 | **AMPS:** 125 A MB | **FED FROM:** TX-PP-4
ADDED ACCESSORIES: SPD | **FEED-THRU LUGS...** | **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - LVD FIELD LDRs KAL-116, SE	20	1	720	720		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, W ENTRY	2
3	RECEPTACLE - LVD FIELD LDRs KAL-116, SW	20	1		540	1440	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, W	4
5	RECEPTACLE - LVD FIELD LDRs KAL-116, S PP	20	1			500 540	1	20	RECEPTACLE - LVD CREW ROOM KAL-115,...	6
7	RECEPTACLE - LVD FIELD LDRs KAL-116, S PP	20	1	500	720		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, E	8
9	RECEPTACLE - LVD FIELD LDRs KAL-116, S PP	20	1		1500	1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, NW PP	10
11	RECEPTACLE - LVD FIELD LDRs KAL-116, N PP	20	1			500 1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, NW PP	12
13	RECEPTACLE - LVD FIELD LDRs KAL-116, N PP	20	1	500	1500		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, NE PP	14
15	RECEPTACLE - LVD FIELD LDRs KAL-116, N PP	20	1		1500	1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, NE PP	16
17	SPARE	20	1			0 1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C1 PP	18
19	SPARE	20	1	0	500		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C1 PP	20
21	SPARE	20	1		0	1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C2 PP	22
23	SPARE	20	1			0 500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C2 PP	24
25	SPARE	20	1	0	1500		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C3 PP	26
27	SPARE	20	1		0	500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C3 PP	28
29	SPARE	20	1			0 1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C4 PP	30
31	SPARE	20	1	0	500		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C4 PP	32
33	SPARE	20	1		0	1500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C5 PP	34
35	RECEPTACLE - LOBBY KAL-H1-1 AV	20	1			360 500	1	20	RECEPTACLE - LVD CREW ROOM KAL-115, C5 PP	36
37	RECEPTACLE - BUSINESS CNTR KAL-113	20	1	720	500		1	20	RECEPTACLE - LVD CREW ROOM KAL-115, W PP	38
39	RECEPTACLE - BUSINESS CNTR KAL-113, COPIER	20	1		180	0	1	20	SPARE	40
41	RECEPTACLE - BUSINESS CNTR KAL-113, PLOTTER	20	1			180 0	1	20	SPARE	42
43	RECEPTACLE - NMR KAL-111	20	1	180	0		1	20	SPARE	44
45	RECEPTACLE - NMR KAL-111	20	1		900	0	1	20	SPARE	46
47	RECEPTACLE - UNISEX KAL-112	20	1			460 0	1	20	SPARE	48
49	SPARE	20	1	0	0		1	20	SPARE	50
51	SPARE	20	1		0	0	1	20	**HVAC - TERMINAL UNITS**	52
53	SPARE	20	1			0 0	1	20	**HVAC - TERMINAL UNITS**	54
55	SURGRE PROTECTIVE DEVICE (SPD)	30	3	0						56
57	--	--	--		0					58
59	--	--	--			0				60
	TOTAL LOAD:			8560 VA	12560 VA	8040 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			72 A	105 A	67 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
POWER -	100 VA	100.00%	100 VA		
RECEPTACLE -	28340 VA	67.64%	19170 VA	**TOTAL CONNECTED LOAD:**	29160 VA
TECHNOLOGY -	720 VA	100.00%	720 VA	**TOTAL ESTIMATED DEMAND:**	19990 VA
				TOTAL CONNECTED LOAD (A):	81 A
				TOTAL ESTIMATED DEMAND...	55 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD "PANEL PP-5" LOAD SCHEDULE

PANEL: PP-5 | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: MECHANICAL KAL-207 / SECOND... | **AMPS:** 125 A MB | **FED FROM:** TX-PP-5
ADDED ACCESSORIES: SPD | **FEED-THRU LUGS...** | **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**HVAC - ERU-1 LTS / RECEPTS**	20	1	500	0		1	20	**HVAC - UH-1**	2
3	**HVAC - AHU-1 LTS / RECEPTS**	20	1		500	200	1	20	**HVAC - UH-2**	4
5	**HVAC - AHU-2 LTS / RECEPTS**	20	1			500 200	1	20	**HVAC - UH-3**	6
7	**HVAC - EF-1**	20	1	250	250		1	20	**HVAC - EF-3**	8
9	**HVAC - EF-2**	20	1		250	0	1	20	**HVAC - EF-13**	10
11	**HVAC - EF-4**	20	1			250 0	1	20	**HVAC - TERMINAL UNITS**	12
13	**HVAC - EF-4**	20	1	250	0		1	20	**HVAC - TERMINAL UNITS**	14
15	**RECEPTACLE - MECHANICAL KAL-207 - SOUTH**	20	1		1080	200	1	20	**HVAC - CP-1**	16
17	**RECEPTACLE - MECHANICAL KAL-207 - NORTH**	20	1			900 0	1	20	SPARE	18
19	**RECEPTACLE - MECHANICAL KAL-207 - WH-1A**	20	1	180	0		1	20	SPARE	20
21	**RECEPTACLE - MECHANICAL KAL-207 - WH-1B**	20	1		180	0	1	20	SPARE	22
23	**HVAC - ACCU-01**	40	2			1872 0	1	20	SPARE	24
25	--	--	--	1872	0		1	20	SPARE	26
27	RECEPTACLE - 20 PPL CONFERENCE KAL-203C	20	1		1080	0	1	20	SPARE	28
29	RECEPTACLE - 20 PPL CONFERENCE KAL-203C	20	1			1320 0	1	20	SPARE	30
31	RECEPTACLE - 20 PPL CONFERENCE KAL-203C	20	1	1380	0		1	20	SPARE	32
33	RECEPTACLE - 10P CONFERENCE KAL-214	20	1		1500	180	1	20	RECEPTACLE - BUSINESS CENTER KAL-208...	34
35	RECEPTACLE - Room KAL-203, KAL-211	20	1			900 900	1	20	RECEPTACLE - WOMEN KAL-212	36
37	RECEPTACLE - ACCU-01 ROOF	20	1	360	720		1	20	RECEPTACLE - WOMEN KAL-212	38
39	RECEPTACLE - 8 PPL CONFERENCE KAL-203B	20	1		900	1200	1	20	POWER - WOMEN KAL-212, HAND DRYER	40
41	RECEPTACLE - BUSINESS CENTER KAL-208 COPIER	20	1			180 1200	1	20	POWER - WOMEN KAL-212, HAND DRYER	42
43	POWER - MEN KAL-209 HAND DRYER	20	1	1200	700		1	20	POWER - WOMEN KAL-212, FLUSH VALVES	44
45	POWER - MEN KAL-209 HAND DRYER	20	1		1200	600	1	20	POWER - WOMEN KAL-212, FLUSH VALVES	46
47	RECEPTACLE - MEN KAL-209	20	1			720 540	1	20	RECEPTACLE - J.C. KAL-210	48
49	POWER - MEN KAL-209, FLUSH VALVES	20	1	500	0		1	20	SPARE	50
51	SPARE	20	1		0	0	1	20	SPARE	52
53	SPARE	20	1			0 0	1	20	SPARE	54
55	SURGE PROTECTIVE DEVICE (SPD)	30	3	0						56
57	--	--	--		0					58
59	--	--	--			0				60
	TOTAL LOAD:			8162 VA	9070 VA	9482 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			68 A	77 A	80 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	7094 VA	100.00%	7094 VA		
POWER -	6600 VA	100.00%	6600 VA	**TOTAL CONNECTED LOAD:**	26714 VA
RECEPTACLE -	13020 VA	88.40%	11510 VA	**TOTAL ESTIMATED DEMAND:**	25204 VA
				TOTAL CONNECTED LOAD (A):	74 A
				TOTAL ESTIMATED DEMAND...	70 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " PP-6" LOAD SCHEDULE

PANEL: PP-6 | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: ELEC. KAL-219A / SECOND FLOOR... | **AMPS:** 125 A MB | **FED FROM:** TX-PP-6
ADDED ACCESSORIES: | **FEED-THRU LUGS...** | **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - EE KAL-219, FURNITURE SW1	20	1	500	1080		1	20	RECEPTACLE - EE KAL-219, SW	2
3	RECEPTACLE - EE KAL-219, FURNITURE SW2	20	1			500 900	1	20	RECEPTACLE - EE KAL-219, SE	4
5	RECEPTACLE - IT OFFICES KAL-218	20	1			720 720	1	20	RECEPTACLE - EE KAL-219, E	6
7	RECEPTACLE - GAS ENGINEERING KAL-216	20	1	540	540		1	20	RECEPTACLE - EE KAL-219, NW	8
9	RECEPTACLE - EE KAL-219, FURNITURE S1 (SOUTH)	20	1			500 900	1	20	RECEPTACLE - EE KAL-219, COLUMNS	10
11	RECEPTACLE - EE KAL-219, FURNITURE S2	20	1			500 900	1	20	RECEPTACLE - GAS ENGINEERING KAL-216	12
13	RECEPTACLE - EE KAL-219, FURNITURE S3	20	1	500	180		1	20	RECEPTACLE - GAS ENGINEERING KAL-216	14
15	RECEPTACLE - EE KAL-219, FURNITURE S4	20	1			500 720	1	20	RECEPTACLE - FUTURE KAL-217	16
17	RECEPTACLE - EE KAL-219, FURNITURE S5	20	1			500 720	1	20	RECEPTACLE - FUTURE KAL-217	18
19	RECEPTACLE - EE KAL-219, FURNITURE S6	20	1	500	540		1	20	RECEPTACLE - NMR KAL-213, GENERAL	20
21	RECEPTACLE - EE KAL-219, FURNITURE S7	20	1			500 540	1	20	RECEPTACLE - NMR KAL-213, DISPOSAL, COUNTER	22
23	RECEPTACLE - EE KAL-219, FURNITURE S8	20	1			500 180	1	20	RECEPTACLE - NMR KAL-213, FRIDGE	24
25	RECEPTACLE - EE KAL-219, FURNITURE E1 (EAST)	20	1	500	540		1	20	RECEPTACLE - J.C. KAL-215	26
27	RECEPTACLE - EE KAL-219, FURNITURE E2	20	1			500 1440	1	20	RECEPTACLE - FOCUS ROOM KAL-223	28
29	RECEPTACLE - EE KAL-219, FURNITURE E3	20	1			500 1320	1	20	RECEPTACLE - 8P CONFERENCE KAL-221	30
31	RECEPTACLE - EE KAL-219, FURNITURE E4	20	1	500	900		1	20	RECEPTACLE - 8P CONFERENCE KAL-221	32
33	RECEPTACLE - EE KAL-219, FURNITURE N1 (NORTH)	20	1			500 1440	1	20	RECEPTACLE - 14P CONFERENCE KAL-224	34
35	RECEPTACLE - EE KAL-219, FURNITURE N2	20	1			500 1320	1	20	RECEPTACLE - 16P CONFERENCE KAL-220	36
37	RECEPTACLE - EE KAL-219, FURNITURE N3	20	1	500	1260		1	20	RECEPTACLE - 16P CONFERENCE KAL-220	38
39	RECEPTACLE - EE KAL-219, FURNITURE N4	20	1			500 1320	1	20	RECEPTACLE - 14P CONFERENCE KAL-224	40
41	SPARE	20	1			0 900	1	20	RECEPTACLE - IT OFFICES KAL-218	42
43	SPARE	20	1	0	900		1	20	RECEPTACLE - S3-2, KAL-H2-4, KAL-H2-5	44
45	SPARE	20	1			0 720	1	20	RECEPTACLE - Room KAL-H2-4, KAL-H2-3	46
47	SPARE	20	1			0 0	1	20	SPARE	48
49	SPARE	20	1	0	0		1	20	SPARE	50
51	SPARE	20	1			0 0	1	20	SPARE	52
53	SPARE	20	1			0 0	1	20	SPARE	54
55	SURGE PROTECTIVE DEVICE (SPD)	30	3	0						56
57	--	--	--		0					58
59	--	--	--			0				60
	TOTAL LOAD:			9480 VA	11480 VA	9280 VA				
	ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):			0 VA	0 VA	0 A				
	TOTAL AMPS:			79 A	96 A	77 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE -	30240 VA	66.53%	20120 VA		
				TOTAL CONNECTED LOAD:	30240 VA
				TOTAL ESTIMATED DEMAND:	20120 VA
				TOTAL CONNECTED LOAD (A):	84 A
				TOTAL ESTIMATED DEMAND...	56 A

NOTES:
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

PANELBOARD " UPS" LOAD SCHEDULE

PANEL: UPS | **MOUNTING:** SURFACE | **VOLTAGE:** 208/120V, 3PH, 4W
LOCATION: MDF KAL-120 / Level 1 | **AMPS:** 225 A MLO | **FED FROM:** PP-3
ADDED ACCESSORIES: SPD | **FEED-THRU LUGS...** | **A.I.C. VALUE:**
(PROVIDE 25% HIGHER A.I.C. RATING)

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - MDF KAL-120, PHONE	20	1	180	600		1	20	RECEPTACLE - MDF KAL-120, DWDM, L5-20R	2
3	RECEPTACLE - MDF KAL-120, EPIK?	20	1		180	600	1	20	RECEPTACLE - MDF KAL-120, DWDM, L5-20R	4
5	SPARE	20	1			0 1200	1	30	RECEPTACLE - MDF KAL-120, DWDM, L6-30R	6
7	SPARE	20	1	0	1200		1	30	RECEPTACLE - MDF KAL-120, DWDM, L6-30R	8
9	RECEPTACLE - MDF KAL-120, N WALL, L6-30R, 7'-2"	30	1			1200 0	1	20	SPARE	10
11	RECEPTACLE - MDF KAL-120, N WALL, L6-30R, 7'-2"	30	1			1200 600	1	20	RECEPTACLE - MDF KAL-120, 4 POST, L5-20R	12
13	RECEPTACLE - MDF KAL-120, N WALL, L6-30R,...	30	1	1200	600		1	20	RECEPTACLE - MDF KAL-120, 4 POST, L5-20R	14
15	RECEPTACLE - MDF KAL-120, N WALL, L6-30R,...	30	1			1200 0	1	20	SPARE	16
17	RECEPTACLE - MDF KAL-120, N WALL, L5 20R, 6'3	20	1			600 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 1, L5-20R	18
19	SPARE	20	1	0	600		1	20	RECEPTACLE - MDF KAL-120, 2 POST 1, L5-20R	20
21	SPARE	20	1			0 0	1	20	SPARE	22
23	SPARE	20	1			0 600	1	20	RECEPTACLE - MDF KAL-120, 2 POST 2, L5-20R	24
25	SPARE	20	1	0	600		1	20	RECEPTACLE - MDF KAL-120, 2 POST 2, L5-20R	26
27	SPARE	20	1			0 0	1	20	SPARE	28
29	SPARE	20	1			0 600	1

BREAKERS WITH BOLD AND UNDERLINE SHALL BE CONNECTED TO OWNER'S EXISTING SCHNEIDER ELECTRIC ECOSTRUCTURE POWER MONITORING EXPERT SOFTWARE. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR ADDITIONAL BREAKERS IN EXISTING PANELS TO MONITOR. PROVIDE CURRENT TRANSFORMERS (CTS) IN EACH PANEL AS REQUIRED TO MONITOR EACH INDIVIDUAL BREAKER ALONG WITH ALL NECESSARY HEAD END EQUIPMENT, CABLING, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE INSTALLATION. CONNECT SYSTEM TO BUILDING GAS AND WATER SERVICES ALONG WITH SUB-METERING CALLED OUT ON MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS. CATE CABLING IS BY OWNER. CONDUIT PATHWAYS AND ALL REQUIRED 120V POWER TO CONTROLLERS SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO SCHNEIDER ELECTRIC SHOP DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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EXISTING PANELBOARD " DP2A" LOAD SCHEDULE

EXISTING PANEL: DP2A
LOCATION: MECHANICAL KAL-207 / SECOND...
MOUNTING: SURFACE
AMPS: 600 A MLO
VOLTAGE: 480/277V, 3PH, 4W
FED FROM: MDP
A.I.C. VALUE: 18 KAIC

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A		B		C		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	TX-PP-5	70	3	8162	6522					3	125	LP1	2
3	--	--	--			9070	0			--	--	--	4
5	--	--	--					9482	0	--	--	--	6
7	**HVAC - ERU-1**	60	3	6873	2300					3	150	TX-RP1 & RP2	8
9	--	--	--			6873	1400			--	--	--	10
11	--	--	--					6873	1080	--	--	--	12
13	**HVAC - AHU-1 RF**	40	3	6156	0					3	60	SPARE	14
15	--	--	--			6156	0			--	--	--	16
17	--	--	--					6156	0	--	--	--	18
19	**HVAC - AHU-1 SF**	40	3	6156	0					3	30	EXISTING NO LABEL?	20
21	--	--	--			6156	0			--	--	--	22
23	--	--	--					6156	0	--	--	--	24
25	**HVAC - AHU-2 SF**	30	3	6156	0					3	20	SPARE	26
27	--	--	--			6156	0			--	--	--	28
29	--	--	--					6156	0	--	--	--	30
31	**HVAC - AHU-2 RF**	30	3	6156	4181					3	15	EPL-01	32
33	--	--	--			6156	2109			--	--	--	34
35	--	--	--					6156	0	--	--	--	36
37	SPACE	--	3	--	0					3	20	SPARE	38
39	--	--	--			--	0			--	--	--	40
41	--	--	--					--	0	--	--	--	42
43	SPACE	--	3	--	9480					3	70	TX-PP-6	44
45	--	--	--			--	11480			--	--	--	46
47	--	--	--					--	9280	--	--	--	48
		TOTAL LOAD:		62140 VA		55554 VA		51337 VA					
		TOTAL AMPS:		227 A		203 A		185 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	101580 VA	100.00%	101580 VA		
LIGHTING -	6522 VA	100.00%	6522 VA	**TOTAL CONNECTED LOAD:**	169032 VA
POWER -	7600 VA	100.00%	7600 VA	**TOTAL ESTIMATED DEMAND:**	150512 VA
RECEPTACLE -	47040 VA	60.63%	28520 VA	**TOTAL CONNECTED LOAD (A):**	203 A
EM LIGHTING -	6290 VA	100.00%	6290 VA	**TOTAL ESTIMATED DEMAND...**	181 A

NOTES:

EXISTING PANELBOARD "EXIST K1" LOAD SCHEDULE

EXISTING PANEL: K1
LOCATION: SUB METRO SHOP KAL-143 / Level 1
MOUNTING: SURFACE
AMPS: 225 A MB
VOLTAGE: 120/240, 1PH, 3W
FED FROM: KAL-TX-K1
A.I.C. VALUE: 10 KAIC

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	EXISTING - PLUGS	20	1	0	0			2	20	EXISTING - 240V PLUG NORTH WEST	2
3	EXISTING - PLUGS	20	1			0	0	--	--	--	4
5	EXISTING -	20	1	0	0			2	20	EXISTING - 240V PLUG SOUTH EAST	6
7	**EXISTING - TUBE HEATERS - EAST**	20	1			0	0	--	--	--	8
9	**EXISTING - TUBE HEATERS - WEST**	20	1	0	0			1	20	EXISTING - OUTLET AT ROOF UNIT	10
11	**EXISTING - TUBE HEATERS - NORTH**	20	1			0	0	1	20	EXISTING - SAW PLUG, NORTH WALL	12
13	EXISTING - DOCK LEVELER	20	1	0	0			1	20	**EXISTING - UNIT HEATERS**	14
15	EXISTING -OVERHEAD DOOR OPERATOR	20	1			0	0	1	20	**EXISTING - UNIT HEATERS**	16
17	EXISTING - CEILING FANS	20	1	0	0			1	20	SPARE	18
19	**HVAC - WH-2**	20	2			1250	0	1	20	SPARE	20
21	--	--	--	1250							22
23											24
25											26
27											28
29											30
31											32
33											34
35											36
37											38
39											40
41											42
	TOTAL LOAD:			1250 VA		1250 VA					
	TOTAL AMPS:			10 A		10 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC -	2500 VA	100.00%	2500 VA		
				TOTAL CONNECTED LOAD:	2500 VA
				TOTAL ESTIMATED DEMAND:	2500 VA
				TOTAL CONNECTED LOAD (A):	10 A
				TOTAL ESTIMATED DEMAND...	10 A

NOTES: PROVIDE NEW BREAKERS AND NEW SUB-METERING IN EXISTING PANELBOARD

EXISTING PANELBOARD " LP1" LOAD SCHEDULE

EXISTING PANEL: LP1
LOCATION: MECHANICAL KAL-207 / SECOND...
MOUNTING: SURFACE
AMPS: 125 A MLO
VOLTAGE: 480/277V, 3PH, 4W
FED FROM: DP2A
A.I.C. VALUE: 10 KAIC

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	**LIGHTING -**	20	1	6522	0					1	20	SPARE	2
3	**LIGHTING -**	20	1			0	0			1	20	SPARE	4
5	**LIGHTING -**	20	1					0	0	1	20	SPARE	6
7	**LIGHTING -**	20	1	0	0					1	20	SPARE	8
9	SPARE	20	1			0	0			1	20	SPARE	10
11	SPARE	20	1					0	0	1	20	SPARE	12
13	SPARE	20	1	0	0					1	20	SPARE	14
15	SPARE	20	1			0	0			1	20	SPARE	16
17	SPARE	20	1					0	0	1	20	SPARE	18
19	SPARE	20	1	0	0					1	20	SPARE	20
21	SPARE	20	1			0	0			1	20	SPARE	22
23	SPARE	20	1					0	0	1	20	SPARE	24
25	SPARE	20	1	0	0					1	20	SPARE	26
27	SPARE	20	1			0	0			1	20	SPARE	28
29	SPARE	20	1					0	0	1	20	SPARE	30
		TOTAL LOAD:		6522 VA		0 VA		0 VA					
		TOTAL AMPS:		24 A		0 A		0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
LIGHTING -	6522 VA	100.00%	6522 VA		
				TOTAL CONNECTED LOAD:	6522 VA
				TOTAL ESTIMATED DEMAND:	6522 VA
				TOTAL CONNECTED LOAD (A):	8 A
				TOTAL ESTIMATED DEMAND...	8 A

NOTES:

EXISTING PANELBOARD " RP1" LOAD SCHEDULE

EXISTING PANEL: RP1
LOCATION: MECHANICAL KAL-207 / SECOND...
MOUNTING: SURFACE
AMPS: 225 A MB
VOLTAGE: 208/120V, 3PH, 4W
FED FROM: TX-RP1
A.I.C. VALUE: 10 KAIC

	CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)		B (VA)		C (VA)		POLES	TRIP (A)	CIRCUIT DESCRIPTION	
1	RECEPTACLE - STORAGE / FUTURE OFFICE KAL-204	20	1	720	500					1	20	POWER - MECH KAL-207 - LIGHTING CONTORL PNL	2
3	RECEPTACLE - STORAGE / FUTURE OFFICE KAL-204	20	1			720	500			1	20	POWER - MECH KAL-207 - FA NAC PANEL	4
5	RECEPTACLE - STORAGE / FUTURE OFFICE KAL-204	20	1					900	0	1	20	SPARE	6
7	RECEPTACLE - STORAGE / FUTURE OFFICE KAL-204	20	1	900	0					1	20	SPARE	8
9	SPARE	20	1			0	0			1	20	SPARE	10
11	SPARE	20	1					0	0	1	20	EXISTING - RECEPTACLE - PRINTER	12
13	SPARE	20	1	0	0					1	20	EXISTING - RECEPTACLE - PRINTER	14
15	SPARE	20	1			0	0			1	20	SPARE	16
17	SPARE	20	1					0	0	1	20	SPARE	18
19	SPARE	20	1	0	0					1	20	SPARE	20
21	SPARE	20	1			0	0			1	20	EXISTING - RECEPTACLE - BUSINESS CENTER 1ST...	22
23	SPARE	20	1					0	0	1	20	EXISTING - RECEPTACLE - BUSINESS CENTER 1ST...	24
25	SPARE	20	1	0	0					1	20	EXISTING - RECEPTACLE - BUSINESS CENTER 1ST...	26
27	SPARE	20	1			0	0			1	20	EXISTING - RECEPTACLE - BUSINESS CENTER 1ST...	28
29	SPARE	20	1					0	0	1	20	EXISTING - RECEPTACLE - BUSINESS CENTER 1ST...	30
31	SPARE	20	1	0	0					1	20	EXISTING - RECEPTACLE - 240	32
33	SPARE	20	1			0	0			1	20	EXISTING - POWER POLE - 240A	34
35	SPARE	20	1					0	0	1	20	EXISTING - RECEPTACLE - 240A	36
37	RECEPTACLE - IT KAL-206	20	1	180	0					1	20	EXISTING - POWER POLE - 240A	38
39	RECEPTACLE - IT KAL-206	20	1			180	0			1	20	EXISTING - RECEPTACLE - 240	40
41	RECEPTACLE - IT KAL-206	20	1					180					42
		TOTAL LOAD:		2300 VA		1400 VA		1080 VA					
		TOTAL AMPS:		20 A		12 A		9 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
POWER -	1000 VA	100.00%	1000 VA		
RECEPTACLE -	3780 VA	100.00%	3780 VA	**TOTAL CONNECTED LOAD:**	4780 VA
				TOTAL ESTIMATED DEMAND:	4780 VA
				TOTAL CONNECTED LOAD (A):	13 A
				TOTAL ESTIMATED DEMAND...	13 A

NOTES:

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
A	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	ELV	RSS	SDE	SDT	TP

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
EXISTING ELECTRICAL PANEL LOAD SHEETS

SCALE:
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: E-505
REV: A

22-133.010

TECHNOLOGY PROVISION MATRIX

DEVICE TYPE	OWNER FURNISHED	OWNER INSTALLED	CONTRACTOR FURNISHED	CONTRACTOR INSTALLED	COMMENTS
ELECTRIFIED DOOR HARDWARE			X	X	PROVIDED BY DOOR HARDWARE MANUFACTURER.
DEMOLITION OF EXISTING TECHNOLOGY DEVICES, MOUNTING HARDWARE, & CABLING	X	X			
GROUNDING BUSBARS IN TELECOM ROOMS			X	X	
PATHWAY FOR COMMUNICATIONS (CONDUIT, SLEEVES, ROUGH-IN BOXES, ETC.)			X	X	
CABLE TRAY (OUTSIDE TELECOM ROOMS)			X	X	
CABLE TRAY (INSIDE TELECOM ROOMS)	X	X			
CENTRAL UPS SYSTEM			X	X	
PLYWOOD BACKERBOARD (INSIDE TELECOM ROOMS)			X	X	
NETWORK RACKS	X	X			
BACKBONE DATA CABLING, TERMINATIONS, & PATCH PANELS	X	X			
HORIZONTAL DATA CABLING, TERMINATION, & PATCH PANELS	X	X			
NETWORK EQUIPMENT (SWITCHES AND WIRELESS ACCESS POINTS)	X	X			
AV EQUIPMENT, MOUNTING HARDWARE, FACEPLATES, & CABLING	X	X			
SOUND MASKING SYSTEM (DEVICES & CABLING)			X	X	
SECURITY INTERCOM & CABLING			X	X	
CLOCKS & CABLING			X	X	
ACCESS CONTROL SYSTEM (ENCLOSURES, READERS, SENSORS, POWER SUPPLIES, CABLING, ETC.)			X	X	
SECURITY CAMERAS & CABLING			X	X	

GENERAL NOTES - TECHNOLOGY

1. REFER TO TECHNOLOGY PROVISION MATRIX TO DETERMINE WHAT IS WITHIN CONTRACTOR'S SCOPE VERSUS WHAT IS PROVIDED/INSTALLED BY THE OWNER.
2. REMOVAL / DEMOLITION OF EXISTING TECHNOLOGY DEVICES, MOUNTING HARDWARE, AND CABLING WILL BE DONE BY THE OWNER.
3. UNLESS NOTED OTHERWISE, ALL CONDUIT SLEEVES FOR LOW VOLTAGE CABLING SHALL BE EMT WITH PLASTIC NIPPLES. SEAL OUTSIDE OF SLEEVES WITH INTUMESCENT FIRE CAULK. FIRE-STOPPING INSIDE OF THE SLEEVES WILL BE DONE BY THE OWNER.
4. REFER TO TECHNOLOGY, ELECTRICAL AND ARCHITECTURAL DETAILS AND ELEVATIONS FOR SYMBOL INFORMATION AND ELEVATION DETAIL.
5. DEVICES AND EQUIPMENT SHOWN DASHED OR WITH AN "X" ARE TO BE REMOVED. FIXTURES, DEVICES AND EQUIPMENT SHOWN LIGHTLY OR WITH AN "E" ARE EXISTING TO REMAIN UNDISTURBED.
6. DEVICES SHOWN WITH AN "R" ARE EXISTING TO BE REPLACED WITH NEW DEVICE AND COVERPLATE.
7. TEMPORARILY SUPPORT EXISTING CEILING DEVICES TO REMAIN IN EXISTING CEILINGS TO BE REPLACED. REINSTALL DEVICES INTO NEW CEILING.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT PHASING. TEMPORARY WIRING TO KEEP SYSTEMS RUNNING SHALL BE PROVIDED AS REQUIRED WHILE BUILDING IS OCCUPIED BETWEEN PHASES OF CONSTRUCTION.

STRUCTURED CABLING — MOUNTING HEIGHTS

	DATA/VOICE OUTLET - 4 SQ BOX, SG COVER, 1" CONDUIT STUB	16"
	DATA/VOICE OUTLET - 4 SQ BOX, SG COVER, SURFACE #WM500	16"
	DATA/VOICE OUTLET - 4 SQ BOX, SG COVER, 1" CONDUIT STUB 4" ABOVE BACKSPLASH	
	SECURITY CONTROLS PATHWAY - 4 SQ BOX, SG COVER WITH BRUSH PLATE, 1" CONDUIT STUB	16"
WAP	WIRELESS ACCESS POINT (REFER TO DETAILS)	
GDB	GROUNDING BUS BAR WITH DEDICATED GROUND, (REFER TO DETAILS)	
	CABLE TRAY, (12"x4" UNLESS NOTED OTHERWISE)	
	CLOCK (REFER TO DETAILS)	90" TO CENTER
MCP	MASTER CLOCK PANEL	
PAG	PAGING SYSTEM HEAD END	
	NETWORK COMMUNICATION RACK - FLOOR STANDING 3' CLEAR ON BOTH SIDES	
	4'X8'X3/4" FIRE-RATED PLYWOOD, A/C FINISH, MOUNT VERTICALLY	12"
	CONDUIT SLEEVE IN ACCESSIBLE CEILING (2" CONDUIT UNLESS NOTED OTHERWISE, ONLY SHOWN ON PLANS INDICATING SPECIFIC CONDITIONS, REFER TO GENERAL NOTES FOR SLEEVES THAT ARE REQUIRED INTO ALL SPACES)	

AUDIO/VISUAL

TV n	TV WALL RECESSED "FSR" BACKBOX, (REFER TO DETAILS)	
PRJ n	PROJECTOR, (REFER TO DETAILS)	
AV n	A/V WALL STATION BOXES, USE FSR MUDRING MUD-2G-** FOR 2-GANG OPENINGS (REFER TO DETAILS)	
TS n	TECHNOLOGY OR TEACHER'S STATION BOXES, USE FSR MUDRING MUD-2G-** FOR 2-GANG OPENINGS(REFER TO DETAILS)	
MIC	MICROPHONE JACK	16"
CB	CEILING BOX, (REFER TO DETAILS)	
BT	BLUETOOTH DEVICE - DEEP 4 SQ BOX, 1-G OPENING, (REFER TO DETAILS)	40"
ANT	ANTENNA, (REFER TO DETAILS)	
PCN	PROJECTOR SCREEN, (REFER TO DETAILS)	
	LOUDSPEAKER CEILING - MOUNTED	
	LOUDSPEAKER WALL - MOUNTED	
VC	VOLUME CONTROL	40"

SECURITY SYMBOLS

	SECURITY CAMERA - WALL	
	SECURITY CAMERA - CEILING	
SCP	SECURITY CABLING PATHWAY, 4 SQ, SG BRUSH PLATE, 1" CONDUIT STUB	16"
ACP#	ACCESS CONTROL PANEL (REFER TO DETAILS)	
RB	RELEASE BUTTON	
IM	INTERCOM MASTER STATION	
LD	LOCKDOWN BUTTON	
DB	DURESS ALARM PUSH BUTTON - UNDER DESK	
CR	CARD READER - 4 SQ BOX, SG COVER, 3/4" CONDUIT STUB	40"
CR M	CARD READER, MULLION MOUNT, 3/4" CONDUIT STUB	40"
LDS	LOCKDOWN STROBE (REFER TO DETAILS)	
KP	KEY PAD - 4 SQ BOX, SG COVER, 3/4" CONDUIT STUB	40"
IC	INTERCOM - 4 SQ BOX, SG COVER, 3/4" CONDUIT STUB	40"
ACD#	ACCESS CONTROL DETAIL INDICATOR: REFER TO ACCESS CONTROL DETAILS AND SCHEDULE	

NOTES:

MOUNT DEVICES AT HEIGHTS INDICATED UNLESS INDICATED OTHERWISE ON PLANS. HEIGHTS ARE TO BOTTOM OF DEVICE.

REFER TO CONSUMERS ENERGY SPECIFICATION FOR CABLE COLORING STANDARDS

YELLOW - CORPORATE SECURITY
VIOLET - ELECTRICAL / LIGHTING CONTROLS / HVAC
WHITE - DATA PLENUM COAX / SOUND MASKING
GRAY - AV DIGITAL SIGNAGE
BLUE - DATA STANDARD CAT6
ORANGE - DATA 800 MHZ RADIO OR ANALOG
BLACK - DATA WIFI
RED - FIRE AND SPECIFICALLY DESIGNED LIFE SAFETY
PINK - RESERVED FOR ONE OFF PROJECT NEEDS
GREEN - RESERVED FOR FUTURE

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REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-06-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	NW	NW	ER	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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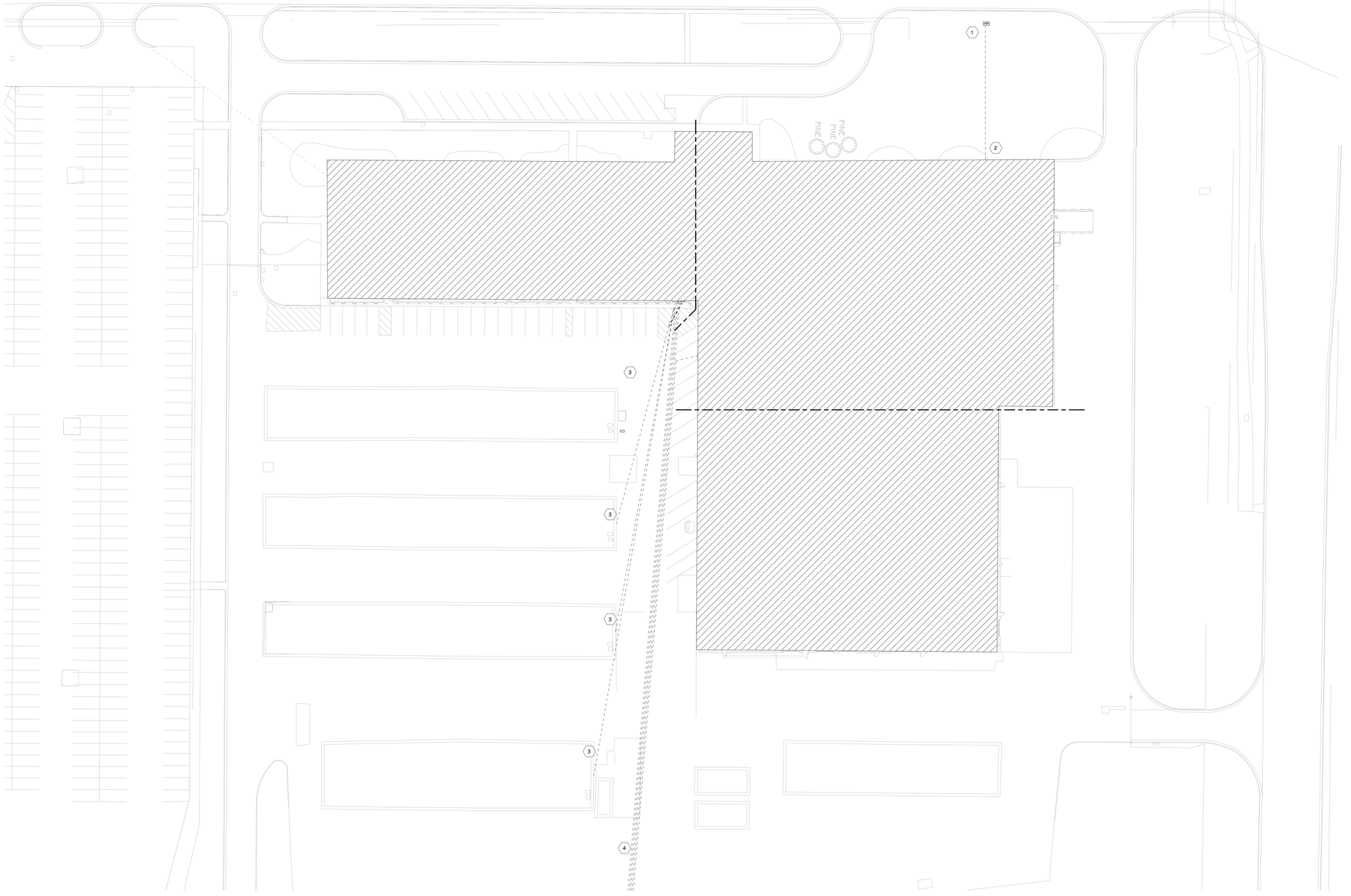
SHEET TITLE
TECHNOLOGY SYMBOLS AND GENERAL NOTES

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: TG-001
REV: D

22-133.010



KEYED NOTES - TECHNOLGY - SITE - CONSTRUCTION

1 INSTALL 24"X36"X24" HANDHOLE (QUAZITE B1624362424M, TIER 22, MOUSEHOLES). LOCATE DAMAGED SECTION OF EXISTING FIBER DUCT, AND PLACE NEW HANDHOLE OVER THAT LOCATION. INSTALL FLUSH GRADE MOUNTED COVER. IT SHALL BE SPLIT LID DESIGN WHEN OFFERED. HANDHOLE SHALL BE SET ON 12" COMPACTED CRUSHED STONE AGGREGATE BASE, FLUSH TO BOTTOM OF BOX. PLACE ONE ROUND, ORANGE-TOPPED, UTILITY MARKER POLE AT CORNER OF HANDHOLE. TYPICALLY THE MARKER IS SUPPLIED BY OWNER I.T. AND IS INSATLLED BY DATA CABLING CONTRACTOR. UTILIZE 22.5/45 DEGREE ELBOW OPTIONS NEAR HANDHOLE TO BRING CONDUIT THROUGH BOTTOM. NO SIDE PENETRATIONS. COVER SHALL BE LABELED AS:

CONSUMERS ENERGY
TELECOM
517-788-2275

2 INSTALL TWO 2" PVC CONDUITS FROM HANDHOLE. INSTALL WARNING FIBER TAPE 12" ABOVE CONDUITS. COORDINATE EXACT ROUTE INTO BUILDING WITH OWNER PRIOR TO INSTALLATION. TRANSITION TO RIGID STEEL 90S AT BUILDING AND ROUTE 2" RIGID STEEL UP EXTERIOR OF BUILDING TO 24"X24"X4" NEMA RATED ENCLOSURE. MOUNT ENCLOSURE TO ALLOW CONDUIT SLEEVES TO ENTER BUILDING BETWEEN 24'-36"AFF. PLACE PENETRATION NEAR COLUMN LINE.

COORDINATE WITH OWNER I.T. GROUP ON A PLANNED CUT OVER DATE IN Q4 OF 2024. OWNER TO COMPLETE FIBER CUT OVER BUT WILL NEED CONTRACTOR TO HELP SUPPORT THE CONDUIT TIE-IN WORK DURING THIS PLANNED OUTAGE.

3 INSTALL ONE 2" PVC CONDUIT FOR FUTURE DATA CABLING.

4 INSTALL ONE 2" PVC CONDUIT FOR DATA AND SECURITY CABLING.

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TECHNOLOGY SITE PLAN
1" = 30'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	NW	NW	ER	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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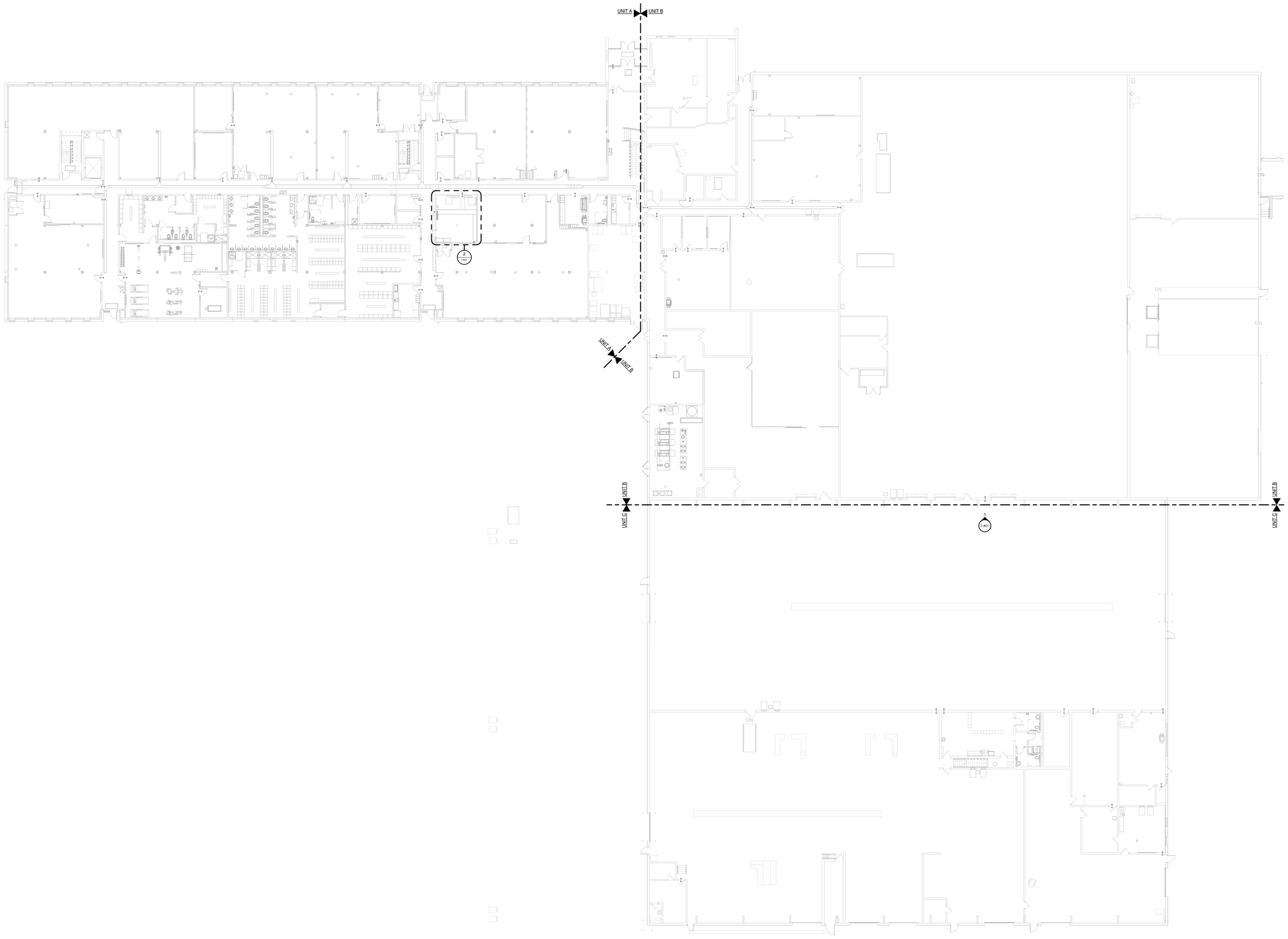
SHEET TITLE
TECHNOLOGY SITE PLAN

SCALE: 1" = 30'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: TS-101
REV: D

22-133.010



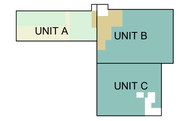
OVERALL FIRST FLOOR TECHNOLOGY PLAN
1/16" = 1'-0"

PHASING PLAN KEY

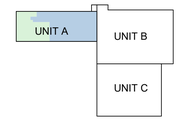
REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
SCALE: NO SCALE



SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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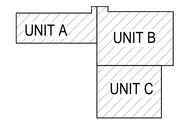
KALAMAZOO SERVICE CENTER



TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	NW	NW	ER	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
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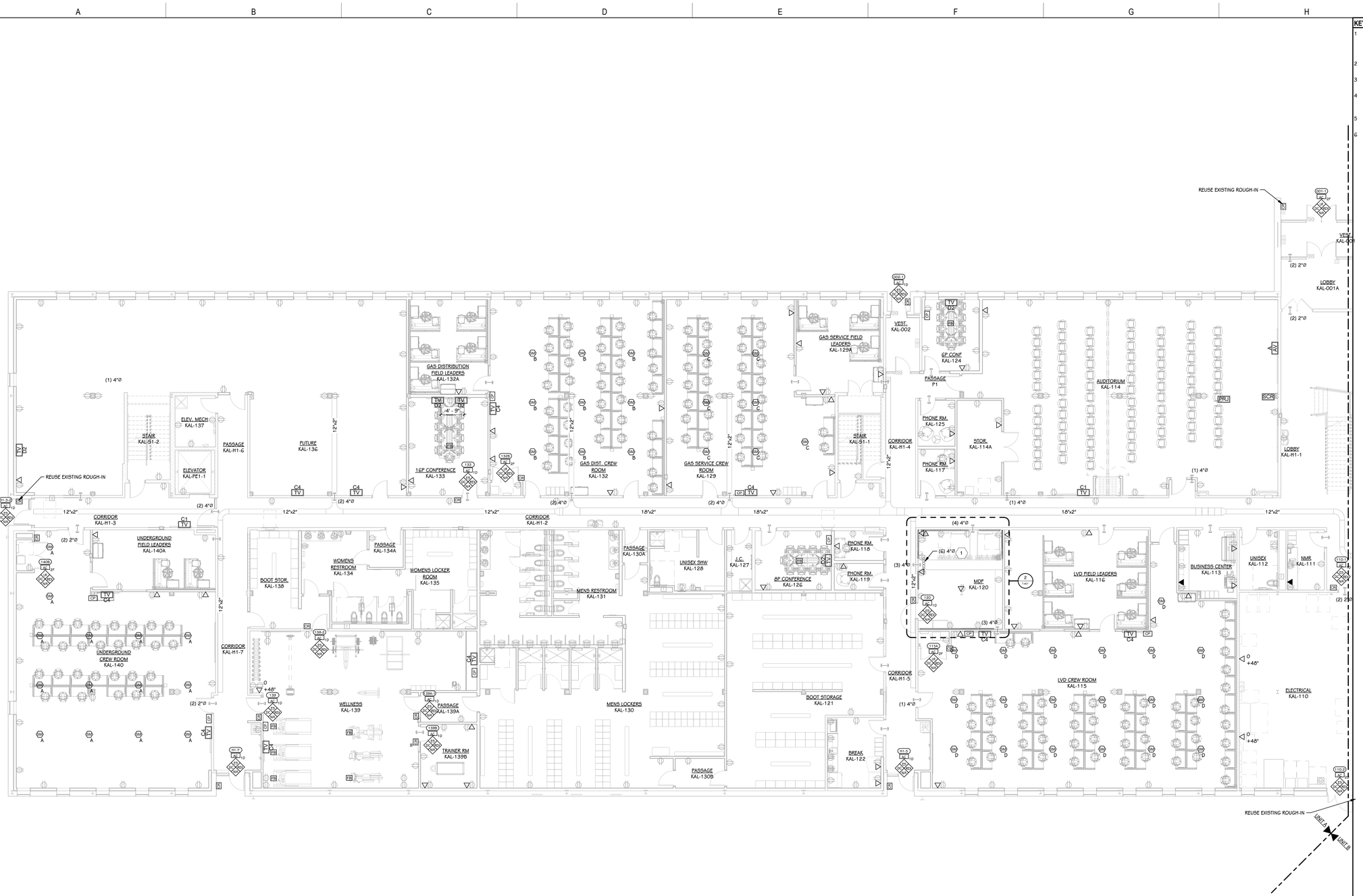
SHEET TITLE
OVERALL FIRST FLOOR TECHNOLOGY PLAN

SCALE: 1/16" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-101
REV: D

22-133.010



KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1. 5" CORES THROUGH FLOOR CONNECTING MDF KAL-120 TO IDF KAL-206. COORDINATE WITH OWNER I.T. GROUP PRIOR TO CORING. INSTALL HILTI SPEED SLEEVES (CP 653) IN EACH CORING.
2. EXTEND EXISTING 4" CONDUITS INTO KAL-206 (IDF).
3. EXISTING CABLE TRAY TO REMAIN.
4. ROUTE ALL STRUCTURED CABLING CONDUITS FROM FLOORBOXES IN THIS ROOM DOWN TO ABOVE FIRST FLOOR ACCESSIBLE CEILING.
5. INSTALL CABLE TRAY WITHIN IT OFFICES BELOW CEILING.
6. EXISTING CORES/SLEEVES THROUGH FLOOR TO REMAIN. REWORK/REROUTE EXISTING CONDUITS ABOVE FIRST FLOR CEILING TO TERMINATE AT NEW CABLETRAY IN MAIN CORRIDOR.

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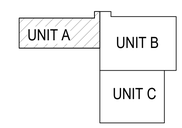

KEY PLAN
SCALE: NO SCALE

FIRST FLOOR TECHNOLOGY PLAN - UNIT A
1/8" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	NW	NW	ER	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME
SCOTT D. THOMPSON
MICHIGAN P.E. No.
6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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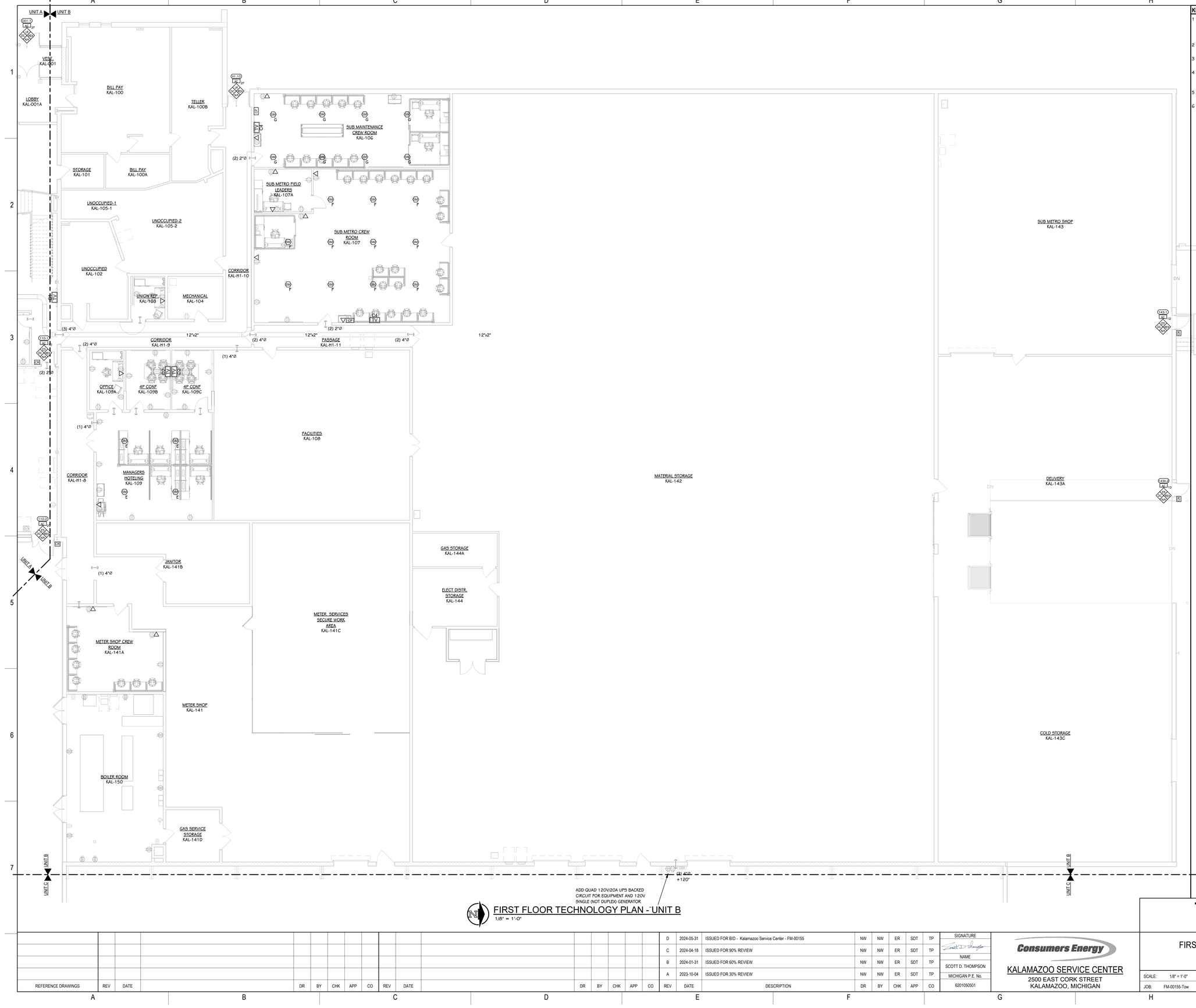
SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-101A
REV: D

22-133.010



FIRST FLOOR TECHNOLOGY PLAN - UNIT B
1/8" = 1'-0"

KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1. 5" CORES THROUGH FLOOR CONNECTING MDF KAL-120 TO IDF KAL-206. COORDINATE WITH OWNER I.T. GROUP PRIOR TO CORING. INSTALL HILTI SPEED SLEEVES (CP 653) IN EACH CORING.
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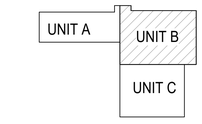

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
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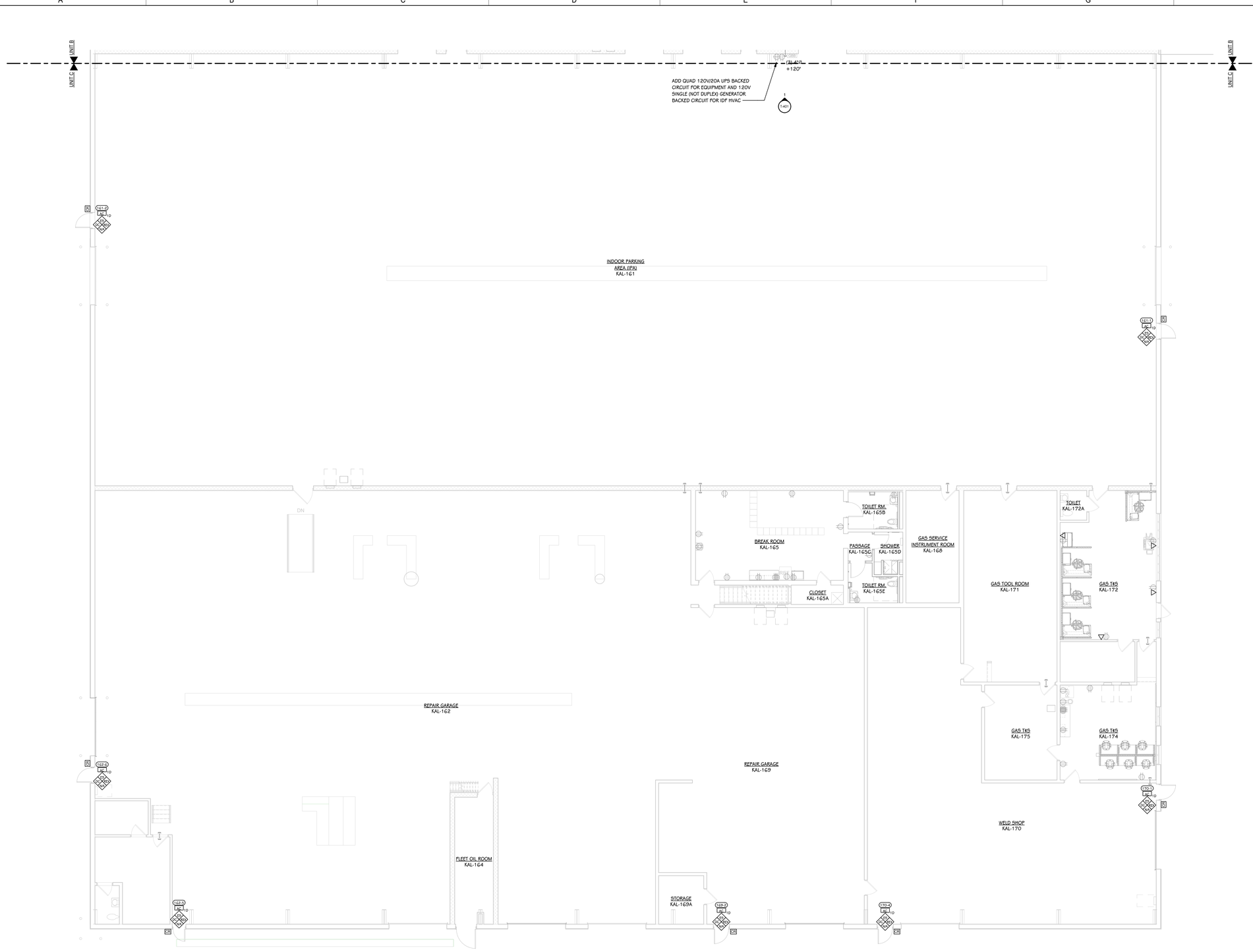
SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT B

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-101B
REV: D

22-133.010



FIRST FLOOR TECHNOLOGY PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1. 5" CORES THROUGH FLOOR CONNECTING MDF KAL-120 TO IDF KAL-206. COORDINATE WITH OWNER I.T. GROUP PRIOR TO CORING. INSTALL HILTI SPEED SLEEVES (CP 653) IN EACH CORING.
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UNIT A | UNIT B | UNIT C

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

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REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No. 6201050501

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2500 EAST CORK STREET
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SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT C

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-101C
REV: D

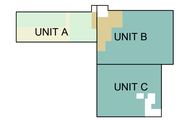
22-133.010

PHASING PLAN KEY

REFER TO SHEETS: G-111, G-112 & G-113

- PHASE 1
- PHASE 2 + ROOF
- PHASE 3
- PHASE 4
- PHASE 5

PHASING KEY PLANS



FIRST FLOOR PHASING PLAN
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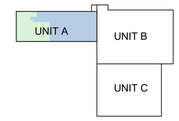

SECOND FLOOR PHASING PLAN
SCALE: NO SCALE

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OVERALL SECOND FLOOR TECHNOLOGY PLAN
1/16" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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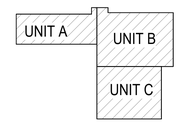

TRUE NORTH

KEY PLAN
SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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MICHIGAN P.E. No.: 6201050501

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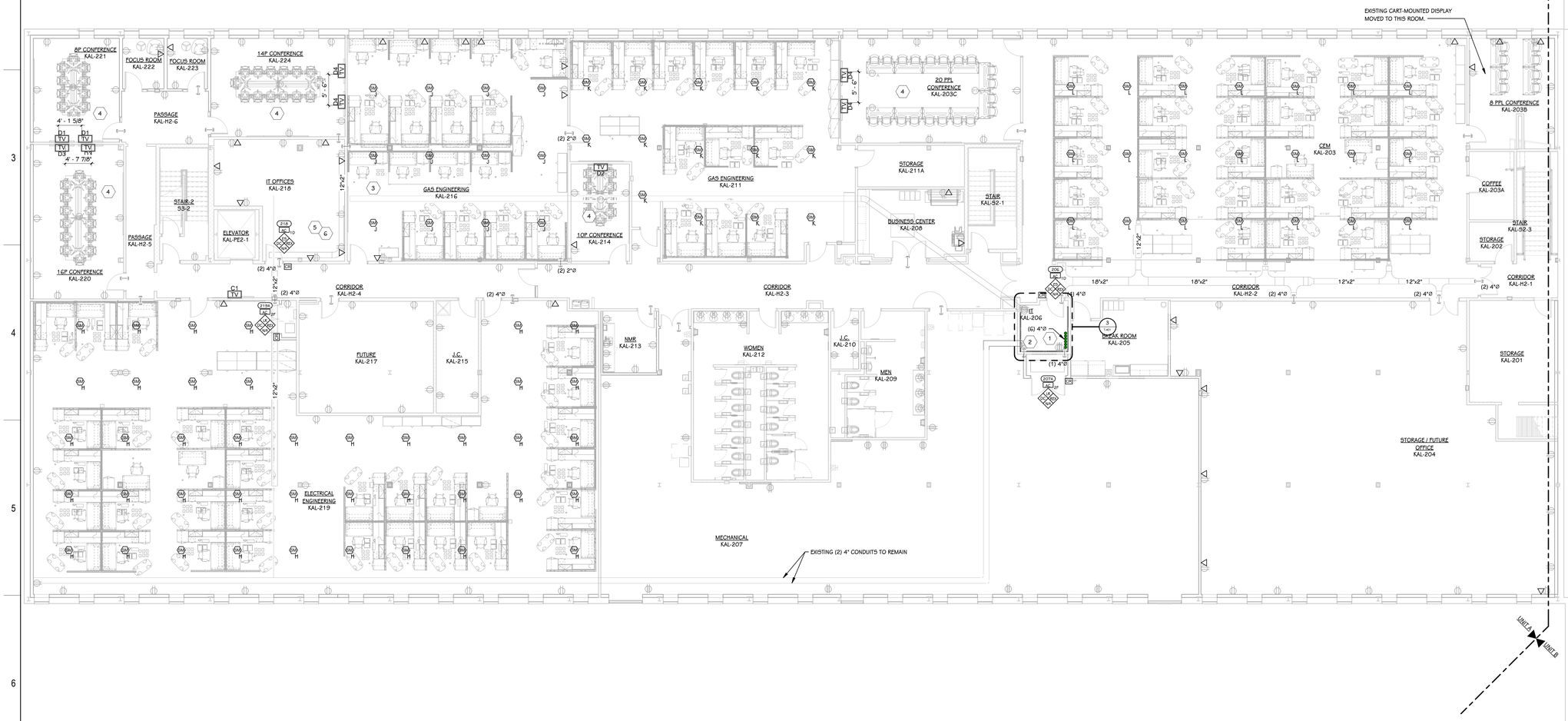
SHEET TITLE
OVERALL SECOND FLOOR TECHNOLOGY PLAN

SCALE:	1/16" = 1'-0"	DRAWING NUMBER	SHEET	REV
JOB:	FM-00155-Tow	3084-KAL-SC01	T-102	D

22-133.010



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SECOND FLOOR TECHNOLOGY PLAN - UNIT A

1/8" = 1'-0"

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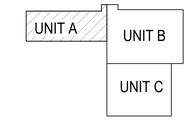

TRUE NORTH

KEY PLAN

SCALE: NO SCALE

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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SHEET TITLE
SECOND FLOOR TECHNOLOGY PLAN - UNIT A

SCALE: 1/8" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-102A
REV: D

22-133.010

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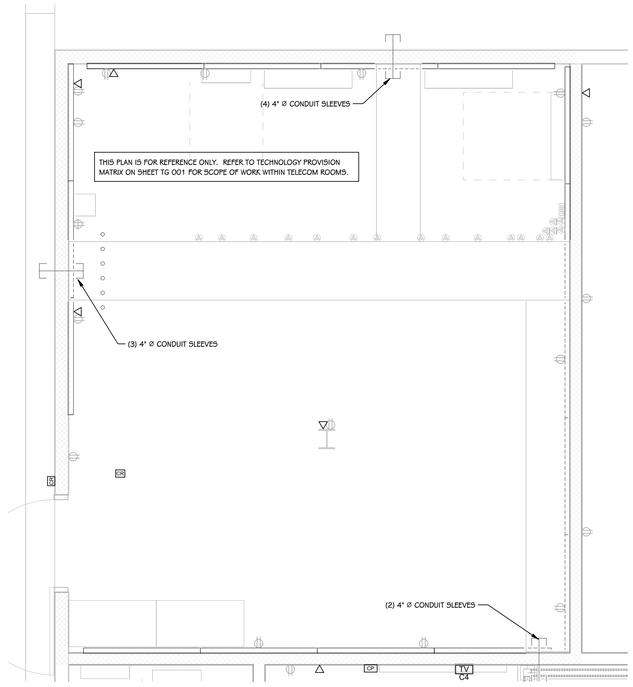
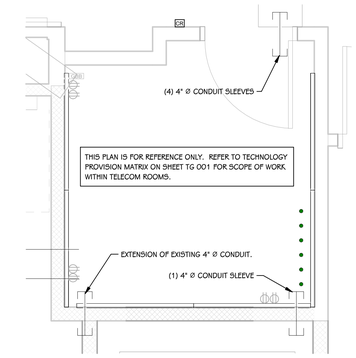


ENLARGED MDF KAL-120 TECHNOLOGY PLAN
1/2" = 1'-0"



ENLARGED IDF KAL-206 TECHNOLOGY PLAN
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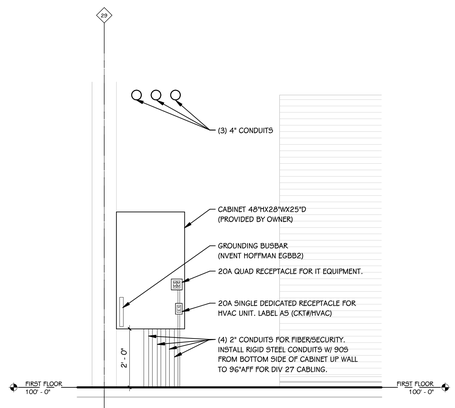

1 T-401
ENLARGED TR3 ELEVATION
1/2" = 1'-0"

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
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B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
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SHEET TITLE
TELECOM ROOMS DETAILS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-401
REV: D

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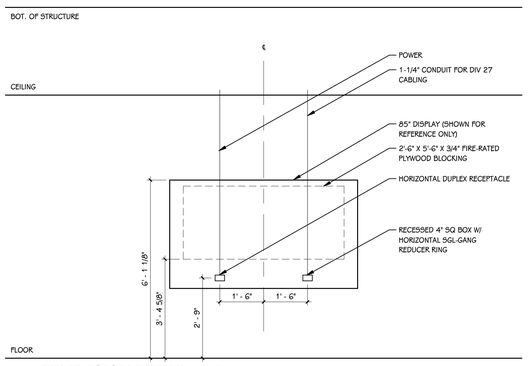
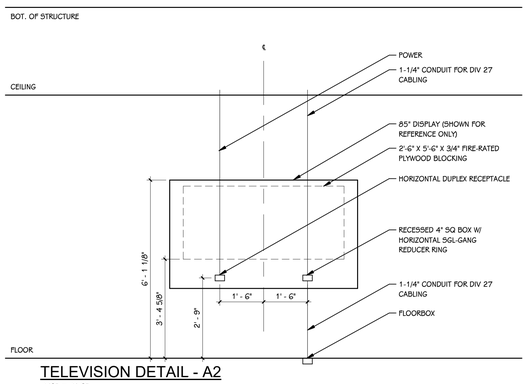


TELEVISION DETAIL - A1
1/2" = 1'-0"



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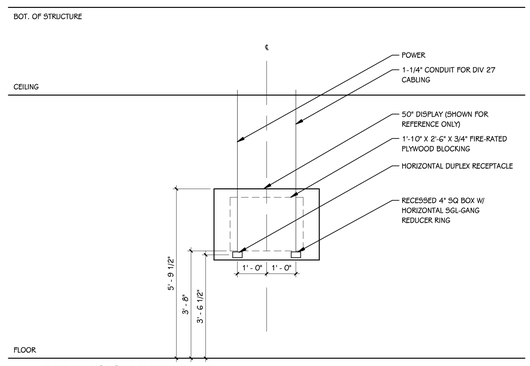

TELEVISION DETAIL - B
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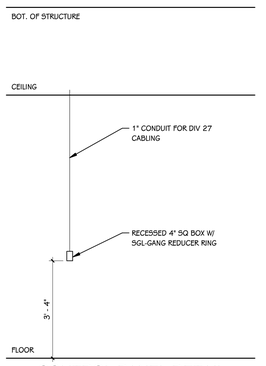
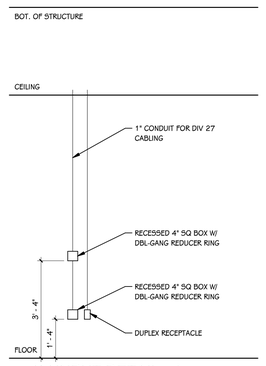
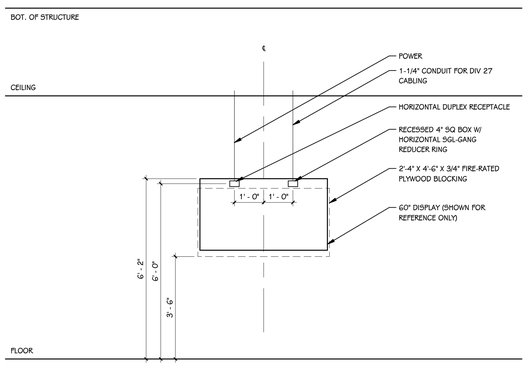


CONTROL PANEL DETAIL
1/2" = 1'-0"



AV INPUT DETAIL - A
1/2" = 1'-0"



TELEVISION DETAIL - C1
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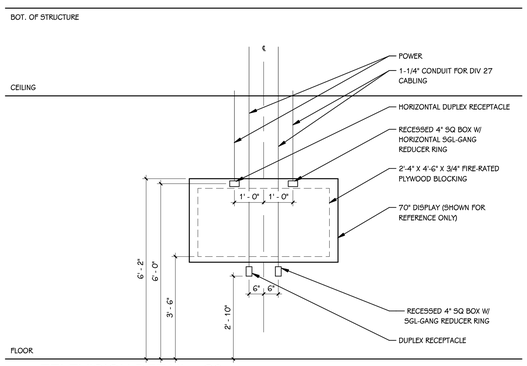

TELEVISION DETAIL - C2
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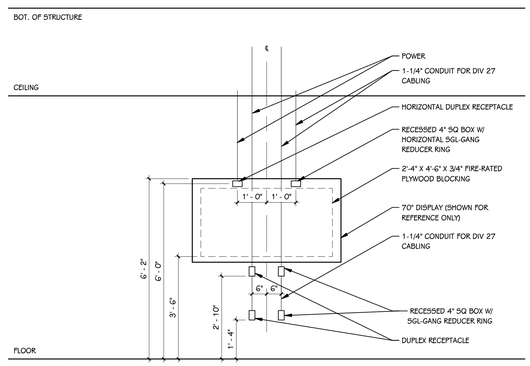

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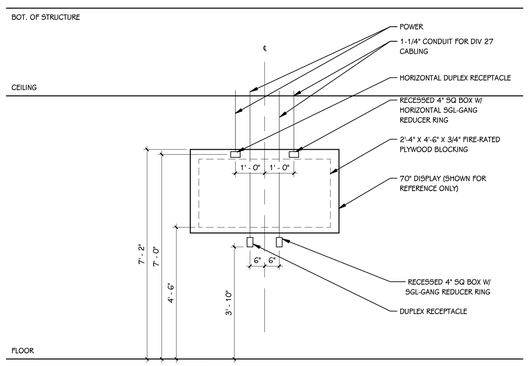

TELEVISION DETAIL - C4
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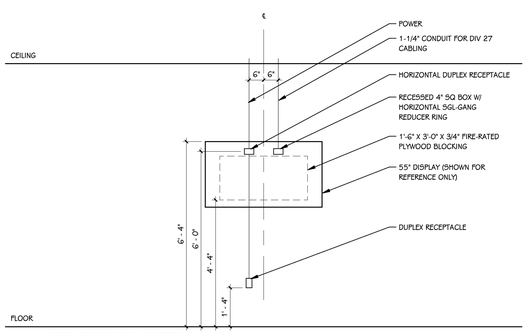
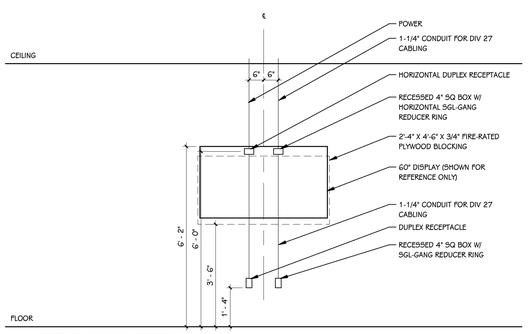


TELEVISION DETAIL - D1
1/2" = 1'-0"



TELEVISION DETAIL - D2
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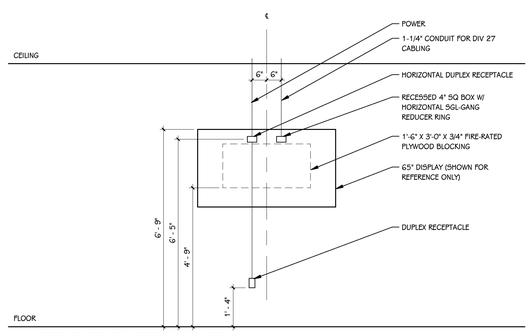

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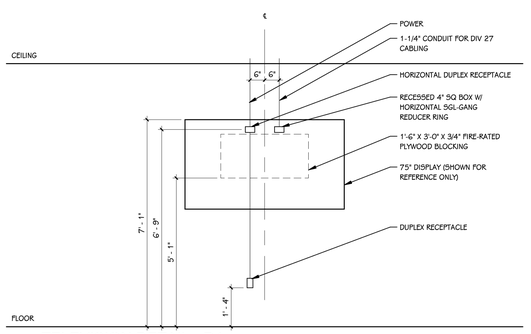

TELEVISION DETAIL - D4
1/2" = 1'-0"

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KALAMAZOO, MICHIGAN

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SHEET TITLE
AV ROUGH-IN DETAILS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-421
REV: D

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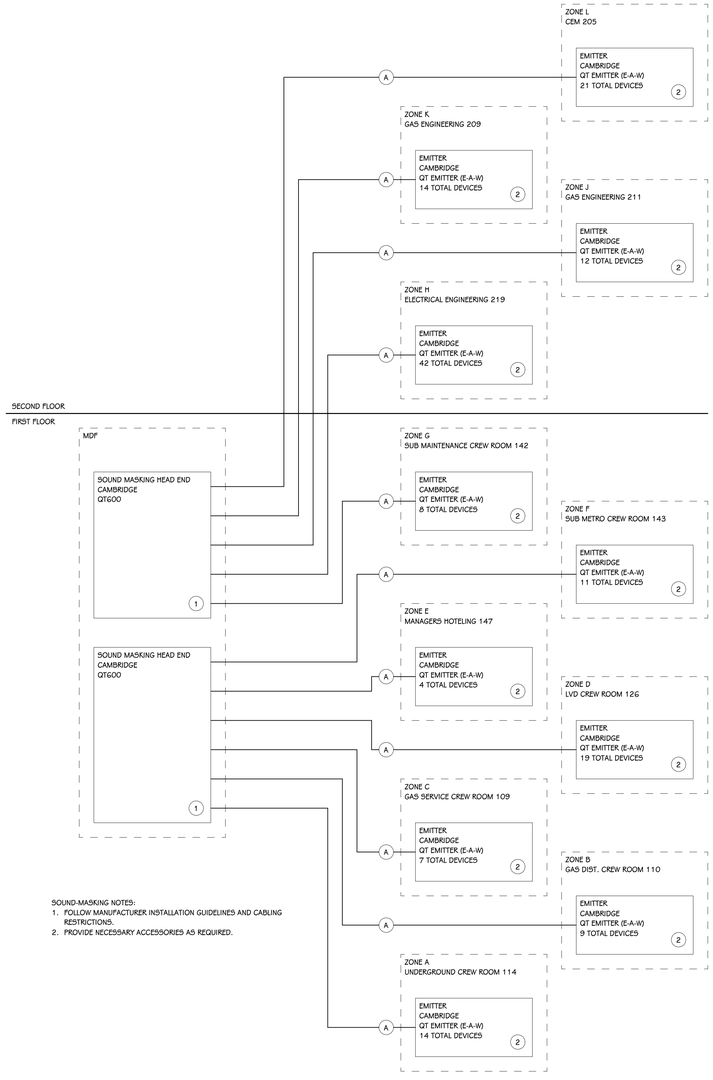

SOUND-MASKING NOTES:
1. FOLLOW MANUFACTURER INSTALLATION GUIDELINES AND CABLING RESTRICTIONS.
2. PROVIDE NECESSARY ACCESSORIES AS REQUIRED.

SOUND MASKING SYSTEM RISER
SCALE: NONE

SOUND-MASKING EQUIPMENT SCHEDULE

KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	SOUND MASKING HEAD END	CAMBRIDGE	QT600	
2	EMITTER	CAMBRIDGE	QT EMITTER (E-A-W)	
A	CAT6 CABLE	SEE CABLE SCHEDULE.		LENGTH AS REQUIRED FOR APPLICATION.

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
D	2024-06-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
C	2024-04-18	ISSUED FOR 90% REVIEW	NW	NW	ER	SDT	TP
B	2024-01-31	ISSUED FOR 60% REVIEW	NW	NW	ER	SDT	TP
A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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SHEET TITLE
SOUND-MASKING DETAILS

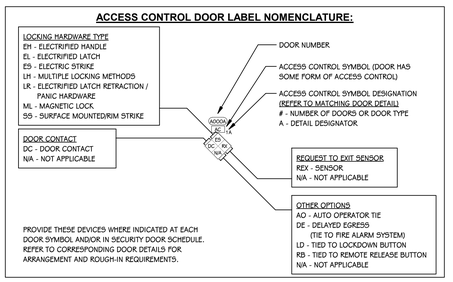
SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-422
REV: D

22-133.010

ACCESS CONTROL DOOR SCHEDULE

NUMBER	ACCESS CONTROLS	SECURITY INFO					
DOOR	CARD READER	LOCKING HARDWARE TYPE	DOOR CONTACT	OTHER	REX	DOOR DETAIL #	PROGRAMMING NOTES
001-1	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. UNLOCKED BY ACCESS CONTROL SYSTEM AT BEGINNING OF BUSINESS DAY, AND THEN RELOCKS AT END OF BUSINESS DAY. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
002-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
110-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
110-2	Yes	ES	DC	N/A	REX	2D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
115A	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
120	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
132B	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
133	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
138-2	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
139	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
139A-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
139B	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
140B	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
143-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
143A-2	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
144B	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
161-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
161-2	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
162-5	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
162-6	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
169-2	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
170-1	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
170-4	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
206	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
207A	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
218	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
219A	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
H1-3-2	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
H1-5	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
H1-7	Yes	ES	DC	N/A	REX	1D	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.
H1-10	Yes	LR	DC	N/A	REX	2F	DOOR NORMALLY LOCKED. PRESENTATION OF VALID CREDENTIAL TO READER ALLOWS ACCESS. FREE EGRESS ALWAYS PERMITTED.

ACCESS CONTROL DOOR LABEL NOMENCLATURE:



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A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
MICHIGAN P.E. No.: 6201050501

Consumers Energy
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2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

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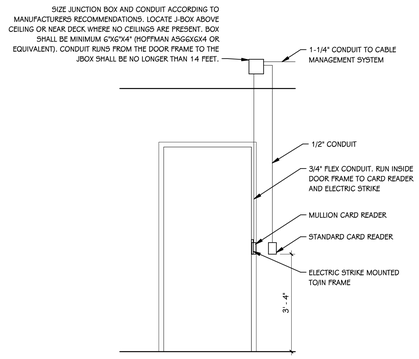
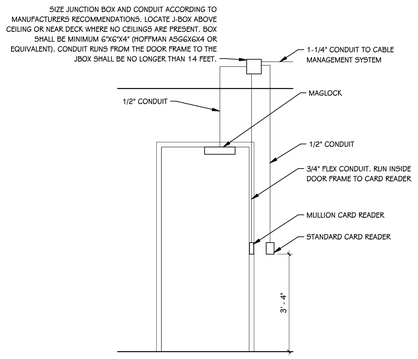
SHEET TITLE
ACCESS CONTROL DETAILS

SCALE: 12" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-441
REV: D

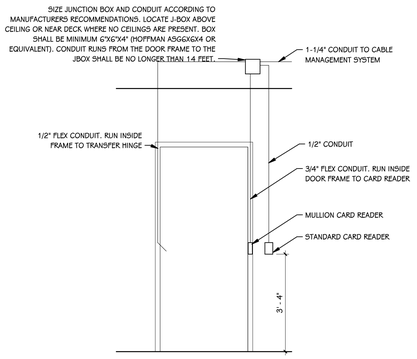
22-133.010



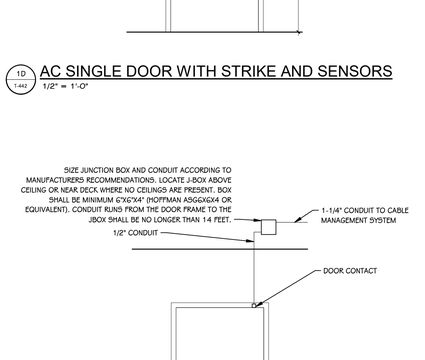
1A / T-442 AC SINGLE DOOR WITH STRIKE
1/2" = 1'-0"



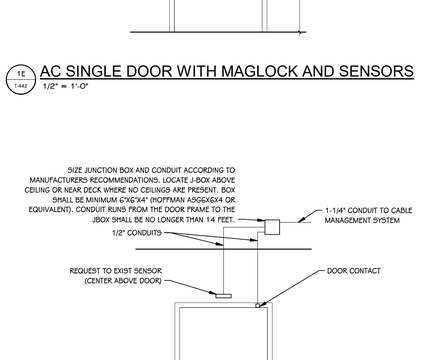
1D / T-442 AC SINGLE DOOR WITH MAGLOCK
1/2" = 1'-0"



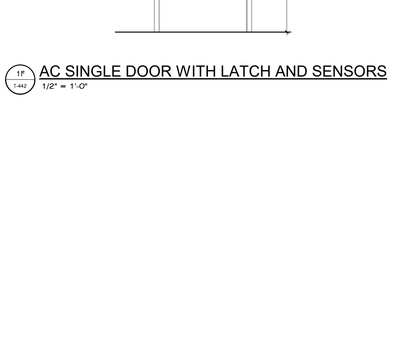
1C / T-442 AC SINGLE DOOR WITH LATCH
1/2" = 1'-0"



1D / T-442 AC SINGLE DOOR WITH STRIKE AND SENSORS
1/2" = 1'-0"



1E / T-442 AC SINGLE DOOR WITH MAGLOCK AND SENSORS
1/2" = 1'-0"



1F / T-442 AC SINGLE DOOR WITH LATCH AND SENSORS
1/2" = 1'-0"

1G / T-442 AC SINGLE DOOR WITH CONTACT
1/2" = 1'-0"

1H / T-442 AC SINGLE DOOR WITH SENSORS
1/2" = 1'-0"

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D	2024-05-31	ISSUED FOR BID - Kalamazoo Service Center - FM-00155	NW	NW	ER	SDT	TP
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A	2023-10-04	ISSUED FOR 30% REVIEW	NW	NW	ER	SDT	TP

REFERENCE DRAWINGS

SIGNATURE
NAME: SCOTT D. THOMPSON
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Consumers Energy
KALAMAZOO SERVICE CENTER
2500 EAST CORK STREET
KALAMAZOO, MICHIGAN

TowerPinkster
Architecture · Engineering · Interiors

SHEET TITLE
ACCESS CONTROLLED DOOR ELEVATIONS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-442
REV: D

22-133.010

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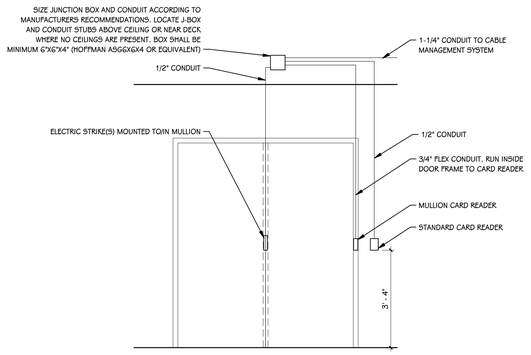
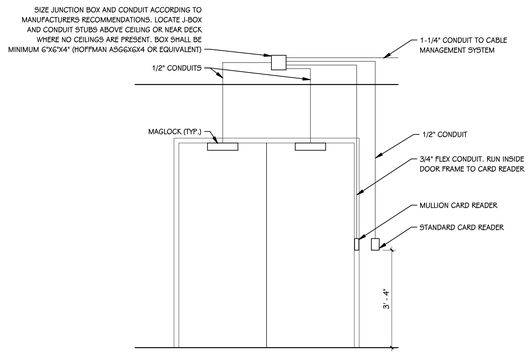
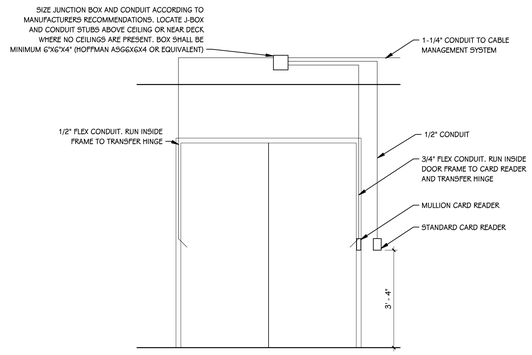


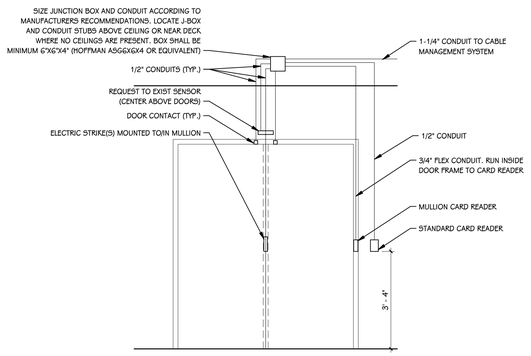
2A T-443 AC DOUBLE DOOR WITH MULLION STRIKES
1/2" = 1'-0"



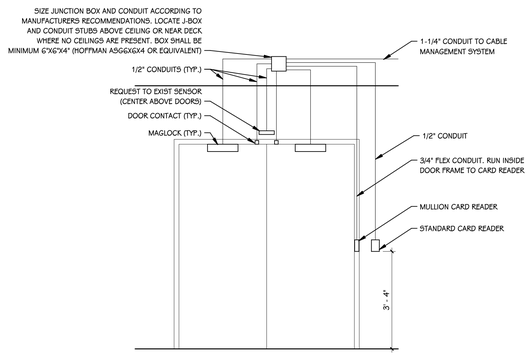
2B T-443 AC DOUBLE DOOR WITH MAGLOCK
1/2" = 1'-0"



2C T-443 AC DOUBLE DOOR WITH LATCHES
1/2" = 1'-0"



2D T-443 AC DOUBLE DOOR WITH MULLION STRIKES AND SENSORS
1/2" = 1'-0"



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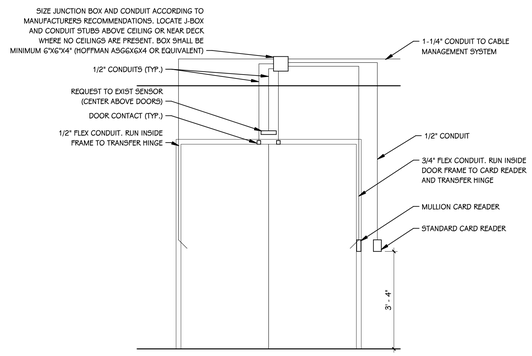
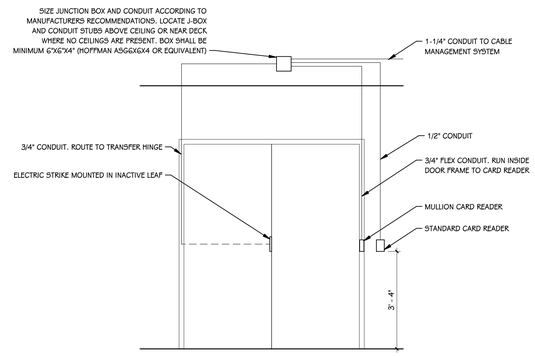
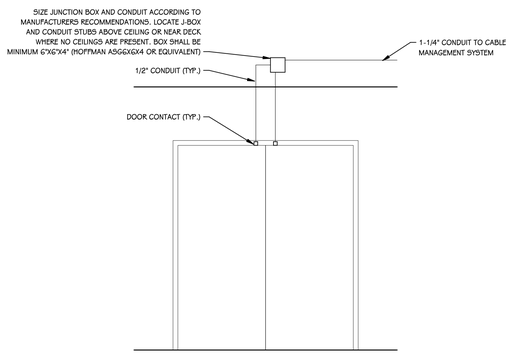
1/2" = 1'-0"



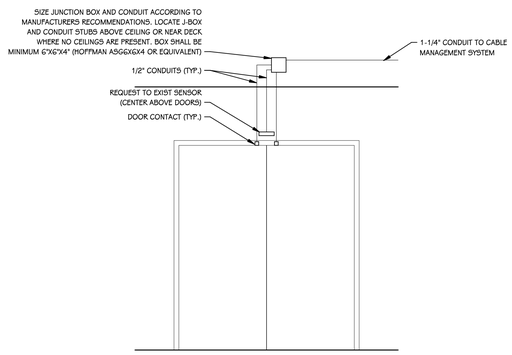
2F T-443 AC DOUBLE DOOR WITH LATCHES AND SENSORS
1/2" = 1'-0"



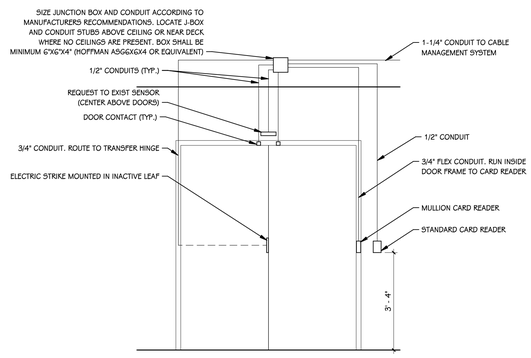
2G T-443 AC DOUBLE DOOR WITH STRIKES
1/2" = 1'-0"



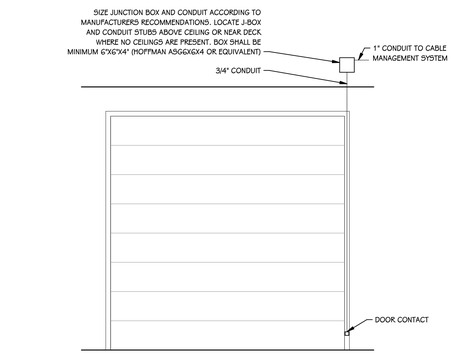
2H T-443 AC DOUBLE DOOR WITH CONTACTS
1/2" = 1'-0"



2J T-443 AC DOUBLE DOOR WITH SENSORS
1/2" = 1'-0"



2K T-443 AC DOUBLE DOOR WITH STRIKES AND SENSORS
1/2" = 1'-0"



2H T-443 AC OVERHEAD DOOR WITH CONTACT
1/2" = 1'-0"

REFERENCE DRAWINGS	REV	DATE		DR	BY	CHK	APP	CO

REV	DATE		DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO
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NAME
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6201050501

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SHEET TITLE
ACCESS CONTROLLED DOOR ELEVATIONS

SCALE: 1/2" = 1'-0"
JOB: FM-00155-Tow
DRAWING NUMBER: 3084-KAL-SC01
SHEET: T-443
REV: D

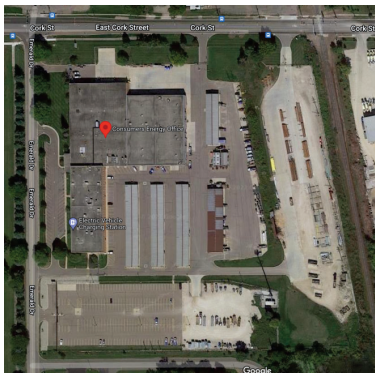
22-133.010

Consumers Energy Kalamazoo Service Center

DESIGN ALTERNATIVES ANALYSIS NARRATIVE

2500 E. Cork St Kalamazoo MI 49001

Submitted: June 29, 2022



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DESIGN ALTERNATIVES ANALYSIS NARRATIVE

OVERVIEW

The following report summarizes the six requested design options for the Kalamazoo Service Center. Along with the building planning options, there are site reconfiguration options as well as a sustainable design feasibility summary. Each option has some variance in the size and adjacency of spaces to test different ideas and design approaches to the study. The overall goal is to provide Consumers Energy with a series of different approaches that help set overall concept budgets to move forward into design. During design, the selected concept will be studied and tested further to provide the best value for the teams at the Kalamazoo Service Center.

This report was developed with input from several stakeholders at the service center as well as leadership from storage, and fleet services. This has allowed the planning team to develop concepts that respond to the needs for future growth at the site as well as prioritize advantageous adjacencies and site flow efficiencies. This also includes revising existing internal departmental adjacencies to create spaces that better reflect the work culture of Consumers Energy.

Major drivers for this effort include:

1. Modernizing aging existing infrastructure and facilities
2. Improve inefficiencies of process flows with existing layout
3. Opportunity to update the facility to Consumers Energy design standards
4. Enhance overall service center security and access
5. Transition from customer-facing areas to service functions

These major initiatives are all existing needs at the service center. There are several other opportunities for improvement itemized in the following report. These improvements all support the major drivers outlined above.

Existing Facility Summary:

Consumers Energy's service center in Kalamazoo, Michigan is located at the corner of Cork St. and Emerald St. The existing facility is organized around several main programmatic elements. The existing two-story office building houses most of the traditional office workstations, work crew locker rooms and support spaces. North of the office is the main materials storage building. This area of the facility houses the main warehouse, delivery dock, Gas Service shop and the Sub Metro shop. To the immediate east, is the indoor automotive parking and loading area. East of that is the automotive repair and welding bays.

On the exterior the building is surrounded by a series of covered vehicle parking bays, fuel yard, separate employee and visitor parking areas and the pole storage yard. Pole storage is at a lower section of the site on the east edge of the property. The eastern boundary has a rail line and the southern edge of the property abuts an adjacent private business. The pole storage yard is currently working well for the crews as was not modified in any of the proposed design options.

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There is a cellular antenna tower along the south edge of the site with an easement running to it. The concepts that were developed also leave the easement, tower and secure area beneath it undisturbed. The plans also prioritized minimal impact to the existing site utilities. Paying particular attention to the existing water mains that run across the site. There are also existing main electrical distribution utilities that will need to be impacted based on the concept plans.

The overall condition of the existing facility is showing wear due to its age and the hi-impact nature of the work being performed. The following sections will provide a high level overview of the existing conditions and provide narrative supplement to the concept options.

Existing Workflow and Program:

The existing facility has gone through many programmatic changes over the life of the building. This series of renovations has created multiple challenges to operational flow and long-term planning flexibility. As additions have been made, the current key adjacencies have become remote from each other which reduces overall efficiency for the crews using the facility. Examples of this include, remoteness of the crew lockers from the Indoor Parking Area (IPA), and the remoteness of the wellness area from main traffic patterns in the building. Other challenges include people circulating through the storage area to the Sub Metro shop which creates an inventory management risk due to reduced security for increased access.

Making improvements to the Service Center will allow for the Consumers Energy teams to provide better service to your customers while creating a work environment that helps recruit and retain team members by providing flexible spaces that allow for a variety of work styles.

EXISTING CONDITIONS

SITE

The existing site is in good condition. The pavement was replaced in 2012 and is generally functioning well. Site circulation is convoluted in several locations, however. The main access gate for service trucks is at the south of the property, with the staff parking located just beyond this access drive. This causes potential conflicts with staff crossing the access drive to enter the building. Similarly, the primary entrance into the indoor parking area (IPA) is located on the north side of the facility, which is also the location of the delivery docks, which need to come into the secured perimeter to make deliveries. Service Trucks and delivery vehicles are then in conflict on the north side of the facility. The access gate on the northwest corner of the property is also not functioning and located too close to the intersection of Emerald Dr. and Cork Street to function properly for deliveries. Guest / bill pay parking located along Emerald Dr. is also significantly underutilized.

The location of a 8” water main running along the south of the covered parking area and primary electrical service coming from south also constrain the buildable site area when considering the construction of new facilities without substantial utility impacts.

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There is an elevation difference of approximately 10 feet between the primary service and pole yard/service area. This grade differential also limits what is practical for alternatives that consider newly constructed structures.

ARCHITECTURAL

The existing architecture and interiors of the facility are clean and maintained. There are, however, several asset management needs to be considered for renovation. These would be addressed in various ways through the following design concepts.

The office building has several areas that are currently not occupied due to potential asbestos exposure. These spaces would have the asbestos abated in all renovation options to allow for long-term planning flexibility and increased utilization.

During a brief visual inspection, the roof system in all four main building areas was in need of demolition and replacement with a new roof system. It is assumed that all renovation options allow for a new roof system to be installed. The building envelope would also be upgraded to provide additional insulation. It is currently face brick on concrete block with limited exterior insulation. There are two scenarios to add insulation. The first would be to add insulated metal panels to the exterior of the building as a rainscreen. The alternate approach would be to add stud and drywall to the interior with new spray foam insulation in the stud cavity.

Interior finishes throughout the facility no longer align with the Consumers Energy's design standards. All renovation options assume that the project will receive new interior finishes including walls, ceilings (in the office area) and flooring.

Other architectural issues that would be addressed by renovations include: ADA accessibility issues, updates to the elevator machine and cab, replacement of all the existing aluminum windows, refinish or replace doors and frames as needed. Furniture would be upgraded to Consumers Energy standards as part of any renovation or new construction work.

INTERIOR DESIGN

Office areas include carpet or carpet tile and painted walls (CMU or Gyp. Bd.) with painted HM doors and vinyl 4" base throughout. Kitchen and Workroom areas include VCT floors with plastic laminate counters and cabinets. All ceilings are either 2x2 or 2x4 ACT tile. Windows include mini blinds or integral mini blinds (several integral mini blinds are failing). All finishes are in varying degrees of wear and age.
Crew spaces include VCT flooring with painted CMU walls, ACT ceilings, and metal lockers.
Office storage spaces consist of sealed concrete flooring, painted (or not) CMU walls with exposed ceilings.
Storage facilities include exposed ceilings with concrete floors and painted CMU walls.
Restrooms consist of tiled walls and floors. Varying heights of tiled walls include full height throughout or wainscot height.

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STRUCTURAL

The four main building areas all have independent structures from each other. Based on visual observation, the office building is a steel-based structural frame with columns, beams for the second floor framing and joists and metal deck for the roof framing. The storage area is also a steel frame with joists and girders with a tectum deck. The indoor parking and automotive repair bays are a clear-span pre-engineered structure.

MECHANICAL

Plumbing Systems

Existing domestic water service to remain. Existing backflow preventers are approximately 35 years old and far beyond their recommended lifespan of 10 years. Electric water cooler drinking fountains appear to be in good condition and include external filtration.

Existing domestic hot water is provided by ten (10) decentralized hot water heaters. All of these water heaters are beyond their useful life, expect for WH-2 which is approximately 5 years old. Public restrooms utilize wall mounted manual flush valve water closets and urinals, wall mounted manual lavatories. Existing plumbing fixtures are in good, working condition. Break rooms include manual kitchen faucets, where applicable.

Heating, Ventilation, and Air Conditioning

The existing building is served by a wide array of HVAC systems and equipment. Existing building heat is provided by two gas fired boilers (1.5 MMBtu each) and two heating hot water pumps. An additional seasonal boiler is located in Room 090. The existing chilled water system includes a 145-Ton air cooled chiller with a chilled water pump (P-3) to serve AHU cooling coils.

The building currently uses eleven (11) existing air handling units:

Existing Air Handling Units					
Name	Serves	Heating Type	Cooling Type	Airside Type	Control
AHU-1	2nd North Conference	Hot Water	DX	Traditional	Pneu.
AHU-2	1st Mapping	Hot Water	Chilled Water	Hot/Cold Deck	DDC
AHU-3	1st Spatt	Hot Water	Chilled Water	Hot/Cold Deck	DDC
AHU-4	1st Crew (137)	Hot Water	DX	Traditional	DDC
AHU-5	1st North	Hot Water	Chilled Water	Hot/Cold Deck	DDC
AHU-7	2nd East (206-221)	Hot Water	Chilled Water	Hot/Cold Deck	DDC
AHU-11	Storeroom (106)	Hot Water	DX	Traditional	Pneu.
AHU-12	1st Radio	Hot Water	DX	Traditional	Pneu.
AHU-13	Storeroom (102)	Hot Water	Chilled Water	Traditional	DDC
AHU-14	Storeroom (121)	Hot Water	Chilled Water	Traditional	DDC
AHU-19	1st Floor (160)	Heat Pump	Heat Pump	Traditional	DDC

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The building currently uses twelve (12) existing rooftop units:

Existing Rooftop Units				
Name	Serves	Manufacturer	Heating Type	Cooling Type
RTU-1	West Open Office	Trane	Natural Gas	DX
RTU-2	Mid Open Office	Trane	Natural Gas	DX
RTU-3	East Open Office	Trane	Natural Gas	DX
RTU-4	West Conference	Trane	Natural Gas	DX
RTU-5	Gas T&S / Break Room	Trane	Natural Gas	DX
RTU-6	Offices / Restrooms	Trane	Natural Gas	DX
RTU-7	Wellness	Trane	Natural Gas	DX
RTU-8	South Open Office	Trane	Natural Gas	DX
RTU-15	Gas T&S	Carrier	Natural Gas	DX
RTU-16	Gas T&S	Trane	Natural Gas	DX
RTU-17	Fleet Service	Inner City	Natural Gas	DX
RTU-18	Sub Metro	Sterling/Alton	Natural Gas	None

Additional systems include:

- Liebert units provide cooling for the IT Room and Wellness Room.
- One (1) air source heat pump serves the garage break room.
- Cabinet unit heaters and unit heaters serve vestibules and entryways.
- Perimeter fin tube is provided for supplemental heat along exterior walls.
- Overhead gas fired infrared heaters are located in the Material Storage space.
- Exhaust fans are provided throughout the building as well as carbon monoxide exhaust fans for garage areas.
- The store room uses a direct fired makeup air unit to provide ventilation air. Rooms 142 and 143 use indirect makeup air units for ventilation air.

Temperature Controls

Existing systems and equipment is controlled by a combination of pneumatic and Direct Digital Controls (DDC). Refer to the table above for Air Handling Unit control type.

Fire Suppression

Existing fire suppression system is an automatic standpipe system with an 8” wet riser (#1), 4” wet riser (#2), 4” dry riser (#3) and 8” wet riser (#4). The dry system serves Material Storage and the wet system serves the remainder of the building.

ELECTRICAL

Existing Systems

Existing 800A service, electrical branch and main panels are in good condition. Panels are approximately 25 years old. Arc flash labels were applied to panels. Panels appear to be well maintained. Lighting is provided with minimal automatic control, fluorescent fixtures with parabolic louvers are used throughout and provide a low light level. Existing 100kW emergency generator only backs up very minimum electrical loads.

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FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm

Fire alarm horn strobes provide decent coverage, but is tone system only without voice instruction.

Security Systems

Access control at main exterior doors only; served from the cabinet on the second floor. No video intercom at entrance vestibules. There are a few cameras around the outside of the buildings, and some inside covering a few of the exterior entrance doors.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Demarc is on the second floor in room 202. Existing POTS system is largely abandoned. Single closet on the second floor has a lot of abandoned equipment and racks still left in place. Data cabling on the second floor appears to be mostly CAT6. Closets on the first floor are shallow depth with no dedicated cooling or air filtration. The oversized bifold doors no longer stay on the rails. Most of the data cabling on the first floor appears to be CAT5E and is long overdue for replacement.

Clocks & Paging Systems

There is no paging or clock system in the building.

Audio-Video Systems

There are a few digital signs sprinkled around the building. They are each controlled by a dedicated PC located in the vicinity of the display. They are not centrally managed. The athletic facility has some flat panel displays with locally connected VCRs and DVD players.

ENVIRONMENTAL

Energy Usage

Building energy usage is electricity and natural gas. The chart below shows a peak of electricity usage in the summer and, conversely, a peak of natural gas in the winter. The total annual operating cost for 2021 was $226,140. The Energy Use Intensity (EUI) observed for 2021 was, on average, 6 kBtu/SF, which is far less than the CBECS 2021 average utility service center at 50 kBtu/SF per year. The low EUI observed at the Kalamazoo Service center for 2021 may be a result of underutilized space as well as many remote employees due to the pandemic.

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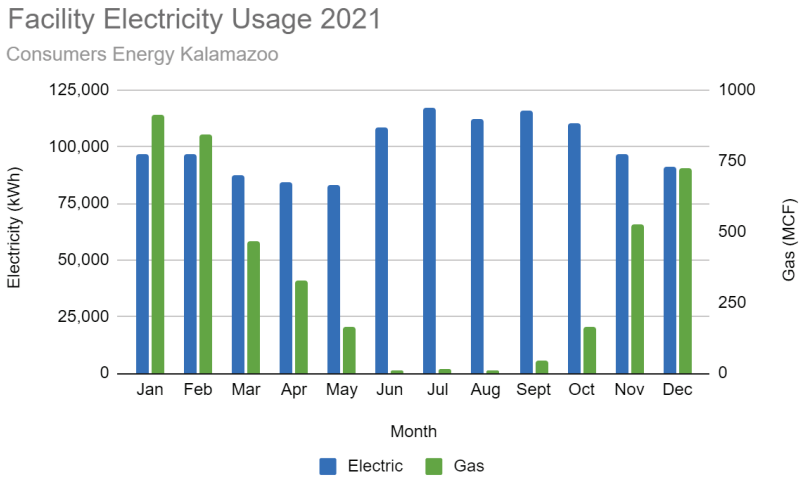

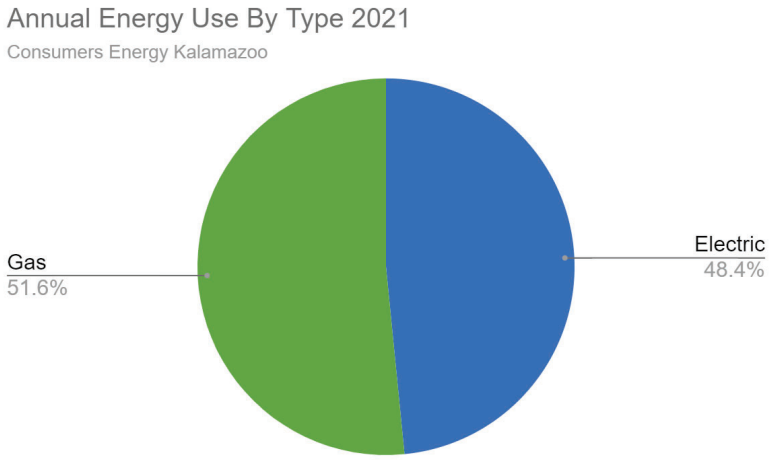

ALTERNATE OPTION #1: PHASED RENOVATION OF THE EXISTING BUILDING WITH NO SIGNIFICANT CHANGE TO THE BUILDING FOOTPRINT, MINIMAL CHANGES TO THE INTERNAL LAYOUT

SITE

Alterations

No site alterations.

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ARCHITECTURAL

In the five renovation concepts there are consistent scope items that will carry through. The goal would be to provide an appropriately upgraded level of finish to the spaces. Improve the exterior envelope, including perimeter wall insulation, replacing the roofing, roof insulation and upgrading the existing areas of roof deck that are no longer in good condition. Along with these upgrades, the exterior windows would be replaced in all options to further improve the thermal performance of the facility, in pursuit of the sustainable design goals.

There will be new entrance and exit hardware as needed along with building security upgrades to reorganize visitor access to the site. This will achieve the program goals of keeping the service center secure while having a minimal impact on the teams using the facility on a daily basis.

Option 1 represents the smallest scope of architectural work to support the improvements to the facility. There will be some departmental reorganization to increase adjacency efficiency (see diagrams). The majority of the existing uses and adjacencies will be maintained. The goal of this option is to increase the utilization of the existing space, while controlling the capital costs and minimizing the disruption to operations. This option will also allow for long-term growth in the existing space by capturing “soft space” (conference rooms, etc.) to allow for future growth into workspaces.

The operational planning will benefit from in-place renovations but this concept will have the least impact on operations of the six proposed options. The majority of existing walls will be maintained and the primary adjacency between the crew locker room and the Indoor Parking Area will remain as is.

In this option, the office building should still be able to be in operation for most of a phased renovation project. We would encourage a remote work policy during the renovation of the office areas to allow for simpler construction phasing. This will allow the high-bay spaces to also be phased to minimize the impact.

All exterior walls will remain “as is”. The vast majority of interior walls will also remain “as is”. This will limit renovation costs. A broad range of improvements to the existing spaces are planned as part of this option:

- Abate and remove all asbestos in the office area
- Add insulation to the exterior walls in the office area
- Tear-off and add new roofing to the existing facility
- New finishes throughout the office area. Including flooring, ceilings and wall paint (See interiors section below)

These upgrades will work in conjunction with the systems upgrades to allow for the building to operate with improved energy efficiency.

INTERIOR DESIGN

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Design Alterations

First floor interior renovation consists of asbestos remediation that allows for new finishes for office spaces. After remediation, new w carpet ($28/sy material only), 4" rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.

All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4" rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling (Armstrong Ultima as basis of design).

All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.

All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

STRUCTURAL

With Alternate 1, the modification to the structural system is minimal. The main structural frame of the building is to remain intact, and structural work will be limited to miscellaneous steel, such as lintels above new openings in new or existing masonry walls.

MECHANICAL

Plumbing Systems

Design Alterations

Replace existing water heaters beyond their useful life and associated degraded piping and valves. Replace existing backflow preventers. Replace the following unitary plumbing equipment: Air Compressor #3, Ice Machine #2, and Tepid Water Pump.

Heating, Ventilation, and Air Conditioning

Design Alterations

Alternate 1 includes replacing the existing equipment that is at the end of its useful life and modifying piping as needed based on minor architectural modifications. The following equipment is beyond its useful life and requires replacement: Heating Hot Water Boilers and Pumps, Air Cooled Chiller and Chilled Water Pumps, Liebert units, Condensing Units, Air Handling Units, Rooftop Units, Exhaust Fans (1, 1A, 2A, 3A, 6, 7, 11, 13, 23, 24, 26, 28, 30, 33, 35, 37, 42, 45, 46, 47), Monoxide Exhaust Fans (48, 49, 50, 51), Infrared Heaters (1, 10), Makeup Air Units, Return Air Fans, Gas Fired Unit Heaters.

Temperature Controls

Design Alterations

All new systems will be controlled through Direct Digital Controls and tied into the existing DDC platform.

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Fire Suppression

Design Alterations

Revise existing fire suppression system for new space configurations in accordance with NFPA 13 and the authority having jurisdiction.

ELECTRICAL

Design Alterations

Main Electrical Service

No revisions to main electrical service.

Emergency Power

Replace generator with 300kW natural gas generator to pick up minimum building systems and add some more standby loads.

Power

Remove existing UPS system and upgrade power to technology closets with central UPS backup system.

Lighting

Replace lighting systems with LED lighting, Finelite HP2 2x2 fixtures or similar with DALI drivers.

Upgrade control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations

Replace fire alarm system throughout building with a new voice fire alarm system.

Security Systems

Design Alterations

Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Remove existing readers from locations where not required. Install new control cabinet and power supply in new first floor TR (Telecommunications Room). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations

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For entire first floor, pull all new data cabling to new TR (Telecommunication Room). New racks, patch panels, fiber enclosure in first floor TR. Provide new network electronics. New fiber connection needed between new first floor TR and existing second floor TR. Provide dedicated cooling and rack-mount UPS in new first floor TR.

Audio-Video Systems

Design Alterations

Add A/V systems to conference rooms on the first floor.

ENVIRONMENTAL

Envelope

Alternate #1 includes bring the exterior envelope up to code as discussed in the Architecture section. By adding exterior wall insulation, a new R-30 roof, and new doors and windows to meet current Energy Code (ASHRAE 90.1-2016), the building is anticipated to reduce energy use by up to 10%.

Energy

Existing mechanical, plumbing and electrical systems that are beyond their useful life consume more energy than is required to serve their function. By replacing the units one-for-one, the building will use less energy than previously consumed. Roof mounted solar photovoltaics (PV) can be incorporated for this alternate as a minimally invasive strategy for reducing the dependence on grid-based electricity. Solar PV capacity is limited to approximately 318,000 kWh per year based on available roof area.

Water

Primary building water usage is tied to maintenance garage functions and restrooms. Spaces that are modified architecturally will be provided with new water efficient plumbing fixtures to incrementally reduce overall water usage.

Materials / Embodied Carbon

A minimally invasive design option (Alternate #1) through deeper renovations (Alternate #5) will provide the benefit of reusing existing materials and structure (depending on the level of renovation) which inherently has a lower embodied carbon footprint. The embodied carbon footprint accounts for all of the carbon emissions required to create a material as well as transport it to the project site. Therefore, alternatives that maintain and preserve existing materials reduce embodied carbon but may not be the healthiest materials available.

Alternatives #1 through #5 will incorporate a varying level of new materials which will be evaluated for transparency (EPDs), material ingredients (i.e. HPD, etc.), and VOCs (Volatile Organic Compounds). The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

LEED

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The LEED rating system for Alternate #1 is v4/v4.1 Interior Design and Construction: Commercial Interiors. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #2: PHASED RENOVATION OF THE EXISTING BUILDING, RECONFIGURATION OF INTERNAL LAYOUT TO ACCOMMODATE OWNER'S REQUIREMENTS

SITE

Alterations

No site alterations.

ARCHITECTURAL

The second design option will keep all perimeter walls as is. However, this option will focus on a major internal reorganization of the existing office spaces. Several departments will be relocated into other areas of the office building. The high-bay spaces will be maintained as-is. The interior renovations will have a similar scope to option 1 with the addition of reconfiguration of the interior partitions to better utilize the existing spaces.

There are two main goals for the departmental reorganization. The first goal is to increase the efficiency of the departmental adjacencies and add spaces to improve the employee experience. This includes moving the wellness to the first floor, adjacent to the crew locker areas, adding dedicated conference and hoteling spaces, as well as "work cafe" areas for team member breaks and collaboration. Similar to option 1, the existing customer bill pay area will be renovated into a large conference room with folding partitions to support large group meetings on-site.

The list of physical modifications will include and also expand on option 1.

INTERIOR DESIGN

Design Alterations
Finish alterations will be similar to option 1 where offices areas receive new carpet tile ($28/sy material only), 4" rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.

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All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4" rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling (Armstrong Ultima as basis of design).
All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.
All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

STRUCTURAL

Alterations

The existing building will have most of the internal partitions stripped back to the main structural frame. There are no planned alterations to the current frame, however new exterior envelope elements will be supported back to the structure, which could lead to some minor alterations.

New interior partitions will be mainly constructed with light gauge metal studs, with some isolated masonry walls. As with Alternate 1, some miscellaneous lintels in new or existing masonry walls may be required for this Alternate.

MECHANICAL

Plumbing Systems

Existing domestic water service to remain. Replace items listed in Alternate #1.

Provide new central domestic hot water system to serve the entire building. Replace plumbing fixtures corresponding to restrooms, break areas, and spaces with architectural upgrades.

Heating, Ventilation, and Air Conditioning

Provide new central heating hot water system with three (3) high efficiency boilers, pumps, VFDs, branch piping, valves and appurtenances. Heating water will be generated using two-third redundancy natural gas fired condensing modular boilers. Heating water will feed Air Handling Unit heating coils, terminal unit reheat units, cabinet heaters and unit heaters.

The primary source for building cooling will be a new central chilled water system with one (1) high efficiency air cooled chiller, pumps, VFDs, branch piping, valves and appurtenances.

Provide two new Variable Air Volume Air Handling Units (VAV AHUs); one for each floor of the office wing. The VAV AHU's will be located in the Mechanical Rooms on each respective floor. Terminal units with hot water reheat will be provided for zoning and thermal comfort based on the floor plan.

Additional systems modifications:

- Provide new ductless mini-split cooling systems for all IT spaces.
- One (1) air source heat pump serves the garage break room to remain.
- Replace Cabinet Unit Heaters and Unit Heaters that serve vestibules and entryways.

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- Replace Perimeter Fin Tube for supplemental heat along exterior walls.
- Overhead gas fired infrared heaters in the Material Storage space to remain.
- Replace rooftop Exhaust Fans that serve multiple spaces throughout the building.
- Replace carbon monoxide Exhaust Fans for garage areas.
- Replace Makeup Air Units to provide ventilation air.

Temperature Controls

All new systems will be controlled through Direct Digital Controls and tied into the existing DDC platform. This will enable the maintenance team to maximize the efficiency of the building operation using scheduling and set point control.

Fire Suppression

Revise existing fire suppression system for new space configurations in accordance with NFPA 13 and the authority having jurisdiction.

ELECTRICAL

Design Alterations

Main Electrical Service

No revisions to main electrical service.

Emergency Power

Replace generator with 600kW – 1000kW diesel generator to pick up the entire building systems loads.

Power

Branch panels would be replaced where they are required to be relocated and reconfigured.
New outlets and branch wiring in reconfigured spaces.
Remove existing UPS and upgrade power to technology closets with central UPS backup system.

Lighting

Replace lighting systems with LED lighting, Finelite HP2 2x2 fixtures or similar with DALI drivers.
Upgrade control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations

Replace fire alarm system throughout building with a new voice fire alarm system.

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Security Systems

Design Alterations

Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Install new control cabinet and power supply in TRs (Telecommunications Rooms). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations

Pull all new data cabling on both floors to new TRs (Telecommunication Rooms). New racks, patch panels, fiber enclosure in TRs. Provide new network electronics. New fiber connections needed between TRs. Provide dedicated cooling and rack-mount UPS in all TRs.

Audio-Video Systems

Design Alterations

Add A/V systems to conference rooms and the athletic facility. Provide new centrally-managed digital signage system throughout the building.

ENVIRONMENTAL

Envelope

Alternate #2 resembles envelope work conducted in Alternate #1 to bring the exterior envelope up to code as discussed in the Architecture section.

Energy

Existing mechanical, plumbing and electrical systems that are beyond their useful life consume more energy than is required to serve their function. By replacing the units with a centralized, high efficiency boiler/chiller system, the building will use less energy than previously consumed. Including sub-meters for centralized systems allow for energy tracking and improved maintenance to verify that systems are operating as intended. Roof mounted solar photovoltaics (PV) can be incorporated for this alternate to reduce the dependence on grid-based electricity. Additional roof area is available for this option based on the removal of unitary equipment such as existing rooftop units and condensing units. Solar PV capacity is limited to approximately 1,060,500 kWh per year based on available roof area.

Water

Primary building water usage is tied to maintenance garage functions and restrooms. Spaces that are modified architecturally will be provided with new water efficient plumbing fixtures to incrementally reduce overall water usage. A centralized, high efficiency domestic hot water system will help to reduce overall energy use as well as deliver hot water quickly with hot water return.

Materials / Embodied Carbon

A minimally invasive design option (Alternate #1) through deeper renovations (Alternate #5) will provide the benefit of reusing existing materials and structure (depending on the level of

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renovation) which inherently has a lower embodied carbon footprint. The embodied carbon footprint accounts for all of the carbon emissions required to create a material as well as transport it to the project site. Therefore, alternatives that maintain and preserve existing materials reduce embodied carbon but may not be the healthiest materials available.

Alternatives #1 through #5 will incorporate a varying level of new materials which will be evaluated for transparency (EPDs), material ingredients (i.e. HPD, etc.), and VOCs (Volatile Organic Compounds). The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

LEED
The LEED rating system for Alternate #2 is v4/v4.1 Interior Design and Construction: Commercial Interiors. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #3: RENOVATION OF EXISTING BUILDING WITH REDUCTION TO OFFICE FLOOR SPACE TO MEET SPECIFIC REQUIREMENTS, RECONFIGURATION OF INTERNAL LAYOUT TO ACCOMMODATE OWNER'S REQUIREMENTS

SITE

Alterations

Native, drought-tolerant landscaping at the south end of the office area where the existing building would be demolished.

ARCHITECTURAL

Option 3 explores modifications to the exterior envelope while also further developing the interior renovations to reduce the amount of conditioned spaces, while improving adjacencies and building utilization.

Option 3 will demolish the southernmost four structural bays of the office building. This will reduce the available square footage for additional employee amenities but will match the existing office space square footages. This reduction in conditioned space will reduce HVAC upgrade costs as well as reduce the annual operating costs for the facility.

The high-bay spaces will not have any modifications to the existing footprint. There will be a few modifications to the existing program space in the storage building but the indoor parking and automotive bays will remain as is.

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In this option, the other major scopes of work will be carried forward along with a new south elevation for the office building. It is anticipated that this would be a glass curtainwall system fastened back to the existing structure, with required reinforcement. Aluminum sunshades would be recommended to include to limit solar heat gain while increasing daylight and views for the building users.

This will provide improvements to departmental adjacencies by moving the crew room closer to the IPA, allow for the wellness to be closer to the entries and update the office areas to Consumers Energy workplace standards. By reducing the building footprint, long-term office area growth and flexibility is limited but per square foot operating expenses will be reduced at the Service Center.

INTERIOR DESIGN

Design Alterations

New office areas to receive new carpet tile ($28/sy material only), 4” rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.
All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4” rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling (Armstrong Ultima as basis of design).
All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.
All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

STRUCTURAL

Alterations

In Alternate 3, the southernmost four (4) bays of steel framing will be demolished in the existing two-story office building. As a result of this demolition, previously interior steel columns will now be located on an exterior wall. As such, existing foundations will need to be extended down to bear below the frost-depth (42”) for the State of Michigan. Additionally, a new perimeter frost-wall will be required along the new south face of the building.

In addition, a new stairwell and elevator will be cut into the interior of the building. This will require new steel framing to allow for the new openings through the elevated floors and roofs. A new concrete elevator pit will be required at the elevator location.

A geotechnical report has not been performed for this project, but it’s assumed that conventional shallow footings will be appropriate for all new required foundations.

MECHANICAL

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Plumbing Systems

Provide a new central domestic hot water system to serve the entire building. Provide new plumbing fixtures. Domestic water, sanitary and storm to tie into existing mains. Investigate solar thermal pre-heating for domestic hot water loads.

Heating, Ventilation, and Air Conditioning

Provide new central heating hot water system with three (3) high efficiency boilers, pumps, VFDs, branch piping, valves and appurtenances. Heating water will be generated using two-third redundancy natural gas fired condensing modular boilers. Heating water will feed Dedicated Outdoor Air Unit heating coils, fan coil units, cabinet heaters and unit heaters.

The primary source for building cooling will be a new central chilled water system with one (1) high efficiency air cooled chiller, pumps, VFDs, branch piping, valves and appurtenances.

Provide two new Dedicated Outdoor Air Systems (DOAS); one for each floor of the office wing. The DOAS units will be located in the Mechanical Rooms on each respective floor. Fan coil units with heating water and chilled water will be provided for zoning and sensible loads based on the floor plan. The DOAS will use energy recovery to capture exhaust air to pretreat ventilation air.

Additional systems modifications:

- Provide new ductless mini-split cooling systems for all IT spaces.
- One (1) air source heat pump serves the garage break room to remain.
- Replace Cabinet Unit Heaters and Unit Heaters that serve vestibules and entryways.
- Replace Perimeter Fin Tube for supplemental heat along exterior walls with overhead radiant panel or in-floor radiant heat.
- Overhead gas fired infrared heaters in the Material Storage space to remain.
- Remove rooftop Exhaust Fans that serve office spaces throughout the building. Exhaust air will be routed to the DOAS for energy recovery.
- Replace carbon monoxide Exhaust Fans for garage areas.
- Remove Makeup Air Units in office areas.

Temperature Controls

All new systems will be controlled through Direct Digital Controls and tied into the existing DDC platform. This will enable the maintenance team to maximize the efficiency of the building operation using scheduling and set point control. All existing pneumatic controls will be removed within the scope of the renovated areas.

Fire Suppression

Provide new fire suppression systems fed from the existing main risers in accordance with NFPA 13 and the authority having jurisdiction.

ELECTRICAL

Design Alterations

Main Electrical Service

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No revisions to main electrical service.

Emergency Power
Replace generator with 600kW – 1000kW diesel generator to pick up the entire building systems loads.

Power
Branch panels would be replaced where they are required to be relocated and reconfigured. New outlets and branch wiring in reconfigured spaces.
Remove existing UPS and upgrade power to technology closets with central UPS backup system.

Lighting
Replace lighting systems with LED lighting, Finelite HP2 2x2 fixtures or similar with DALI drivers.
Upgrade control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations
Replace fire alarm system throughout building with a new voice fire alarm system.

Security Systems

Design Alterations
Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Install new control cabinet and power supply in TRs (Telecommunications Rooms). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations
Reroute service entrance cabling to new EF/TR (Entrance Facility / Telecommunications Room) location. Pull all new data cabling throughout the building to new TRs (Telecommunication Rooms). New racks, patch panels, fiber enclosure in TRs. Provide new network electronics. New fiber connections needed between TRs. Provide dedicated cooling and rack-mount UPS in all TRs.

Audio-Video Systems

Design Alterations
Add A/V systems to conference rooms and the athletic facility. Provide new centrally-managed digital signage system throughout the building.

ENVIRONMENTAL

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Envelope
Alternate #3 includes designing a new exterior envelope as discussed in the Architecture section. With a major renovation, the new exterior wall insulation, a new R-30+ roof, and new doors and windows will be designed to meet or exceed current Energy Code (ASHRAE 90.1-2016) to reduce building energy use.

Energy
Existing mechanical, plumbing and electrical systems that are beyond their useful life consume more energy than is required to serve their function. By replacing the units with a centralized, high efficiency boiler/chiller system, the building will use less energy than previously consumed. Utilizing a Dedicated Outdoor Air System (DOAS) reduced energy use in multiple ways: provides the opportunity for energy recovery of exhaust air, separates the sensible loads in the spaces to allow for more efficient fluid processes to serve the space as well as deliver fresh ventilation air more efficiently. DOAS systems typically reduce energy use by 8-10% compared to traditional VAV Air Handling Unit systems.

Including sub-meters for centralized systems allow for energy tracking and improved maintenance to verify that systems are operating as intended. Roof mounted solar photovoltaics (PV) can be incorporated for this alternate to reduce the dependence on grid-based electricity. Additional roof area is available for this option based on the removal of unitary equipment such as existing rooftop units and condensing units. Solar PV capacity is limited to approximately 965,800 kWh per year based on available roof area.

Water
Primary building water usage is tied to maintenance garage functions and restrooms. Spaces that are modified architecturally will be provided with new water efficient plumbing fixtures to incrementally reduce overall water usage. A centralized, high efficiency domestic hot water system will help to reduce overall energy use as well as deliver hot water quickly with hot water return. A larger renovation that encompasses more water end uses allows for the use of solar thermal for pre-heating domestic hot water loads.

In Alternate #3, a deeper renovation and new roof allows for a reconfiguration of the office building water system. Greywater and/or rainwater reclamation can be used to reduce the amount of domestic service water required from the local utility. Rainwater capture of the available roof area results in approximately 908,334 gallons per year to be used for water end uses.

Materials / Embodied Carbon
A minimally invasive design option (Alternate #1) through deeper renovations (Alternate #5) will provide the benefit of reusing existing materials and structure (depending on the level of renovation) which inherently has a lower embodied carbon footprint. The embodied carbon footprint accounts for all of the carbon emissions required to create a material as well as transport it to the project site. Therefore, alternatives that maintain and preserve existing materials reduce embodied carbon but may not be the healthiest materials available.

Alternatives #1 through #5 will incorporate a varying level of new materials which will be evaluated for transparency (EPDs), material ingredients (i.e. HPD, etc.), and VOCs (Volatile Organic

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Compounds). The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

LEED
The LEED rating system for Alternate #3 is v4/v4.1 Interior Design and Construction: Commercial Interiors based on no site work conducted. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #4: RENOVATION OF EXISTING BUILDING WITH REDUCTION TO OFFICE FLOOR SPACE TO MEET SPECIFIC REQUIREMENTS, DEMOLITION OF THE AUTOMOTIVE AND EQUIPMENT SERVICE GARAGE, CONSTRUCTION OF NEW AUTOMOTIVE REPAIR AND EQUIPMENT SERVICE GARAGE

SITE

Alterations / Phasing

The western-most gas-service covered parking bay will be removed to accommodate the construction of the new automotive repair and equipment service garage on the south side end of the existing office building. The access drive from the south will need to be reconfigured and expanded to accommodate proper turning radii of the service trucks with trailers entering the service bays. Two of the three service bays can accommodate pull through lanes, allowing direct access to the rest of the property. Deliveries to the new service center do present an operational challenge in this option. Materials delivery originating from receiving and storage will present occasional traffic conflicts between delivery equipment (trucks and forklifts) and service vehicles exiting the service center.

There are then two options for accommodating the displaced covered parking: A) the existing service area can be retrofitted as an additional indoor parking area (IPA) or B) a new covered parking bay and associated new pavement can be constructed to replace the covered parking bay displaced by the new repair and service garage. This alternative also accommodates a flexible, just-in-time (JIT) material delivery lane attached to the north west corner of the existing storage facility.

ARCHITECTURAL

Option 4 relocates the automotive repair area to the south end of the office building. The office building would undergo the same floor plate renovations as presented in option 3 but in lieu of a new south facade, the automotive repair and welding areas would be relocated to the land that was vacated during demolition. In addition to the changes to the office building footprint, the major renovation scopes outlined in the previous three options will also be included in the scope for Option 4.

The new high-bay addition would be a pre-engineered structure with an architecturally complimentary facade to the existing mid-century office building design. This addition would be completed after the office demolition and renovation was complete. This will allow for the existing automotive service area to maintain operations while the new space is being constructed. The existing automotive repair

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section of the building will be demolished and additional covered parking bays will be built to offset the area of the site that houses the new addition.

This option allows for long-term expansion of the automotive repair area as well as the indoor parking area. However, it limits the ability for the office area to expand by capping that section of the building at both the north and south ends.

INTERIOR DESIGN

Design Alterations

Finish alterations will be similar to option 3 where offices areas receive new carpet tile ($28/sy material only), 4" rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.

All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4" rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling (Armstrong Ultima as basis of design).

All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.

All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

STRUCTURAL

Alterations

The automotive service/repair and welding shop will be demolished in its entirety as part of Alternate 4. The indoor parking and materials storage areas will remain largely intact from a Structural perspective. Again, the southernmost four (4) bays of steel framing will be demolished in the existing two-story office building. As with other Alternates, the interior of the existing office building will be reconfigured, resulting in some miscellaneous structural work, including new stairwells and an elevator shaft.

The automotive service/repair and welding shops will be rebuilt along the south edge of the remaining office building. Since the final existing bay of structural steel will now remain an 'interior' space, the foundations along this wall will not need to be reworked as noted for Alternate 3.

Both pre-engineered metal building (PEMB) or conventional steel framing / bar joists will be explored for the new structural system for the relocated automotive service/repair and welding shop building.

MECHANICAL

Plumbing Systems

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Provide a new central domestic hot water system to serve the entire building. Provide new plumbing fixtures. Domestic water, sanitary and storm to tie into existing mains. Investigate solar thermal pre-heating for domestic hot water loads.

Provide new plumbing systems for new Service Garage. Investigate rainwater collection at the new Service Garage roof to use for process greywater.

Heating, Ventilation, and Air Conditioning

Provide new central heating hot water system with three (3) high efficiency boilers, pumps, VFDs, branch piping, valves and appurtenances. Heating water will be generated using two-third redundancy natural gas fired condensing modular boilers. Heating water will feed Dedicated Outdoor Air Unit heating coils, fan coil units, cabinet heaters and unit heaters.

The primary source for building cooling will be a new central chilled water system with one (1) high efficiency air cooled chiller, pumps, VFDs, branch piping, valves and appurtenances.

Investigate geothermal heating and cooling within the scope of new site work and pavement. Utilize ground source water-to-water heat pumps in lieu of boilers and chillers. It is recommended to pursue a geothermal system for Alternate #6 based on the scope of sitework available and modiications that are required within the existing building.

Provide two new Dedicated Outdoor Air Systems (DOAS); one for each floor of the office wing. The DOAS units will be located in the Mechanical Rooms on each respective floor. Fan coil units with heating water and chilled water will be provided for zoning and sensible loads based on the floor plan. The DOAS will use energy recovery to capture exhaust air to pretreat ventilation air.

Replace overhead infrared heaters in Service Garage. Investigate electric alternatives for infrared heaters. Provide ventilation louvers and inline exhaust fans on opposite walls to allow for cross ventilation. Provide new High Volume Low Speed (HVLS) fans for efficient summer cooling.

Additional systems modifications:

- Provide new ductless mini-split cooling systems for all IT spaces.
- One (1) air source heat pump serves the garage break room to remain.
- Replace Cabinet Unit Heaters and Unit Heaters that serve vestibules and entryways.
- Replace Perimeter Fin Tube for supplemental heat along exterior walls with overhead radiant panel or in-floor radiant heat.
- Remove rooftop Exhaust Fans that serve office spaces throughout the building. Exhaust air will be routed to the DOAS for energy recovery.
- Replace carbon monoxide Exhaust Fans for garage areas.
- Remove Makeup Air Units in office areas.

Temperature Controls

All new systems will be controlled through Direct Digital Controls and tied into the existing DDC platform. This will enable the maintenance team to maximize the efficiency of the building operation using scheduling and set point control. All existing pneumatic controls will be removed within the scope of the renovated areas.

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Fire Suppression

Provide new fire suppression systems fed from the existing main risers in accordance with NFPA 13 and the authority having jurisdiction.

ELECTRICAL

Design Alterations

Main Electrical Service

No revisions to main electrical service.

Emergency Power

Replace generator with 600kW – 1000kW diesel generator to pick up the entire building systems loads.

Power

Branch panels would be replaced where they are required to be relocated and reconfigured. New outlets and branch wiring in reconfigured spaces.

Remove existing UPS and upgrade power to technology closets with central UPS backup system.

Lighting

Replace lighting systems with LED lighting, Finelite HP2 2x2 fixtures or similar with DALI drivers.

Upgrade control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations

Replace fire alarm system throughout building with a new voice fire alarm system.

Security Systems

Design Alterations

Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Install new control cabinet and power supply in TRs (Telecommunications Rooms). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations

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Reroute service entrance cabling to new EF/TR (Entrance Facility / Telecommunications Room) location. Pull all new data cabling throughout the building to new TRs (Telecommunication Rooms). New racks, patch panels, fiber enclosure in TRs. Provide new network electronics. New fiber connections needed between TRs. Provide dedicated cooling and rack-mount UPS in all TRs.

Audio-Video Systems

Design Alterations

Add A/V systems to conference rooms and the athletic facility. Provide new centrally-managed digital signage system throughout the building.

ENVIRONMENTAL

Envelope

Alternate #4 resembles envelope work conducted in Alternate #3 for a new exterior envelope as discussed in the Architecture section. With a major renovation, the new exterior wall insulation, a new R-30+ roof, and new doors and windows will be designed to meet or exceed current Energy Code (ASHRAE 90.1-2016) to reduce building energy use. A new envelope will be designed to meet or exceed code for the service garage to reduce energy usage.

Energy

Existing mechanical, plumbing and electrical systems that are beyond their useful life consume more energy than is required to serve their function. By replacing the units with a centralized, high efficiency boiler/chiller system, the building will use less energy than previously consumed. Utilizing a Dedicated Outdoor Air System (DOAS) reduced energy use in multiple ways: provides the opportunity for energy recovery of exhaust air, separates the sensible loads in the spaces to allow for more efficient fluid processes to serve the space as well as deliver fresh ventilation air more efficiently. DOAS systems typically reduce energy use by 8-10% compared to traditional VAV Air Handling Unit systems.

Including sub-meters for centralized systems allow for energy tracking and improved maintenance to verify that systems are operating as intended. Roof mounted solar photovoltaics (PV) can be incorporated for this alternate to reduce the dependence on grid-based electricity. Additional roof area is available for this option based on the removal of unitary equipment such as existing rooftop units and condensing units. Solar PV capacity is limited to approximately 2,594,000 kWh per year based on available roof area. Investigate installation of solar PV on the new site awnings.

Water

Primary building water usage is tied to maintenance garage functions and restrooms. Spaces that are modified architecturally will be provided with new water efficient plumbing fixtures to incrementally reduce overall water usage. A centralized, high efficiency domestic hot water system will help to reduce overall energy use as well as deliver hot water quickly with hot water return. A larger renovation that encompasses more water end uses allows for the use of solar thermal for pre-heating domestic hot water loads.

In Alternate #4, a deeper renovation and new vehicle bays allows for a reconfiguration of the entire building water system. Greywater and/or rainwater reclamation can be used to reduce the amount

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of domestic service water required from the local utility. Rainwater capture of the entire roof area results in approximately1,325,900 gallons per year to be used for process water uses.

Materials / Embodied Carbon
A minimally invasive design option (Alternate #1) through deeper renovations (Alternate #5) will provide the benefit of reusing existing materials and structure (depending on the level of renovation) which inherently has a lower embodied carbon footprint. The embodied carbon footprint accounts for all of the carbon emissions required to create a material as well as transport it to the project site. Therefore, alternatives that maintain and preserve existing materials reduce embodied carbon but may not be the healthiest materials available.

Alternatives #1 through #5 will incorporate a varying level of new materials which will be evaluated for transparency (EPDs), material ingredients (i.e. HPD, etc.), and VOCs (Volatile Organic Compounds). The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

LEED
The LEED rating system for Alternate #4 is v4/v4.1 Buliding Design and Construction: Major Renovation. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #5: REDUCTION OF OFFICE FLOOR TO MEET SPECIFIED REQUIREMENT, DEMO OF EXIST INDOOR PARKING SPACE, CONSTRUCT NEW INDOOR VEHICLE LOADING & S STORAGE AREA, DEMO OF AUTOMOTIVE AND EQUIP SERVICE GARAGE, CONSTRUCT OF NEW AUTO AND EQUIPMENT SERVICE GARAGE

SITE

Alterations / Phasing

This Alternate covers a phased reconstruction of several of the main components of the site. Phasing of demolition and construction activities are important to allow facilities operations to continue while minimizing operational disruption. The first phase is to construct new covered parking bays along the east and west edges of the yard. This will provide gas service with covered parking spaces and allow the existing covered parking to be demolished, providing a buildable area for a pre-engineered building to be constructed in this footprint. This building will house service, welding, storage, and a temporary indoor parking area to the extent possible. Phase two will then demolish the existing indoor parking, service, and welding areas, and subsequently construct a large indoor parking facility adjacent to the existing storage area to remain.

The fourth and final phase will be to construct new utility service covered parking adjacent to the two new facilities as well as a flexible “uber deliveries” access drive on the northwest corner to the existing storage facility.

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This Alternate establishes a primary south to north circulation pattern. Service trucks will continue to enter the site from the south gate, moving north to covered parking stalls or new IPA. Potential traffic conflicts are possible in the space between the new service center and new IPA, as this area accommodates a convergence of different circulation paths.

These improvements maximize the amount of indoor parking provided in the end state and enhance the facility's ability to accommodate flexible, just-in-time (JIT) material delivery methods. New pavement will need to be installed throughout based on the complex phased construction impacts.

The following Architectural section covers the phasing of this Alternate in more detail.

ARCHITECTURAL

Existing

1st Floor: Vertical circulation, dispatch, mechanical (except the most southern room) and toilet spaces to remain. Exterior wall construction to remain.

2nd Floor: Vertical circulation, mechanical (except the most southern room), toilet spaces, conference spaces, Electrical Engineering, CEM, and plotter spaces to remain. Exterior wall construction to remain.

Alterations

This project to be dictated by phasing to allow owner to keep operation continue uninterrupted. Site work and new pre-engineered building must be in concert to keep site open as much as possible to keep paths and entrances to existing buildings open to owner's employees.

All windows, doors, and frames (swing and overhead styles) are to be removed, discarded, and replaced with new energy efficient windows, doors, frames, and weather seals at the main structure.

PHASE 1: New covered parking for smaller vehicles. New covered parking for utility trucks built to the East of the existing South utility truck parking structure.

PHASE 2: Remove and discard existing covered parking structures for small vehicles. Remove and discard utility truck covered parking. Remove and discard parking lot surface and prep for building foundations and utilities for phase 3.

PHASE 3: New foundations, footings, and utilities ran for high bay pre-engineered building going where existing covered parking for small vehicles had been. Once completed, move all existing indoor parking, pipe welding shop, wash bay, storage, maintenance, and supporting program into the new pre-engineered building. Pre-engineered building to have traffic flow move from south to north in a one-way direction.

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PHASE 4: Remove and discard existing high bay building where previous programs were moved to the new pre-engineered building. Prep site for new foundations, footings, and utilities for new high bay structure.

PHASE 5: New foundations, footings, utilities, and high bay structure. Once structure is completed, move indoor parking from pre-engineered building back into newly created space. Welding, maintenance, storage will stay in pre-engineered structure. High bay structure to have traffic flow move from south to north in a one-way direction.

PHASE 6: Abatement to be done prior to interior remodeling. Remodel of interior spaces of existing storage and office areas of the existing building. Move programs around to newly renovated spaces.

PHASE 7: Remove and discard south sections of the existing office building for footprint reduction. Keep vertical core of elevator and stair. Install new glazing and façade to create new entrance for employees to enter. New architectural exterior wall systems to tie into existing building envelope.

PHASE 8: New covered parking for smaller vehicles East of existing building that is remodeled.

First Floor: Welding, wash bay, storage, and maintenance will be separated from the indoor parking group and reside in the new pre-engineered structure south of the indoor parking structure. New delivery bump out at the northeast corner of the existing building for quick pick up and drop off. Wellness and locker room to be moved adjacent to indoor parking. Storage has been reduced in size. Hoteling near the main entrance near the large conference room. Gas Service, gas work space, LVD offices, and Gas T&S field leaders in the south section of the building.

Second Floor: Electrical Engineering, CEM, GAS T&S office-based employees, office support spaces, conference rooms, and building utility. Remove southern section of the existing office as shown. New southern two-story lobby is created. Consolidate the Gas storage and Gas team that is currently spread throughout. Large conference space at the Eastern (main) entrance and large hoteling space to the south of the Eastern entrance. Wellness has been relocated from second floor to the first floor south of the lockers and shower space. Unassigned area that is open to any bit of overflow programming required.

INTERIOR DESIGN

Design Alterations

Finish alterations will be similar to option 1 where offices areas receive new carpet tile ($28/sy material only), 4” rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.

All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4” rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling

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(Armstrong Ultima as basis of design).
All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.
All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

STRUCTURAL

Alterations

The indoor parking and automotive service/repair and welding shop will be demolished in their entirety to allow for construction of larger reconfigured facilities. Similar to Alternates 3 and 4, a portion of the south end of the office building will be demolished. In Alternate 5, this demolition is more limited to an L-shaped area. Again, existing foundations will need to be extended down to bear below the frost-depth, and a new frost wall will be required along the south face that was previously interior to the building. Existing perimeter beams may need to be reworked to allow for support of new curtain wall along the south face.

A new indoor parking and automotive service/ repair and welding shop facility will be constructed in the same location as the previous. The new facilities will be larger than the previous, with additional square footage on the north side of the building. It is anticipated that two PEMB structures will be used; one for the automotive service/repair facility and one for the indoor parking facility.

MECHANICAL

Mechanical work recommended for Alternate #5 resembled Alternate #4 but with the addition of a new Vehicle Loading and Storage Area.

Plumbing Systems

Provide a new central domestic hot water system to serve the entire building. Provide new plumbing fixtures. Domestic water, sanitary and storm to tie into existing mains. Investigate solar thermal pre-heating for domestic hot water loads.

Provide new plumbing systems for new Service Garage and new Vehicle Loading and Storage Area. Investigate rainwater collection for all new roof areas to use for process greywater and toilet flushing.

Heating, Ventilation, and Air Conditioning

Provide new central heating hot water system with three (3) high efficiency boilers, pumps, VFDs, branch piping, valves and appurtenances. Heating water will be generated using two-third redundancy natural gas fired condensing modular boilers. Heating water will feed Dedicated Outdoor Air Unit heating coils, fan coil units, cabinet heaters and unit heaters.

The primary source for building cooling will be a new central chilled water system with one (1) high efficiency air cooled chiller, pumps, VFDs, branch piping, valves and appurtenances.

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Investigate geothermal heating and cooling within the scope of new site work and pavement. Utilize ground source water-to-water heat pumps in lieu of boilers and chillers. It is recommended to pursue a geothermal system for Alternate #6 based on the scope of sitework available and modiications that are required within the existing building.

Provide two new Dedicated Outdoor Air Systems (DOAS); one for each floor of the office wing. The DOAS units will be located in the Mechanical Rooms on each respective floor. Fan coil units with heating water and chilled water will be provided for zoning and sensible loads based on the floor plan. The DOAS will use energy recovery to capture exhaust air to pretreat ventilation air.

Replace overhead infrared heaters in Service Garage and Vehicle Loading and Storage Area. Investigate electric alternatives for infrared heaters. Provide ventilation louvers and inline exhaust fans on opposite walls to allow for cross ventilation. Provide new High Volume Low Speed (HVLS) fans for efficient summer cooling.

Additional systems modifications:

- Provide new ductless mini-split cooling systems for all IT spaces.
- One (1) air source heat pump serves the garage break room to remain.
- Replace Cabinet Unit Heaters and Unit Heaters that serve vestibules and entryways.
- Replace Perimeter Fin Tube for supplemental heat along exterior walls with overhead radiant panel or in-floor radiant heat.
- Remove rooftop Exhaust Fans that serve office spaces throughout the building. Exhaust air will be routed to the DOAS for energy recovery.
- Replace carbon monoxide Exhaust Fans for garage areas.
- Remove Makeup Air Units in office areas.

Temperature Controls

All new systems will be controlled through Direct Digital Controls and tied into the existing DDC platform. This will enable the maintenance team to maximize the efficiency of the building operation using scheduling and set point control. All existing pneumatic controls will be removed within the scope of the renovated areas.

Fire Suppression

Provide new fire suppression systems fed from the existing main risers in accordance with NFPA 13 and the authority having jurisdiction. Provide new dry piping tied to existing riser for applicable storage areas.

ELECTRICAL

Design Alterations

Main Electrical Service

No revisions to main electrical service.

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Emergency Power
Replace generator with 600kW – 1000kW diesel generator to pick up the entire building systems loads.

Power
Branch panels would be replaced where they are required to be relocated and reconfigured. New outlets and branch wiring in reconfigured spaces.
Remove existing UPS and upgrade power to technology closets with central UPS backup system.

Lighting
Replace lighting systems with LED lighting, Finelite HP2 2x2 fixtures or similar with DALI drivers.
Upgrade control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations
Replace fire alarm system throughout building with a new voice fire alarm system.

Security Systems

Design Alterations
Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Install new control cabinet and power supply in TRs (Telecommunications Rooms). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations
Reroute service entrance cabling to new EF/TR (Entrance Facility / Telecommunications Room) location. Pull all new data cabling throughout the building to new TRs (Telecommunication Rooms). New racks, patch panels, fiber enclosure in TRs. Provide new network electronics. New fiber connections needed between TRs. Provide dedicated cooling and rack-mount UPS in all TRs.

Audio-Video Systems

Design Alterations
Add A/V systems to conference rooms and the athletic facility. Provide new centrally-managed digital signage system throughout the building.

ENVIRONMENTAL

Envelope

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Alternate #5 resembles envelope work conducted in Alternate #4 for a new exterior envelope as discussed in the Architecture section. With a major renovation, the new exterior wall insulation, a new R-30+ roof, and new doors and windows will be designed to meet or exceed current Energy Code (ASHRAE 90.1-2016) to reduce building energy use. A new envelope will be designed to meet or exceed code for the new Service Garage and Vehicle Loading and Storage areas.

Energy
Existing mechanical, plumbing and electrical systems that are beyond their useful life consume more energy than is required to serve their function. By replacing the units with a centralized, high efficiency boiler/chiller system, the building will use less energy than previously consumed. Utilizing a Dedicated Outdoor Air System (DOAS) reduced energy use in multiple ways: provides the opportunity for energy recovery of exhaust air, separates the sensible loads in the spaces to allow for more efficient fluid processes to serve the space as well as deliver fresh ventilation air more efficiently. DOAS systems typically reduce energy use by 8-10% compared to traditional VAV Air Handling Unit systems.

Including sub-meters for centralized systems allow for energy tracking and improved maintenance to verify that systems are operating as intended. Roof mounted solar photovoltaics (PV) can be incorporated for this alternate to reduce the dependence on grid-based electricity. Additional roof area is available for this option based on the removal of unitary equipment such as existing rooftop units and condensing units. Solar PV capacity is limited to approximately 8,143,000 kWh per year based on available roof area. Investigate installation of solar PV on the new site awnings.

Water
Primary building water usage is tied to maintenance garage functions and restrooms. Spaces that are modified architecturally will be provided with new water efficient plumbing fixtures to incrementally reduce overall water usage. A centralized, high efficiency domestic hot water system will help to reduce overall energy use as well as deliver hot water quickly with hot water return. A larger renovation that encompasses more water end uses allows for the use of solar thermal for pre-heating domestic hot water loads.

In Alternate #5, a deeper renovation, new Service Garage and new Vehicle Loading allows for a reconfiguration of the entire building water system. Greywater and/or rainwater reclamation can be used to reduce the amount of domestic service water required from the local utility. Rainwater capture of the entire roof area results in approximately 1,676,600 gallons per year to be used for process water uses and toilet flushing.

Materials / Embodied Carbon
A minimally invasive design option (Alternate #1) through deeper renovations (Alternate #5) will provide the benefit of reusing existing materials and structure (depending on the level of renovation) which inherently has a lower embodied carbon footprint. The embodied carbon footprint accounts for all of the carbon emissions required to create a material as well as transport it to the project site. Therefore, alternatives that maintain and preserve existing materials reduce embodied carbon but may not be the healthiest materials available.

Alternatives #1 through #5 will incorporate a varying level of new materials which will be evaluated for transparency (EPDs), material ingredients (i.e. HPD, etc.), and VOCs (Volatile Organic

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Compounds). The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

LEED
The LEED rating system for Alternate #5 is v4/v4.1 Buliding Design and Construction: Major Renovation. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #6: CONSTRUCT NEW BUILDING ON SITE TO REPLACE EXIST BLDG., EXISTING BUILDING TO REMAIN OPERATION PHASE SITE DEVELOPMENT, DEMOLITION OF EXISTING WITH BUILDING TO FOLLOW UP OCCUPANCY OF NEW BUILDING, COMPLETE SITE WORK TO FOLLOW AFTER DEMOLITION OF EXISTING BUILDING

SITE

Alterations / Phasing

This Alternate covers a major reconstruction of the site. Phasing of demolition and construction activities are important to allow facilities operations to continue with minimal disruption. The first phase is to demolish the existing gas service covered parking bays, office building, and surrounding pavement. This will provide a buildable area for the second phase which includes the construction of: the new office building, receiving / storage, indoor parking area, and service bays. These will be constructed south of the existing storage and indoor parking area, allowing the existing high bay space to remain functional during construction.

The third phase will include the construction of new access drives along Emerald Dr for the receiving bays and service entrance drive at the south end of the property. This south entrance drive will serve a new fueling station and access to the indoor parking, setting up a primary south to north circulation pattern for service trucks. The fourth phase will then include the demolition of the existing receiving / storage and indoor parking buildings. This will provide a buildable area for the fifth and final phase which includes: construction of a new secured parking lot to north of the newly completed office building and the construction of new covered parking bays north of the new indoor parking space.

These improvements provide a new facility that better meets the current and future needs of the user groups. It consolidates and organizes the sequence for crewmembers to get off the lot more efficiently.

ARCHITECTURAL

Option 6 develops a replacement facility on the same campus as the existing service center. The major program elements and relative sizes and adjacencies will be developed to promote and support the service crews and create a service center that aims to improve the flows and processes. The phasing will be dependent on the office staff to work from home during the demolition of the existing office and reconstruction of the new high-bay spaces on the footprint of the existing office.

Once the high-bay spaces have been redeveloped, the existing high-bay spaces will be decommissioned and demolished with the office building being redeveloped on that existing footprint to

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the north. North of the new office, the campus parking lot will be constructed to allow for a single controlled point of day-to-day access on the site.

The new building will be built to Consumers Energy's current design standards, with a priority on highlighting the corporate sustainability goals. Option 6 would be developed to allow the most long-term expansion and flexibility for the future growth of operations at the Kalamazoo Service Center.

INTERIOR DESIGN

Design Alterations

Finish alterations will be similar to option 1 where offices areas receive new carpet tile ($28/sy material only), 4" rubber wallbase, wall paint, and 2x2 ACT lay-in ceiling (Armstrong Ultima as a basis of design) with strategic placements of acoustic wall panels when needed. All conference rooms, Focus rooms, and offices to have (1) glass wall at entry with applied graphic film and low profile seals at doors.

All break rooms and crew rooms to include new LVT flooring ($3/sf material only), painted metal lockers where needed, 4" rubber wall base, painted walls, and new 2x2 lay-in ACT ceiling (Armstrong Ultima as basis of design).

All Wellness Rooms to include full height mirrors and maximum acoustic wall coverings where possible.

All Locker Rooms and Restrooms to have small format tile floors and full height, large format tile surrounding wet areas. Cafe wet walls have full height tiled backsplash with combination of LVT or polished concrete flooring.

All finishes will comply with the current Consumers Energy standards.

STRUCTURAL

New Facility

The current site will be completely reworked in Alternate 5, resulting in the complete (phased) demolition of all existing buildings.

A new office facility will be built on the north side of the site. This building will be framed with structural steel beams and columns supporting concrete floor on metal deck. A conventional metal deck on bar joists will be used for roof structure.

Both the new indoor parking and automotive repair / welding shop buildings will be constructed with PEMB structures.

MECHANICAL

Plumbing Systems

Provide a new central domestic hot water system to serve the entire building. Provide new plumbing fixtures. Domestic water, sanitary and storm to tie into existing mains on site. Provide rainwater collection for the new roof to use for process greywater and toilet flushing. Based on the

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large roof area, it is anticipated that rainwater provides a more cost effective solution than greywater reuse. However, additional work is required to investigate these options.

Investigate solar thermal located on the new roof for pre-heating of domestic hot water loads. In addition, basec on the geothermal capacity, investigate the use of a heat pump desuperheater for domestic hot water loads tied into the Building Heating system.

Heating, Ventilation, and Air Conditioning

Provide new geothermal closed loop system on the project site below future paved parking areas. The associated area is estimated to provide 21,400,000 kBtu per year in heating and cooling. Utilize ground source water-to-water heat pumps in lieu of boilers and chillers to supply Building Heating and Cooling. The geothermal system will provide the opportunity for the building to be net zero energy based on the avoided use of natural gas.

Provide two new Dedicated Outdoor Air Systems (DOAS); one for each floor of the office wing. The DOAS units will be located in the Mechanical Rooms on each respective floor. Fan coil units with heating water and chilled water will be provided for zoning and sensible loads based on the floor plan. The DOAS will use energy recovery to capture exhaust air to pretreat ventilation air.

Replace overhead infrared heaters in Service Garage and Vehicle Loading and Storage Area. Investigate electric alternatives for infrared heaters. Provide ventilation louvers and inline exhaust fans on opposite walls to allow for cross ventilation. Provide new High Volume Low Speed (HVLS) fans for efficient summer cooling.

Additional systems modifications:

- Provide new ductless mini-split cooling systems for all IT spaces.
- Provide air source heat pumps for small ancillary spaces within Service Garage and Vehicle Loading areas.
- Provide new heating water Cabinet Unit Heaters and Unit Heaters that serve vestibules and entryways.
- Provide new radiant ceiling or floor for perimeter spaces.
- Provide carbon monoxide Exhaust Fans for garage areas.

Temperature Controls

All new systems will be controlled through Direct Digital Controls and tied into a central Building Automation System. This will enable the maintenance team to maximize the efficiency of the building operation using scheduling and set point control.

Fire Suppression

Provide new fire suppression systems fed from the existing supply main in accordance with NFPA 13 and the authority having jurisdiction. Provide new dry pipe system for applicable storage areas.

ELECTRICAL

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Design Alterations

Main Electrical Service
Replace and upgrade main electrical service for new building (in new location). Locate pad mount transformer near new electrical room, provide medium voltage distribution to another pad mount for covered parking / garage areas.

Emergency Power
Replace generator with 600kW – 1000kW diesel generator to pick up the entire building systems loads. Explore possibility of generator for each building service.

Power
Provide new branch panels throughout building, new receptacles and UPS and upgrade power to technology closets with central UPS backup system.

Lighting
New LED lighting systems throughout, Finelite HP2 2x2 fixtures or similar with DALI drivers. New system for control of lighting to a Crestron DALI control system with sensors, harvesting and dimming throughout.

FIRE ALARM / SECURITY / SPECIALTY SYSTEMS

Fire Alarm System

Design Alterations
Replace fire alarm system throughout building with a new voice fire alarm system.

Security Systems

Design Alterations
Update access-controlled doors as needed to accommodate functions moving to new locations. Install new readers at locations needed. Install new control cabinet and power supply in TRs (Telecommunications Rooms). Add cameras as required to cover important areas.

COMMUNICATIONS + TECHNOLOGY

Voice & Data Systems

Design Alterations
Reroute service entrance cabling to new EF/TR (Entrance Facility / Telecommunications Room) location. Pull all new data cabling throughout the building to new TRs (Telecommunication Rooms). New racks, patch panels, fiber enclosure in TRs. Provide new network electronics. New fiber connections needed between TRs. Provide dedicated cooling and rack-mount UPS in all TRs.

Audio-Video Systems

Design Alterations
Add A/V systems to conference rooms and the athletic facility. Provide new centrally-managed digital signage system throughout the building.

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ENVIRONMENTAL

Envelope
A new envelope will be designed to exceed energy code for the new building. A tight envelope, low-e and insulating glazing will help to reduce the building energy use. Passive design strategies based on the solar orientation, wind path and other site conditions will help to mitigate energy consumption and result in more cost effecitve mechanical and electrical systems.

Energy
New construction allows the opportunity for renewable energy to be more easily implemented. Ground source heat pumps, roof and awning mounting solar photovoltaics (PV) can be incorporated for this alternate to reduce the dependence on grid-based electricity. Additionally, domestic water heating loads can be reduced through the use of solar thermal panels and/or tying into the Building Heating system. Up to 2,145,000 kWh of energy per year is available through solar PV for Alternate #6, including outdoor carport awnings and roof mounted arrays.

Utilizing a Dedicated Outdoor Air System (DOAS) reduced energy use in multiple ways: provides the opportunity for energy recovery of exhaust air, separates the sensible loads in the spaces to allow for more efficient fluid processes to serve the space as well as deliver fresh ventilation air more efficiently. DOAS systems typically reduce energy use by 8-10% compared to traditional VAV Air Handling Unit systems. Including sub-meters for centralized systems allow for energy tracking and improved maintenance to verify that systems are operating as intended.

Additionally, a reinvision of the project site and electrical system allows for consideration of a new electric fleet powered by a large scale solar photovoltaic (PV) array. While these efforts are possible on a smaller scale for previous Alternates, the most cost effective solution is based on new construction for Alternate #7. Up to 644,160 kWh of energy per year is available through solar PV mounted on the new outdoor carports alone.

Water
New construction provides a holistic approach to building water. A centralized, high efficiency domestic hot water system will help to reduce overall energy use as well as deliver hot water quickly with a hot water return loop. Greywater and/or rainwater reclamation can be used to reduce the amount of domestic service water required from the local utility. Rainwater capture of the entire roof area results in approximately 2,151,000 gallons per year to be used for process water uses and toilet flushing.

Materials / Embodied Carbon
Material selection for a new construction building requires a strong focus on material transparency. Environmental Product Declarations (EPDs), Health Product Declarations (HPDs), and other reporting tools are available to select materials that are made from responsible ingredients, local where possible, and healthy for occupants. Healthy material indicators include zero VOC content and emissions, and inherently nonemitting materials such as wood and ceramics. Life Cycle Assessments (LCAs) are also avaialble to investigate a material's carbon footprint and overall impact on the environment. The amount of responsible materials selected will impact the amount of LEED points in the Materials and Indoor Environmental Quality credits.

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LEED

The LEED rating system for Alternate #6 is v4/v4.1 Buliding Design and Construction: New Construction. Refer to the attached LEED Scorecard for a preliminary estimate of points.

ALTERNATE OPTION #7: A SUMMARY OF ENVIRONMENTAL CONSIDERATIONS FOR ALTERNATES #1 THROUGH #6 AS DETAILED IN PREVIOUS SECTIONS

Below is a summary of the Environmental Study detailed throughout each of the previous sections. Please refer to the attached LEED Checklists for each alternate option as well as the attached floor and site plans.

ALTERNATE 7 - ENVIRONMENTAL STUDY SUMMARY

Category	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Envelope	Insulation, New R30 Roof, Windows to meet energy code			Replacement to meet energy code, New Areas to exceed energy code		New to exceed energy code
Materials	Lower carbon footprint based on utilizing existing structure			Healthy material selection for new construction areas		
Energy Efficiency	Replace existing units with new	Central Boiler/Chiller System, AHU	Central B/C, DOAS with Energy Recovery Infrared heaters & HVLS fans for high bay areas			
Renewable Energy	Solar PV Roof			Solar PV Roof & Carport		Solar PV Roof & Carport, Geothermal
Water	Low flow fixtures where possible	Central DHW	Solar Thermal for DHW Preheat, Rainwater/Greywater Capture based on available area and end uses			
LEED	IDC CI 48 points Certified	IDC CI 57 points Silver	IDC 64 points Gold	BDC MR 66 points Gold	BDC MR 69 points Gold	BDC NC 81 points Platinum

A preliminary review of the estimated energy use and potential renewable energy production is summarized in the table below. Total energy consumption is based on energy saving assumptions and associated savings as listed in the Summary Table above. This value will vary according to the degree of renovation and type of system selected. Total renewable energy produced is based on the maximum area available for solar photovoltaic and/or geothermal systems. Once more holistic and intensive

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energy efficiency and renewable energy systems are installed, the potential for net zero energy becomes more possible. Alternate 6 is the only option that can cover both heating, cooling and electric loads through on-site renewables based on its capacity to include ground source heat pumps.

PRELIMINARY NET ZERO ENERGY EVALUATION

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Estimated Solar Energy (kBtu)	1,085,500	3,618,400	3,295,000	8,852,000	27,784,400	78,752,800
Estimated Geothermal Energy (kBtu)	0	0	0	0	0	21,400,000
Total Renewable Energy (kBtu)	1,085,500	3,618,400	3,295,000	8,852,000	27,784,400	100,152,800
Estimated Energy Consumption (kBtu)	5,535,000	4,920,000	4,125,000	1,592,500	2,041,000	2,931,500
Net Zero Potential?	No	No	No	Yes	Yes	Yes

Rainwater collection is available to some alternates that include a deep renovation of the existing plumbing and stormwater systems on site. Rainwater capture area is based on the new roof areas that can divert rainwater to a central filtration system to deliver treated water to the building end uses.

PRELIMINARY RAINWATER CAPTURE EVALUATION

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6
Roof Area (SF)	0	0	45000	65690	83061	106,600
Runoff Coefficient	1	1	1	1	1	1
Average Annual Rainfall (Inches)	36	36	36	36	36	36
Annual Water Capture Potential (Gal)	0	0	908,334	1,325,966	1,676,603	2,151,742
Estimated Water Consumption (Gal)	1,020,102	1,020,102	1,020,102	1,020,102	1,020,102	1,020,102
Net Zero Potential?	No	No	No	Yes	Yes	Yes

*Water may also be captured through greywater reuse and used for toilet flushing and/or irrigation.

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CONSUMERS ENERGY - KALAMAZOO FACILITY — May, 2022
TowePinkster — PROJ NO: 22.133

***MID-2022 PRICING** - add 7% escalation per year

SCOPE ITEMS	AREA	UNIT COST	COST	Option 1 Minor Office Reno		Option 2 Major Office Reno		Option 3 Reduced Office		Option 4 Reduced Office		Option 5 Reduced Office		Option 6 Replace Facility	
MAJOR PROGRAM AREAS															
OFFICE				58,000		58,000		45,000		45,000		47,200		44,000 **	
STORAGE				48,500		48,500		48,500		48,500		48,500		27,200 **	
INDOOR PARKING AREA				20,200		20,200		20,200		20,200		47,800 **		30,200 **	
AUTOMOTIVE MAINT AREA				20,400		20,400		20,400		21,500 **		46,800 **		23,100 **	
SITE / LANDSCAPE															
Site Demo - Low (allowance)	1	$100,000	$100,000	$0	☐	$0	☐	$100,000	☑	$0	☐	$0	☐	$0	☐
Site Demo - High (allowance)	1	$200,000	$200,000	$0	☐	$0	☐	$0	☐	$200,000	☑	$200,000	☑	$200,000	☑
Vehicle Stall Demo (allowance)	1	$100,000	$100,000	$0	☐	$0	☐	$0	☐	$100,000	☑	$100,000	☑	$100,000	☑
Utility Modifications (allowance)	1	$300,000	$300,000	$0	☐	$0	☐	$0	☐	$300,000	☑	$300,000	☑	$300,000	☑
Vehicle Gates (ea.)	4	$15,000	$60,000	$0	☐	$0	☐	$0	☐	$0	☐	$60,000	☑	$60,000	☑
Security Fence (/lf)	1,950	$70	$136,500	$0	☐	$0	☐	$0	☐	$0	☐	$136,500	☑	$136,500	☑
Parking Lots / Pavement (/acre)	7	$150,000	$997,500	$0	☐	$0	☐	$0	☐	$0	☐	$997,500	☑	$997,500	☑
Parking Lots / Pavement (/acre)	2	$150,000	$225,000	$0	☐	$0	☐	$0	☐	$225,000	☑	$0	☐	$0	☐
Vehicle Stalls w/ Block Heaters (ea.)	120	$30,000	$3,600,000	$0	☐	$0	☐	$0	☐	$0	☐	$3,600,000	☑	$3,600,000	☑
Vehicle Stalls w/ Block Heaters (ea.)	30	$30,000	$900,000	$0	☐	$0	☐	$0	☐	$900,000	☑	$0	☐	$0	☐
Hydro-Excavation Premium (Allowance)	1	$100,000	$100,000	$0	☐	$0	☐	$0	☐	$100,000	☑	$100,000	☑	$100,000	☑
Cold-Storage Building	3,500	$100	$350,000	$0	☐	$0	☐	$0	☐	$350,000	☑	$350,000	☑	$350,000	☑
Fueling Station (allowance)	1	$400,000	$400,000	$0	☐	$0	☐	$0	☐	$0	☐	$400,000	☑	$400,000	☑
Lanscape Areas (/acre)	5	$20,000	$100,000	$0	☐	$0	☐	$0	☐	$100,000	☑	$100,000	☑	$100,000	☑
Lanscape Areas (/acre)	1	$20,000	$10,000	$0	☐	$0	☐	$10,000	☑	$10,000	☑	$0	☐	$0	☐
ARCHITECTURE / INTERIORS															
Asbestos Abatement (/sf)	58,000	$10	$580,000	$580,000	☑	$580,000	☑	$580,000	☑	$580,000	☑	$580,000	☑	$580,000	☑
Interior Office Demo - Heavy	58,000	$7	$406,000	$0	☐	$406,000	☑	$406,000	☑	$406,000	☑	$406,000	☑	$0	☐
Interior Office Demo - Light	58,000	$3	$174,000	$174,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
Office Demo - Whole Building (/sf)	58,000	$5	$290,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$290,000	☑
Storage Area Demo - Whole Buildign (/sf)	48,000	$5	$240,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$240,000	☑
Indoor Parking Demo - Whole Building (/sf)	20,000	$5	$100,000	$0	☐	$0	☐	$0	☐	$0	☐	$100,000	☑	$100,000	☑
Automotive Repair Demo - Whole Building (/sf)	20,400	$5	$102,000	$0	☐	$0	☐	$0	☐	$102,000	☑	$102,000	☑	$102,000	☑
Roof Demo - Asphault & Insulation (/sf)	123,000	$2	$246,000	$246,000	☑	$246,000	☑	$246,000	☑	$246,000	☑	$246,000	☑	$0	☐
Roof Demo - Deck (/sf)	65,000	$2	$130,000	$130,000	☑	$130,000	☑	$130,000	☑	$130,000	☑	$130,000	☑	$0	☐
Roofing: Asphault & Insul. (/sf)	123,000	$25	$3,075,000	$3,075,000	☑	$3,075,000	☑	$3,075,000	☑	$3,075,000	☑	$3,075,000	☑	$0	☐
High Bay Deck replacement (/sf)	65,000	$7	$455,000	$455,000	☑	$455,000	☑	$455,000	☑	$455,000	☑	$455,000	☑	$0	☐
Office Envelope Upgrades (/sf wall area)	18,300	$20	$366,000	$366,000	☑	$366,000	☑	$366,000	☑	$366,000	☑	$366,000	☑	$0	☐
Office Ceilings (/sf)	58,000	$15	$870,000	$870,000	☑	$870,000	☑	$870,000	☑	$870,000	☑	$870,000	☑	$0	☐
Office Finishes: Paint, Flooring (/sf)	58,000	$20	$1,160,000	$1,160,000	☑	$1,160,000	☑	$1,160,000	☑	$1,160,000	☑	$1,160,000	☑	$0	☐
Replace Elevator Cab (ea.)	1	$100,000	$100,000	$0	☐	$100,000	☑	$100,000	☑	$100,000	☑	$100,000	☑	$0	☐
New Elevator Shaft and Cab (ea.)	1	$300,000	$300,000	$0	☐	$0	☐	$300,000	☑	$300,000	☑	$0	☐	$0	☐
Major Office Renovation (/sf)	58,000	$50	$2,900,000	$0	☐	$2,900,000	☑	$0	☐	$0	☐	$0	☐	$0	☐
Reduced Office Footprint Reno (/sf)	45,000	$150	$6,750,000	$0	☐	$0	☐	$6,750,000	☑	$6,750,000	☑	$6,750,000	☑	$0	☐
Structural Reinforcement (allowance)	1	$250,000	$250,000	$0	☐	$0	☐	$250,000	☑	$250,000	☑	$250,000	☑	$0	☐
Replace Exterior Windows (ea)	120	$3,500	$420,000	$420,000	☑	$420,000	☑	$420,000	☑	$420,000	☑	$420,000	☑	$0	
Replace Exterior Entry Doors (ea)															
Replace Exterior Overhead Doors (ea)															
MECHANICAL / PLUMBING															
Hi-Efficiency Central Heating Water System (ea.)	1	$150,000	$150,000	$150,000	☑	$150,000	☑	$150,000	☑	$150,000	☑	$150,000	☑	$0.00	☐
Hi-Efficiency Central Chilled Water System (ea.)	1	$750,000	$750,000	$0	☐	$750,000	☑	$750,000	☑	$750,000	☑	$750,000	☑	$0	☐
(for option 1)	1	$550,000	$550,000	$550,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
Replace High-Bay Mechanical System	65,000	$30	$1,950,000	$1,950,000	☑	$1,950,000	☑	$1,950,000	☑	$1,950,000	☑	$1,950,000	☑	$0	☐
Replace HVAC System: AHU, RTU, etc. (/sf)	58,000	$40	$2,320,000	$2,320,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
New HVAC System: VAV AHU w/ TU (/sf)	58,000	$50	$2,900,000	$0	☐	$2,900,000	☑	$0	☐	$0	☐	$0	☐	$0	☐
New HVAC System: DOAS w/ ERV (/sf)	58,000	$60	$3,480,000	$0	☐	$0	☐	$3,480,000	☑	$3,480,000	☑	$3,480,000	☑	$0	☐
Direct Digital Controls - Office Area(/sf)	58,000	$10	$580,000	$580,000	☑	$580,000	☑	$580,000	☑	$580,000	☑	$580,000	☑	$0	☐
Direct Digital Controls - High Bay (/sf)	65,000	$5	$325,000	$325,000	☑	$325,000	☑	$325,000	☑	$325,000	☑	$0	☐	$0	☐
Fire Protection System (/sf)	123,000	$5	$615,000	$615,000	☑	$615,000	☑	$615,000	☑	$615,000	☑	$615,000	☑	$0	☐
Replace Domestic Hot Water Heaters (ea.)	9	$20,000	$180,000	$180,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
New Central Domestic Water Heaters (ea.)	4	$60,000	$240,000	$0	☐	$240,000	☑	$240,000	☑	$240,000	☑	$240,000	☑	$0	☐
Solar Thermal Domestic HX (ea.)	1	$50,000	$50,000	$0	☐	$0	☐	$50,000	☑	$50,000	☑	$50,000	☑	$0	☐
Domestic Heat Pump HX (ea.)	1	$100,000	$100,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
Replace Plumbing Fixtures (allow)	1	$650,000	$650,000	$0	☐	$650,000	☑	$650,000	☑	$650,000	☑	$650,000	☑	$0	☐
ELECTRICAL															
New Stand-By Generator 300kW (allow)	1	$300,000	$300,000	$300,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
New Stand-By Generator 1MW (allow)	1	$750,000	$750,000	$0	☐	$750,000	☑	$750,000	☑	$750,000	☑	$750,000	☑	$750,000	☑
Upgrade to medium voltage service	1	$140,000	$140,000	$0	☐	$140,000	☑	$140,000	☑	$140,000	☑	$140,000	☑	$0	☐
Upgrade to LED Lights / DALI Ctl (/sf)	147,100	$14	$2,059,400	$2,059,400	☑	$2,059,400	☑	$0	☐	$0	☐	$0	☐	$0	☐
(for options 3 and 4)	134,100	$14	$1,877,400	$0	☐	$0	☐	$1,877,400	☑	$1,877,400	☑	$0	☐	$0	☐
(for option 5)	95,700	$14	$1,339,800	$0	☐	$0	☐	$0	☐	$0	☐	$1,339,800	☑	$0	☐
New Power Distribution (/sf)	147,100	$4	$588,400	$0	☐	$588,400	☑	$0	☐	$0	☐	$0	☐	$0	☐
(for options 3)	134,100	$4	$536,400	$0	☐	$0	☐	$536,400	☑	$536,400	☑	$0	☐	$0	☐
(for options 4 and 5)	95,700	$4	$382,800	$0	☐	$0	☐	$0	☐	$0	☐	$382,800	☑	$0	☐
New Central UPS System	1	$200,000	$200,000	$200,000	☑	$200,000	☑	$200,000	☑	$200,000	☑	$200,000	☑	$0	☐
New Receptacles	147,100	$2	$294,200	$0	☐	$294,200	☑	$0	☐	$0	☐	$0	☐	$0	☐
(for options 3)	134,100	$2	$268,200	$0	☐	$0	☐	$268,200	☑	$268,200	☑	$0	☐	$0	☐
(for options 4 and 5)	95,700	$2	$191,400	$0	☐	$0	☐	$0	☐	$0	☐	$191,400	☑	$0	☐
New PV arrays ($/kW)	250	$2,000	$500,000	$500,000	☑	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐
(for options 2, 3 and 4)	800	$2,000	$1,600,000	$0	☐	$1,600,000	☑	$1,600,000	☑	$1,600,000	☑	$0	☐	$0	☐
(for option 5)	1,300	$2,000	$2,600,000	$0	☐	$0	☐	$0	☐	$0	☐	$2,600,000	☑	$0	☐
(for option 6)	1,700	$2,000	$3,400,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$3,400,000	☑
New Fire Alarm System (/sf)	147,100	$3	$441,300	$441,300	☑	$441,300	☑	$0	☐	$0	☐	$0	☐	$0	☐
(for options 3)	134,100	$3	$402,300	$0	☐	$0	☐	$402,300	☑	$402,300	☑	$0	☐	$0	☐
(for options 4 and 5)	95,700	$3	$287,100	$0	☐	$0	☐	$0	☐	$0	☐	$287,100	☑	$0	☐
MAJOR PROGRAM ELEMENTS															
Option 4 New Automotive Maint. Area (/sf)	21,500	$260	$5,590,000	$0	☐	$0	☐	$0	☐	$5,590,000	☑	$0	☐	$0	☐
Option 5 New Automotive Maint. Area (/sf)	46,800	$260	$12,168,000	$0	☐	$0	☐	$0	☐	$0	☐	$12,168,000	☑	$0	☐
Option 5 New Indoor Parking Area (/sf)	47,800	$250	$11,950,000	$0	☐	$0	☐	$0	☐	$0	☐	$11,950,000	☑	$0	☐
New 2-Story Office (/sf)	44,000	$410	$18,040,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$18,040,000	☑
New Delivery / Storage Area (/sf)	27,200	$250	$6,800,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$6,800,000	☑
New Indoor Parking / Loading Area (/sf)	30,200	$250	$7,550,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$7,550,000	☑
New Automotive Maintenance Area (/sf)	23,100	$260	$6,006,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$6,006,000	☑
SUB TOTALS				$17,646,700		$24,941,300		$29,682,300		$37,049,300		$59,228,100		$49,682,000	
DESIGN CONTINGENCY	(see individual option)			$882,335	5.00%	$1,745,891	7.00%	$2,374,584	8.00%	$2,963,944	8.00%	$5,330,529	9.00%	$3,472,140	7.00%
CONSTRUCTION CONTINGENCY	(see individual option)			$1,411,736	8.00%	$2,494,130	10.00%	$3,265,053	11.00%	$4,260,670	11.50%	$7,107,372	12.00%	$3,472,140	7.00%
CONSTRUCTION TOTALS				**$19,940,771**		**$29,181,321**		**$35,321,937**		**$44,273,914**		**$71,666,001**		**$56,546,280**	
SOFT COSTS															
A/E Design Fee	(see individual option)			$1,096,742	5.50%	$2,042,692	7.00%	$2,649,145	7.50%	$3,541,913	8.00%	$5,733,280	8.00%	$3,392,777	6.00%
Furniture	1	$500,000	$500,000	$500,000	☑	$500,000	☑	$500,000	☑	$500,000	☑	$500,000	☑	$500,000	☑
Equipment (Auto, Wellness, Office, Appliance, etc.)	1	$2,000,000	$2,000,000	$2,000,000	☑	$2,000,000	☑	$2,000,000	☑	$2,000,000	☑	$2,000,000	☑	$2,000,000	☑
Storage Racking	1	$600,000	$600,000	$0	☐	$0	☐	$0	☐	$0	☐	$0	☐	$600,000	☑
Technology Infrastructure (allowance)	1	$1,000,000	$1,000,000	$1,000,000	☑	$1,000,000	☑	$1,000,000	☑	$1,000,000	☑	$1,000,000	☑	$1,000,000	☑
Audio/Video Systems (allowance)	1	$230,000	$230,000	$230,000	☑	$230,000	☑	$230,000	☑	$230,000	☑	$230,000	☑	$230,000	☑
Access Control / Security (allowance)	1	$700,000	$700,000	$700,000	☑	$700,000	☑	$700,000	☑	$700,000	☑	$700,000	☑	$700,000	☑
Permitting Fees (allowance)	1	$60,000	$60,000	$60,000	☑	$60,000	☑	$60,000	☑	$60,000	☑	$60,000	☑	$60,000	☑
Construction Manager Fees (incl GC's.)	(see individual option)			$1,196,446	6.00%	$1,823,833	6.25%	$2,295,926	6.50%	$2,988,489	6.75%	$5,016,620	7.00%	$3,392,776.80	6.00%
Owner's Contingency				$598,223	3.00%	$875,440	3.00%	$1,059,658	3.00%	$1,328,217	3.00%	$2,149,980	3.00%	$1,696,388	3.00%
Owner's Project Costs (Staffing, etc.)				$498,519	2.50%	$729,533	2.50%	$883,048	2.50%	$1,106,848	2.50%	$1,791,650	2.50%	$1,413,657	2.50%
TOTAL PROJECT COSTS				**$27,820,702**		**$39,142,819**		**$46,699,715**		**$57,729,381**		**$90,847,531**		**$71,531,879**	

** AREA INCLUDED IN MAJOR PROGRAM ELEMENTS LINE ITEM

CONSUMERS ENERGY - KALAMAZOO - OPTIONS ANALYSIS MATRIX

CRITERA	EX	1	2	3	4	5	6
				OPTIONS			
CONSTRUCTION COSTS	+	+	+	O	−	−	−
CONSTRUCTION / EMPLOYEE PHASING	+	+	+	+	O	−	O
BUILDING UTILIZATION	−	O	+	+	+	+	+
SITE FLOW	−	−	−	−	O	O	+
EMPLOYEE FLOW	−	−	O	+	+	+	+
DEPARTMENT ADJACENCIES	−	−	+	+	+	+	+
COVERED PARKING / SITE ADJACENCIES	O	O	O	O	O	O	+
EXPANSION OPTIONS	−	−	−	O	+	+	+
COMPOSITE SCORE	5	6	10	11	11	10	13

+ 2 pts
O 1 pt
− 0 pts

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Case No.: U-21981
Exhibit No.: A-95 (QAG-15)
Page: 43 of 43
Witness: QAGuinn
Date: December 2025

MARION BUILDING #1

CREW ROOM EXPANSION

MARION

PRODUCTION T&S

7950 PARTRIDGE AVE., MARION, MI 49665

OWNER CONTACT:
CONSUMERS ENERGY
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ONE ENERGY PLAZA DR.
JACKSON, MI 49201
TELE: (517) 788-0568

ARCHITECT CONTACT:
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EMMANUEL KOLLIAS
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SOUTHGATE, MI 48195
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WWW.GOWIGHTMAN.COM

ELECTRICAL CONTACT:
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DOUG SAYLES, PE
418 1/2 S WASHINGTON AVE
ROYAL OAK, MI. 48067
TELE: (248) 744-8417
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MECHANICAL/
PLUMBING CONTACT:
IMEG
PETE PAPANIKOLAOU
33533 TWELVE MILE RD.
SUITE 200
FARMINGTON HILLS, MI 48331
TELE: (248) 847-3228
WWW.IMEGCORP.COM

ENVIRONMENTAL STATEMENT

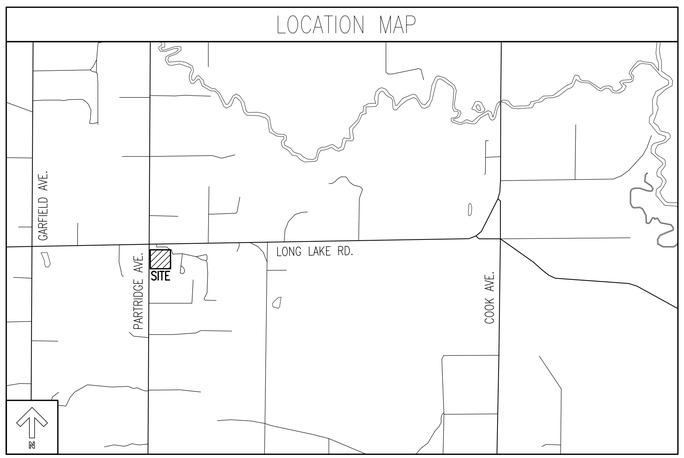
CONSUMERS ENERGY IS COMMITTED TO PRESERVING THE ENVIRONMENT.

THE CONTRACTOR SHALL BE RESPONSIBLE TO RETRIEVE ANY CONSTRUCTION DEBRIS THAT MAY FLY INTO SURROUNDING LAKES OR STREAMS.

THE CONTRACTOR SHALL PRACTICE EXTREME CARE FOR ALL OF OUR NATURAL RESOURCES AND MAINTAIN THE INTEGRITY OF THE ENVIRONMENT.

PROVIDE A NARRATIVE TO DOCUMENT RE-CYCLED MATERIAL DURING DEMOLITION/CONSTRUCTION AND REPORT QUANTITIES TO CE.

LOCATION MAP



DRAWING INDEX

DRAWING NUMBER	DRAWING NAME	ISSUE TYPE	REV	ISSUE DATE
CS-001	COVER	ISSUED FOR BID	G	04/30/2024
CS-002	LEGENDS, SYMBOLS, & STATEMENT OF SPECIAL INSPECTIONS	ISSUED FOR BID	G	04/30/2024
CS-003	EGRESS PLAN / GENERAL INFORMATION	ISSUED FOR BID	G	04/30/2024
A-001	ASBESTOS ABATEMENT & DEMOLITION - FLOOR PLAN & MEZZANINE PLAN / GENERAL DEMOLITION NOTES	ISSUED FOR BID	G	04/30/2024
A-002	ASBESTOS ABATEMENT & DEMOLITION - REFLECTED CEILING PLAN	ISSUED FOR BID	G	04/30/2024
A-003	ASBESTOS ABATEMENT & DEMOLITION - ELEVATIONS	ISSUED FOR BID	G	04/30/2024
A-100	PROPOSED FLOOR PLANS	ISSUED FOR BID	G	04/30/2024
A-110	PROPOSED REFLECTED CEILING PLANS	ISSUED FOR BID	G	04/30/2024
A-200	EXTERIOR ELEVATIONS	ISSUED FOR BID	G	04/30/2024
A-201	BUILDING SECTIONS	ISSUED FOR BID	G	04/30/2024
A-300	WALL SECTIONS	ISSUED FOR BID	G	04/30/2024
A-301	WALL SECTIONS	ISSUED FOR BID	G	04/30/2024
A-400	INTERIOR ELEVATIONS & ENLARGED PLANS	ISSUED FOR BID	G	04/30/2024
A-401	ENLARGED PLAN, SECTIONS & DETAILS	ISSUED FOR BID	G	04/30/2024
A-500	DETAILS	ISSUED FOR BID	G	04/30/2024
A-501	DETAILS	ISSUED FOR BID	B	04/30/2024
A-502	STAIR DETAILS	ISSUED FOR BID	G	04/30/2024
A-600	DOOR SCHEDULE	ISSUED FOR BID	G	04/30/2024
F-100	FURNITURE PLANS	ISSUED FOR BID	G	04/30/2024
E-000	ELECTRICAL SYMBOLS LIST & LIGHTING SCHEDULE	ISSUED FOR BID	G	04/30/2024
E-001	DEMOLITION ELECTRICAL PLANS	ISSUED FOR BID	G	04/30/2024
E-101	PROPOSED ELECTRICAL POWER PLANS	ISSUED FOR BID	G	04/30/2024
E-201	PROPOSED ELECTRICAL LIGHTING PLANS	ISSUED FOR BID	G	04/30/2024
E-300	ELECTRICAL ONE-LINE DIAGRAM & PANEL SCHEDULE	ISSUED FOR BID	G	04/30/2024
M000	HVAC COVERSHEET - PP, V	ISSUED FOR BID	G	04/30/2024
M101	LEVEL 01 PLANS - HVAC	ISSUED FOR BID	G	04/30/2024
M102	LEVEL 01 PLANS - PIPING	ISSUED FOR BID	G	04/30/2024
M103	MEZZANINE PLANS - HVAC	ISSUED FOR BID	G	04/30/2024
M104	MEZZANINE PLANS - PIPING	ISSUED FOR BID	G	04/30/2024
M400	HVAC DETAILS	ISSUED FOR BID	G	04/30/2024
M401	HVAC DETAILS	ISSUED FOR BID	G	04/30/2024
M500	HVAC DIAGRAMS	ISSUED FOR BID	G	04/30/2024
M501	HVAC DIAGRAMS	ISSUED FOR BID	G	04/30/2024
M600	HVAC SCHEDULES	ISSUED FOR BID	G	04/30/2024
M601	HVAC SCHEDULES	ISSUED FOR BID	G	04/30/2024
M602	SPECIFICATIONS	ISSUED FOR BID	G	04/30/2024
M603	SPECIFICATIONS	ISSUED FOR BID	G	04/30/2024
P000	PLUMBING COVERSHEET	ISSUED FOR BID	G	04/30/2024
P101	UNDERFLOOR PLANS - PLUMBING	ISSUED FOR BID	G	04/30/2024
P111	LEVEL 01 PLANS - PLUMBING	ISSUED FOR BID	G	04/30/2024
P112	MEZZANINE PLANS - PLUMBING	ISSUED FOR BID	G	04/30/2024
P400	PLUMBING DETAILS	ISSUED FOR BID	G	04/30/2024
P600	PLUMBING SCHEDULES	ISSUED FOR BID	G	04/30/2024
P601	PLUMBING SPECIFICATION	ISSUED FOR BID	G	04/30/2024
P602	PLUMBING SPECIFICATION	ISSUED FOR BID	G	04/30/2024

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID - REVIEW	PA	EK

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PROPOSED FLOOR PLAN

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet CS-001
Rev G

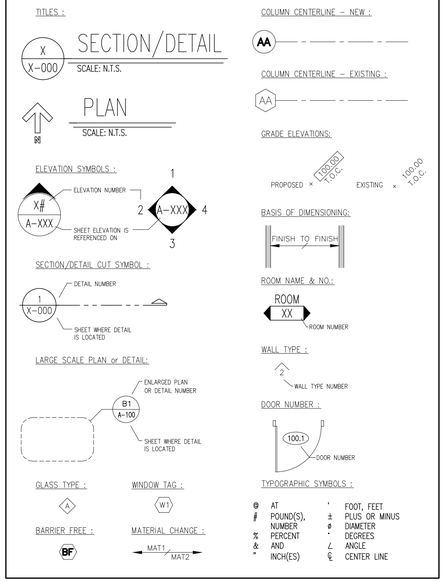
STATEMENT OF SPECIAL INSPECTIONS

CONSTRUCTION OPERATION	CODE SECTION	ARE SPECIAL INSPECTIONS REQUIRED?		AGENCY TO PERFORM SPECIAL INSPECTION	DATE OF APPROVED QUALITY CONTROL PROCEDURES (CODE OFFICIAL'S USE)
		YES	NO		
INSPECTION OF FABRICATIONS	(1704.2)	–	X	–	–
STEEL CONSTRUCTION	(1704.3)	–	X	–	–
CONCRETE CONSTRUCTION	(1704.4)	–	X	–	–
MASONRY CONSTRUCTION	(1704.5)	–	X	–	–
WOOD CONSTRUCTION	(1704.6)	–	X	–	–
SOILS	(1704.7)	–	X	–	–
PILE FOUNDATIONS	(1704.8)	–	X	–	–
PIER FOUNDATIONS	(1704.9)	–	X	–	–
WALL PANELS & VENEERS	(1704.10)	–	X	–	–
SPRAYED FIRE RESISTANT MATERIALS	(1704.11)	–	X	–	–
EXTERIOR INSULATION AND FINISH SYSTEMS	(1704.12)	–	X	–	–
SPECIAL CASES	(1704.13)	–	X	–	–
SMOKE CONTROL	(1704.14)	–	X	–	–

STANDARD MATERIAL INDICATIONS

EARTH
GRANULAR FILL
CONCRETE
BRICK
BLOCK
STEEL (LARGE SCALE)
ROUGH WOOD WOOD NAILER
PLYWOOD (LARGE SCALE)
PLYWOOD (SMALL SCALE)
BLANKET INSULATION (SMALL SCALE)
BLANKET INSULATION (LARGE SCALE)
MORTAR/PLASTER GYPSUM/CUT STONE
RIGID INSULATION ROOF INSULATION
ACOUSTICAL TILE
FINISH WOOD

SYMBOLS LEGEND



LIST OF STANDARD ABBREVIATIONS

A.B.	ANCHOR BOLT	EA.	EACH	LAM.	LAMINATE	Q. T.	QUARRY TILE	U. O. N.	UNLESS OTHERWISE NOTED
A.F.F.	ABOVE FINISH FLOOR	EF	EXHAUST FAN	LAV.	LAVATORY			UR.	URINAL
ALUM.	ALUMINUM	E. W.	EACH WAY	L.	LENGTH, LONG			UNGD.	UNDERGROUND
ARCH.	ARCHITECTURAL	E. W. C.	ELECTRIC WATER COOLER	L. F.	LINEAL FEET	RECPT.	RECEPTACLE		
ALT.	ALTERNATE	EL.	ELEVATION	L. L.	LIVE LOAD	REFRIG.	REFRIGERATOR		
ASPH.	ASPHALT	EMERG.	EMERGENCY	L. L. H.	LONG LEG HORIZONTAL	REINF.	REINFORCE		
		EQ.	EQUAL	L. L. V.	LONG LEG VERTICAL	REQ'D.	REQUIRED	VERT.	VERTICAL
B. PL.	BASE PLATE	EQUIP.	EQUIPMENT	L. P.	LOW POINT	REV.	REVISION	VEST.	VESTIBULE
BM.	BEAM	ELEC.	ELECTRICAL			R.	RISER	V. I. F.	VERIFY IN FIELD
BRG. PL.	BEARING PLATE	EXIST.	EXISTING	M. H.	MANHOLE	R. D.	ROOF DRAIN	VS	VENT STACK
BIT.	BITUMINOUS	E. J.	EXPANSION JOINT	MFR.	MANUFACTURER	RM.	ROOM		
BD.	BOARD	E.T.R.	EXISTING TO REMAIN	M. O.	MASONRY OPENING	R. O.	ROUGH OPENING		
BOTT.	BOTTOM			MATL.	MATERIAL	RTU	ROOF TOP UNIT	W.	WIDTH/WIDE
BLDG.	BUILDING	FT.	FEET, FOOT	MAS.	MASONRY	RV	ROOF VENT	W. C.	WATER CLOSET
BLK.	BLOCK	FIN.	FINISH	MAX.	MAXIMUM			WP.	WEATHERPROOF
B. F.	BARRIER FREE	F. E.	FIRE EXTINGUISHER	MECH.	MECHANICAL			W. W. F.	WELDED WIRE FABRIC
B. W.	BOTH WAYS	F. E. C.	FIRE EXTINGUISHER CABINET	MET.	METAL	SCHED.	SCHEDULE	W/	WITH
B. S.	BOTH SIDES	FLASH.	FLASHING	MIN.	MINIMUM	S. S.	SERVICE SINK	WD.	WOOD
		FL.	FLOOR	MISC.	MISCELLANEOUS	S. D.	SOAP DISH	W. PT.	WORK POINT
CAB.	CABINET	F. D.	FLOOR DRAIN	M. S.	MINI-SPLIT	S. G. T.	STRUCTURAL GLAZED TILE	W/O	WITHOUT
CLG.	CEILING	FLUOR.	FLUORESCENT	MTD.	MOUNTED	SHT.	SHEET		
C/C	CENTER TO CENTER	FDN.	FOUNDATION	MTG.	MOUNTING	SIM.	SIMILAR	YD.	YARD
CER. TILE	CERAMIC TILE			MULL.	MULLION	SPEC.	SPECIFICATIONS		
C. BD.	CHALKBOARD	GA.	GAGE, GAUGE	MEMB.	MEMBRANE	SQ.	SQUARE		
CHKD. PL.	CHECKERED PLATE	GALV.	GALVANIZED			STAG.	STAGGERED		
CONC.	CONCRETE	GL.	GLASS, GLAZING	N. A.	NOT APPLICABLE	S. ST.	STAINLESS STEEL		
CONST.	CONSTRUCTION	G. B.	GRAB BAR	NOM.	NOMINAL	STD.	STANDARD		
CONT.	CONTINUOUS	GYP.	GYPSUM	N. I. C.	NOT IN CONTRACT	STL.	STEEL		
CONTR.	CONTRACTOR			NO.	NUMBER	ST.	STORM		
C. J.	CONTROL JOINT	HDW.	HARDWARE			STRUCT.	STRUCTURAL		
CORR.	CORRIDOR	HT./H.	HEIGHT/HIGH	O. C.	ON CENTER	SUSP.	SUSPENDED		
COORD.	COORDINATE	H. P.	HIGH POINT	OPG.	OPENING	SYM.	SYMMETRICAL		
C. M.	CONSTRUCTION MANAGER	H. M.	HOLLOW METAL	OPP.	OPPOSITE	S. N. D.	SANITARY NAPKIN DISPENSER		
COMP.	COMPACTED	HORZ.	HORIZONTAL	OPP. HD.	OPPOSITE HAND	S. F.	SQUARE FEET		
		H. B.	HOSE BIBB	O. D.	OUTSIDE DIAMETER	SUPP.	SUPPORTED		
D. L.	DEAD LOAD	HR.	HOUR	O. H.	OVERHEAD				
DEPT.	DEPARTMENT					T. BD.	TACKBOARD		
DET.	DETAIL	INCN.	INCANDESCENT	PR.	PAIR	TEL.	TELEPHONE		
DIA.	DIAMETER	IN.	INCH, INCHES	PART. BD.	PARTICLE BOARD	TERR.	TERRAZZO		
DIM.	DIMENSION	INCL.	INCLUDED (ING)	PARTN.	PARTITION	T.B.	TEST BORING		
D. O.	DOOR OPENING	I. D.	INSIDE DIAMETER	PLAS.	PLASTER	THK.	THICK, THICKNESS		
DBL.	DOUBLE	INSUL.	INSULATION	PL. LAM.	PLASTIC LAMINATE	THR.	THRESHOLD		
DWL.	DOWEL	I. E.	INVERT ELEVATION	P. S. F.	POUNDS PER SQUARE FOOT	TRANSF.	TRANSFORMER		
DN.	DOWN	INV.	INVERT	PT.	POINT	T.	TREAD		
DS.	DOWNSPOUT			P. S. I.	POUNDS PER SQUARE INCH	TYP.	TYPICAL		
DWG.	DRAWING	J. C.	JANITOR CLOSET	PROJ.	PROJECT/PROJECTING				
D. F.	DRINKING FOUNTAIN	JT.	JOINT	P. B.	PUSH BUTTON				

SYMBOLS USED AS ABBREVIATIONS

∠	ANGLE
℄	CENTER LINE
ϕ	DIAMETER
⊥	PERPENDICULAR
#	POUND, NUMBER
PL	PLATE
@	AT

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
LEGENDS, SYMBOLS, & STATEMENTS OF SPECIAL INSPECTIONS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet CS-002
Rev G

BUILDING CODE ANALYSIS

PROJECT: MARION BUILDING #1 – CREW ROOM EXPANSION
STREET ADDRESS: 7950 PARTRIDGE AVE.
CITY AND STATE: MARION, MICHIGAN 49665

1.	Local Officials			
a.	Building Department Contacts	Village Clerk	CONNIE ZUIDERVEEN	(231) 743–6801
b.	Fire Department Contact	Fire Chief	–	(231)
c.	Building Department Contacts	Building Official	–	(231)

2.	Applicable Codes, Ordinances, and Standards		
a.	Building code:	Michigan Building Code (MBC)	Edition: 2015
b.	Fire code:	Michigan Building Code, Chapter 9	Edition: 2015
c.	Mechanical code:	Michigan Mechanical Code + MI Rules Pt 9	Edition: 2015
d.	Plumbing code:	Michigan Plumbing Code + MI Rules Pt 7	Edition: 2018
e.	Electrical code:	Nat'l Electric Code (NEC) + MI Rules Pt 8	Edition: 2017
f.	Energy Code:	Michigan Energy Conservation Code/ Ashrae 90.1	Edition: 2015/2013

3. Project Description

This project involves upgrading an existing 4,000 square foot building (Building 1) at the Marion facility located at 7950 Partridge ave.
Also included is the abatement of existing ACM containing interior liner panels.
The renovation will include a new crew room, wellness room, offices, restrooms and storage space in the existing garage space. The existing mezzanine will be enclosed and include a new I.T. room.

4.	Building Occupancy: (MBC Chapter 3 & 5)	
a.	Building Occupancy or Mixed Use:	B, S–1
b.	Occupancy Separations: Mixed Use, Non–Separated (MBC 508.3)	
	Occupancy: Group B; Business	Separation (hours): None required
	Occupancy: S–1; Moderate Hazard Storage	Separation (hours): None required
c.	Incidental Accessory Occupancies	None
d.	Accessory Use Areas (MBC 508.2)	None
e.	Equipment Platform (MBC 505.3)	1. Not included in building area or fire area 2. Not part of means of egress 3. < 2/3 total area of space in which located (1532/3895=0.39)

5.	Construction Classification (MBC 602 & Table 503)	Type: IIB

6.	Fire Resistance Ratings for Building Elements (MBC 601 and others as listed)	
a.	Structural Frame:	0
b.	Bearing Walls	0
c.	Nonbearing walls, interior:	0
d.	Floor Construction	0
e.	Roof Construction	0
f.	Shaft Enclosures: (MBC 708)	0
g.	Stairway Enclosure: (MBC 1022.1)	0
h.	Corridor: (MBC Table 1018.1)	0

7.	Actual Area (SF); (MBC 508); Area Increase (MBC 506.3)		
Occupancy Classification		Actual Area	Allowable Area (MBC TABLE 506.2)
B		4,744 SF	23,000 SF
S–1		386 SF	17,500 SF
Total		5,130 SF	40,500 SF
(MBC 508.3.2)		Allowable area based on most restrictive use:	17,500

8.	Intermediate Levels:			
a.	Equipment Platform (MBC 505.3)	Area: 1,619 SF	Occupants: 2	No. of Exits: 1

9.	Building Height and Stories: (MBC Table 504.3)			
a.	Allowable Height:	B: 55'; S–1: 55'	Actual Building Height:	21'
b.	Allowable Stories:	B: 3; S–1: 2	Actual Building Stories:	1

10.	Maximum Floor Area Allowance per Occupant: (MBC Table 1004.1.2)			
a.	Calculated Building Occupants	58	Calculated Room Occupants	N/A
	[(Storage) 500 sf x 1/300 = 2] + [(Exercise) 391 sf. x 1/50 =7] + [(Locker Room) 464 sf. x 1/50 = 10] + [(Business Office) 2,964 sf x 1/150 = 18] +[(Equipment Room) 1,600 sf x 1/300 = 6] = 58			
b.	Actual Building Occupants	30		

11.	Exit Requirements	
a.	Required Exits (MBC Table 1006.3.1; 1022)	B = 2 S–1 = 2
b.	Maximum exit access travel distance (MBC TABLE 1017.2)	B: 200 ft. S–1: 200 ft.
c.	Maximum common path of egress travel (MBC TABLE 1006.2.1)	B: 100 ft. S–1: 100 ft.
d.	Maximum Dead End (MBC 1020.4)	B: 20 ft. S–1: 20 ft.
e.	Minimum Corridor Width (MBC 1020.2)	36 inches
f.	Minimum Egress Width (MBC 1005.1)	Based on Occupant Load
	Doors (MBC 1005.3.2)	.2" x 49 = 9.8" minimum required 4 exits provided; 144 inches

12. Plumbing Fixtures (MPC Table 403.1)

OCC. GROUP	WC M	WC F	LAVATORY M	LAVATORY F	SHOWER	DRINKING FOUNTAIN	SERVICE SINK
B	1 PER 25 FOR FIRST 50 AND 1 PER 50 FOR THE REMAINDER EXCEEDING 50		1 PER 40 FOR FIRST 80 AND 1 PER 80 FOR THE REMAINDER EXCEEDING 80		–	1 PER 100	1
MIN. FIXTURE COUNT	1 (TOTAL)		2 (TOTAL)		0	1 (TOTAL)	1
ACTUAL FIXT. COUNT	6 WC 2 UR		4		3	2	1

13.	Energy Conservation (MUEC/ASHRAE 90.1)			
Climate Zone		5A		
			R–value (min)	U–factor (max)
Office		Roof – Metal Bldg.	R–19 + R–11 Ls	U–0.037
		Walls – Wd. Framed	R–13 + R–7.5 c.i.	U–0.051
		Walls – Metal Bldg.	R–0 + R–19 c.i.	U–0.050
Garage – Pre–Engineered Metal Building (Semi–heated)		Roof – Metal Bldg.	R–19	U–0.082
		Walls – Metal Bldg.	R–0 + R–9.8 c.i.	U–0.094
Slab on Grade – Unheated			R–15 for 24"	
Doors – Swinging				U–0.500
Doors – Non–swinging				U–0.500
Fenestration		Mtl. Framing (Fixed)	SHGC 0.40 (max)	VT 1.10

TRAVEL DISTANCE KEY

MAXIMUM EXIT ACESS TRAVEL DISTANCE SHALL NOT EXCEED 200 FEET

EXIT DISCHARGE:
49 OCC. X .2 = 9.8" (TOTAL WIDTH OF ALL DOORS COMBINED)

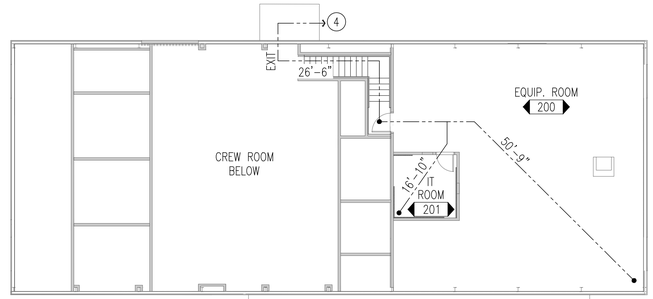
FIRE EXTINGUISHER CABINETS: (F.E.C.)
SHALL NOT EXCEED A 75'–0" TRAVEL DISTANCE

LIFE SAFETY NOTES

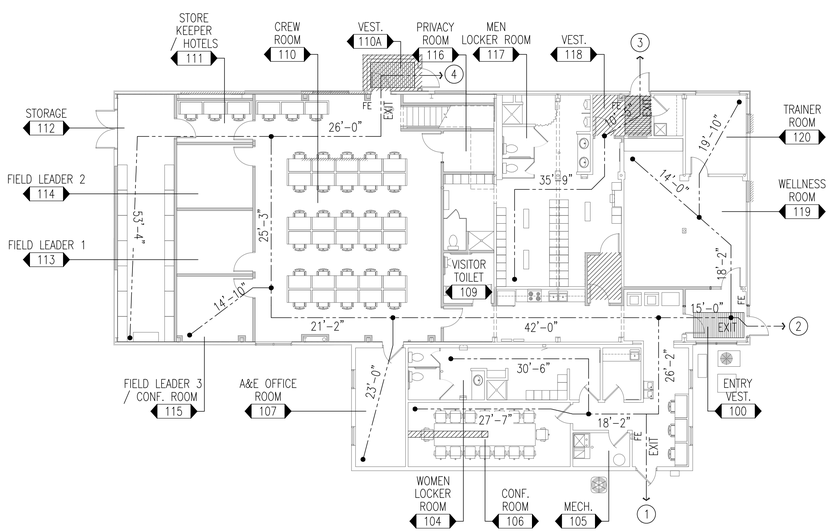
1. PORTABLE FIRE EXTINGUISHERS TYPE 4A–60BC (ORDINARY HAZARD OCCUPANCY) WITH RECESSED CABINET SHALL BE PROVIDED PER 3000 SF WITH MAX TRAVEL DISTANCE OF 75'–0" LOCATED CONSPICUOUSLY ALONG NORMAL PATHS OF TRAVEL.
2. EXIT SIGNS SHALL BE LOCATED TO BE READILY VISIBLE FROM ANY DIRECTION OF APPROACH AND CLARLY INDICATE DIRECTION OF TRAVEL TO EXIT. NO POINT WITHIN THE BUILDING SHALL BE MORE THAN 100'–0" FROM NEAREST VISIBLE SIGN.
3. EXIT REMOTENESS ALLOWED TO BE 1/3 DIAGONAL DISTNACE MEASURED ALONG SHORTEST DIRECT LINE OF TRAVEL ACCORDING TO FBC 1015.2.1 EXCEPTIONS 1 & 2

CODE ANALYSIS LEGEND

- DENOTES FIRE BARRIER
- LB — DENOTES LOAD BEARING FIRE–RATED WALL
- DENOTES TRAVEL DISTANCE
- DENOTES CORRIDOR
- FE / FEC — FIRE–EXTINGUISHER / FIRE–EXTINGUISHER CABINET



MEZZANINE LIFE SAFETY PLAN
SCALE: 3/32" = 1'–0"



LIFE SAFETY PLAN
SCALE: 3/32" = 1'–0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUE FOR BID – FINAL	JG	EK

Dr Date
Des
App
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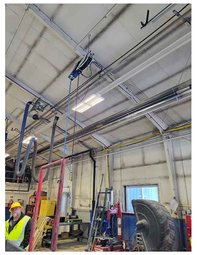
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
EGRESS PLAN / GENERAL INFORMATION
Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet CS–003
Rev G

PHOTOGRAPH D4
SCALE: N.T.S.



PHOTOGRAPH D8
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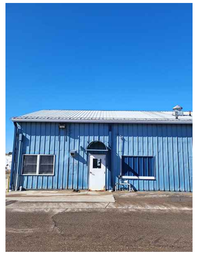


PHOTOGRAPH D3
SCALE: N.T.S.

PHOTOGRAPH D7
SCALE: N.T.S.

PHOTOGRAPH D2
SCALE: N.T.S.

PHOTOGRAPH D6
SCALE: N.T.S.

PHOTOGRAPH D1
SCALE: N.T.S.

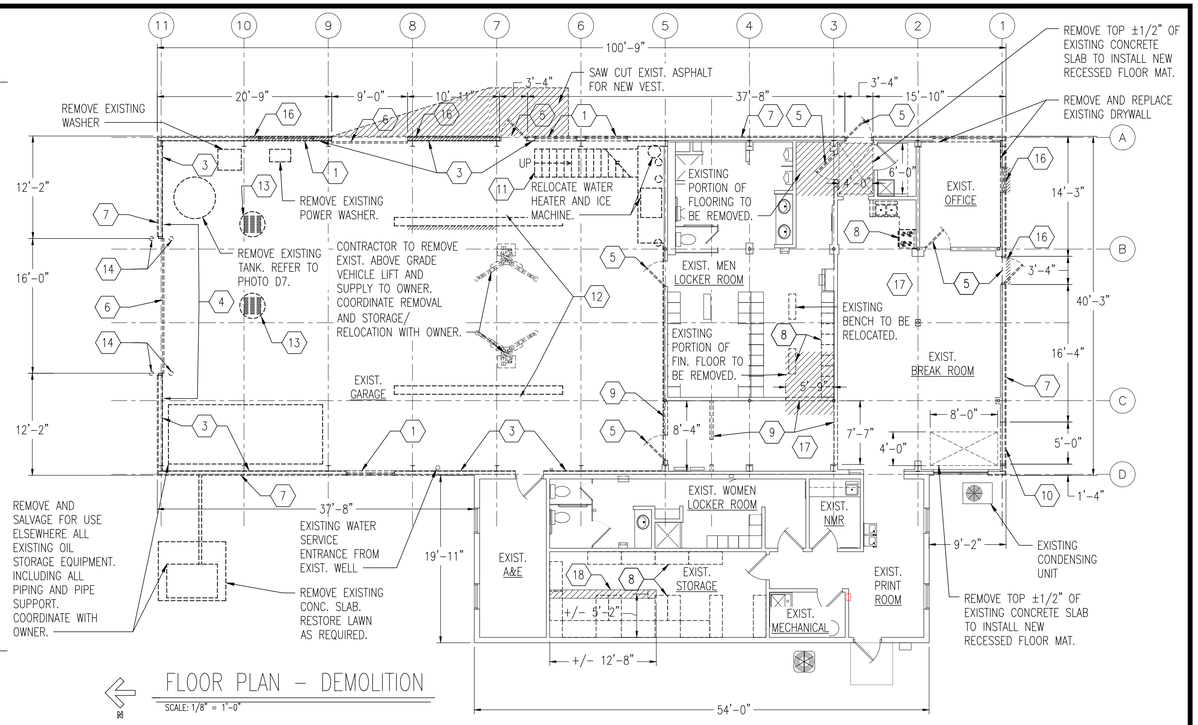
PHOTOGRAPH D5
SCALE: N.T.S.

GENERAL DEMOLITION NOTES:

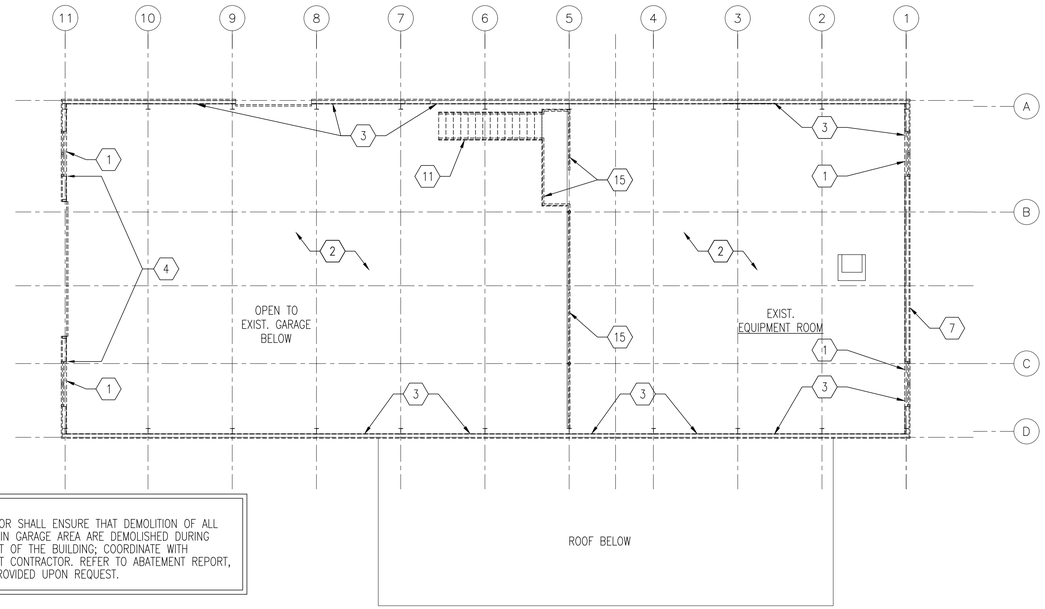
1. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO BEGINNING WORK OR SUPPLYING MATERIALS OR COMPONENTS. NOTIFY OWNER'S PROJECT REPRESENTATIVE FOR DISPOSITION OF MAJOR DIMENSIONAL CONFLICTS.
2. COORDINATE ALL ARCHITECTURAL, MECHANICAL AND ELECTRICAL DEMOLITION w/ OWNER AND SCHEDULE WORK ACCORDINGLY. NOTIFY OWNER AT LEAST 48 HOURS PRIOR TO ANY BUILDING SHUT-DOWN.
3. THESE DEMOLITION NOTES AND PLANS DO NOT FULLY REPRESENT ALL DEMOLITION WORK REQUIRED TO INSTALL NEW WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS, BUT ARE INTENDED TO SERVE AS GENERAL DEMOLITION GUIDELINES. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR LOCATIONS OF INCIDENTAL DEMOLITION WORK NOT INDICATED ON THIS PLAN.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS TO BE SALVAGED AND/OR RELOCATED, THROUGHOUT THE CONSTRUCTION PERIOD, INCLUDING SAFE STORAGE OF SAME. UPON DEMOLITION, THE OWNER SHALL RETAIN THOSE ITEMS DEEMED SALVAGEABLE. ITEMS NOT RETAINED SHALL BECOME THE PROPERTY OF THE CONTRACTOR WHO SHALL LEGALLY DISPOSE OF SAME.
5. WHERE ITEMS ARE REMOVED, PATCH SURFACES TO MATCH ADJACENT SURFACES OR NEW FINISHES WHERE SCHEDULED. PATCHING OF NEW OR EXISTING FINISHES SHALL EXTEND TO NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
6. CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THIS PROJECT (PROVIDE BARRICADES, WARNING SIGNS, ETC....).
7. PROVIDE ALL DUST CURTAINS AND TEMPORARY PARTITIONS AS REQUIRED TO PROTECT EXISTING BUILDING DURING CONSTRUCTION.
8. CONTRACTOR TO RECYCLE DEMOLISHED BUILDING COMPONENTS TO FULLEST EXTENT POSSIBLE AND REPORT QUANTITIES OF ITEMS DEMOLISHED TO OWNER TO SUPPORT CLIENT PLANET GOALS.
9. CONTRACTOR SHALL THOROUGHLY CLEAN ALL EQUIPMENT, TOOLS, CABINETS, STORAGE SHELVING AND PIPING TO BE SALVAGED USING APPROPRIATE ASBESTOS ABATEMENT METHODS AND EQUIPMENT. ALL SALVAGED ITEMS SHALL BE SAFELY STORED ON SITE FOR REINSTALLATION BY OTHERS.

KEYED DEMOLITION NOTES:

1. REMOVE EXISTING WINDOWS AND FRAMES. WINDOWS AND CAULKING CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. REFER TO PHOTOGRAPHS D1, D2, D3 & D4 THIS SHEET.
2. REMOVE EXISTING TRANSITE CEILING PANELS AND BATT INSULATION. PANELS AND INSULATION CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. REFER TO PHOTOGRAPH D6, D7 & D8. CONTRACTOR SHALL TEMPORARILY SUPPORT EXISTING ELECTRICAL CONDUIT AND DEVICES TO ALLOW FOR REMOVAL OF CEILING PANELS.
3. REMOVE EXISTING TRANSITE WALL PANELS AND BATT INSULATION. PANELS AND INSULATION CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. REFER TO PHOTOGRAPH D5, D6, D7 & D8. CONTRACTOR SHALL TEMPORARILY SUPPORT EXISTING ELECTRICAL CONDUIT AND DEVICES TO ALLOW FOR REMOVAL OF CEILING PANELS.
4. REMOVE EXISTING METAL WALL LINER PANELS. IF TRANSITE PANELS ARE UNDER LINER PANELS, SEE KEYED DEMO NOTE 3. REFER TO PHOTOGRAPH D6 & D7
5. REMOVE EXISTING DOORS, FRAMES AND ASSOCIATED HARDWARE. PATCH TO MATCH ADJACENT AS REQUIRED.
6. REMOVE EXISTING GARAGE DOOR, TRACK, MOTOR AND ASSOCIATED HARDWARE. REFER TO PHOTOGRAPH D6 & D7 & D1
7. REMOVE EXISTING EXTERIOR METAL WALL PANELS, INSULATION AND LINER PANEL. CLEAN AND PREP WALL CAVITY FOR INSTALLATION OF NEW INSULATED METAL WALL PANELS.
8. EXISTING FURNITURE AND EQUIPMENT SHALL BE REMOVED BY CONTRACTOR. SALVAGE AND COORDINATE STORAGE WITH OWNER. INSTALL EQUIPMENT AS INDICATED ON DRAWINGS.
9. REMOVE PORTIONS OF EXISTING INTERIOR WALL. PROVIDE A CLEAN EDGE WHERE EXISTING WALL IS TO REMAIN.
10. REMOVE EXISTING EXTERIOR WALL PANELS, INSULATION AND INTERIOR WALL BOARD. CUT, CLEAN AND PREP OPENING FOR NEW DOOR AND FRAME.
11. REMOVE EXISTING STEEL STAIR, PLATFORM, HANDRAILS, GUARDRAILS, AND ASSOCIATED HARDWARE. PATCH CONC. FLOOR AS REQUIRED.
12. REMOVE EXISTING TRENCH DRAINS. FILL WITH CONCRETE AND PATCH FLOOR AS REQUIRED TO MAKE FLOOR LEVEL. RECEIVE NEW FLOOR FINISH. REFER TO PLUMBING PLAN FOR ADDITIONAL INFORMATION.
13. REMOVE EXISTING LID @ CATCH BASIN. FILL WITH CONCRETE AND PATCH FLOOR AS REQUIRED. RECEIVE NEW FLOOR FINISH.
14. REMOVE EXISTING STEEL BUMPER POSTS. PATCH CONC. FLOOR AS REQUIRED TO RECEIVE NEW FINISH FLOOR MATERIAL.
15. REMOVE EXISTING GUARDRAILS AND ASSOCIATED HARDWARE.
16. REMOVE WOOD SILL @ BASE OF WALL. CLEAN AND PREP AREA FOR NEW CONCRETE CURB TO MATCH EXISTING CONC. CURB. REFER TO PHOTOGRAPHS D19, D20, D21 AND SHEET A-003
17. REMOVE EXISTING FLOORING. CLEAN AND PREP FLOOR TO RECEIVE NEW FINISHES.
18. SAW CUT EXISTING CONC. FLOOR FOR FLOOR BOXES AND CONDUIT TO SUPPORT E-TABLE. FIELD VERIFY EXACT LOCATION WITH OWNERS FURNITURE SUPPLIER.



FLOOR PLAN - DEMOLITION
SCALE: 1/8" = 1'-0"



NOTE:
CONTRACTOR SHALL ENSURE THAT DEMOLITION OF ALL WINDOWS IN GARAGE AREA ARE DEMOLISHED DURING ABATEMENT OF THE BUILDING; COORDINATE WITH ABATEMENT CONTRACTOR. REFER TO ABATEMENT REPORT, OWNER PROVIDED UPON REQUEST.

FLOOR PLAN - MEZZANINE DEMOLITION
SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID - FINAL	PA	EK

Dr EK Date
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Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
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MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
ASBESTOS ABATEMENT & DEMOLITION
FLOOR PLAN & MEZZANINE PLAN

Scale: AS NOTED
Work Order # 41198794
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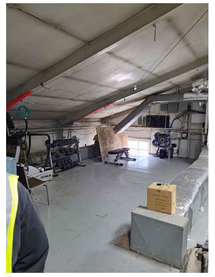
Sheet A-001
Rev G



PHOTOGRAPH D12
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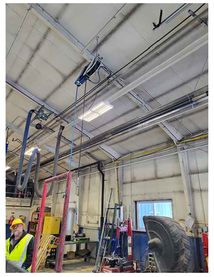

PHOTOGRAPH D16
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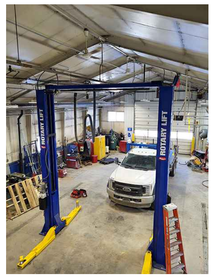

PHOTOGRAPH D11
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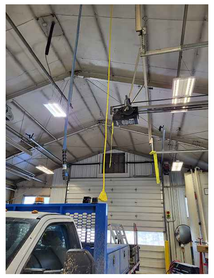


PHOTOGRAPH D15
SCALE: N.T.S.

PHOTOGRAPH D10
SCALE: N.T.S.

PHOTOGRAPH D14
SCALE: N.T.S.

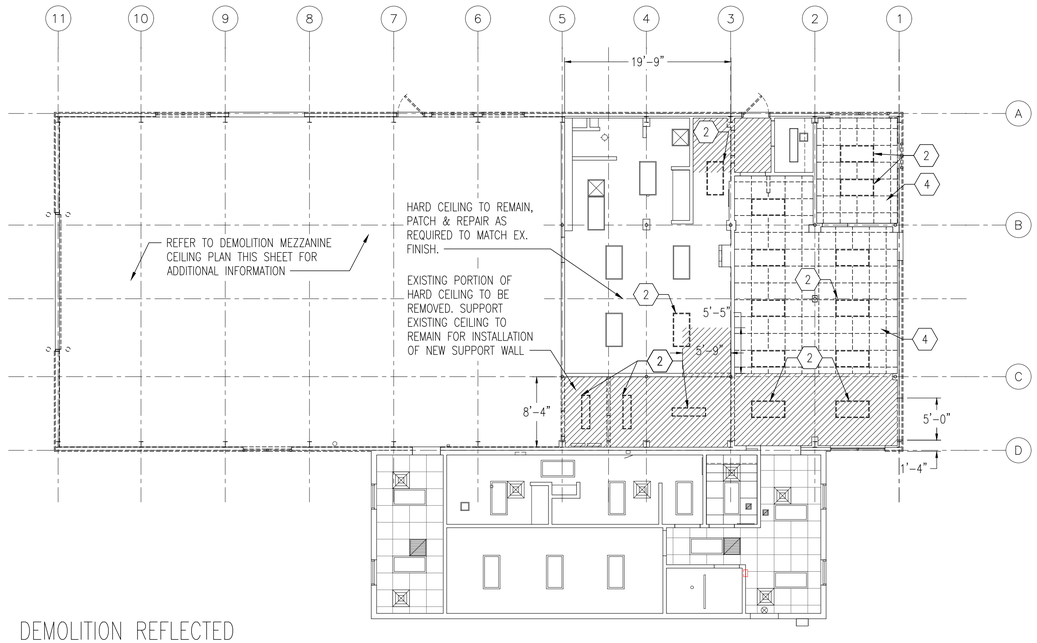
PHOTOGRAPH D9
SCALE: N.T.S.

PHOTOGRAPH D13
SCALE: N.T.S.

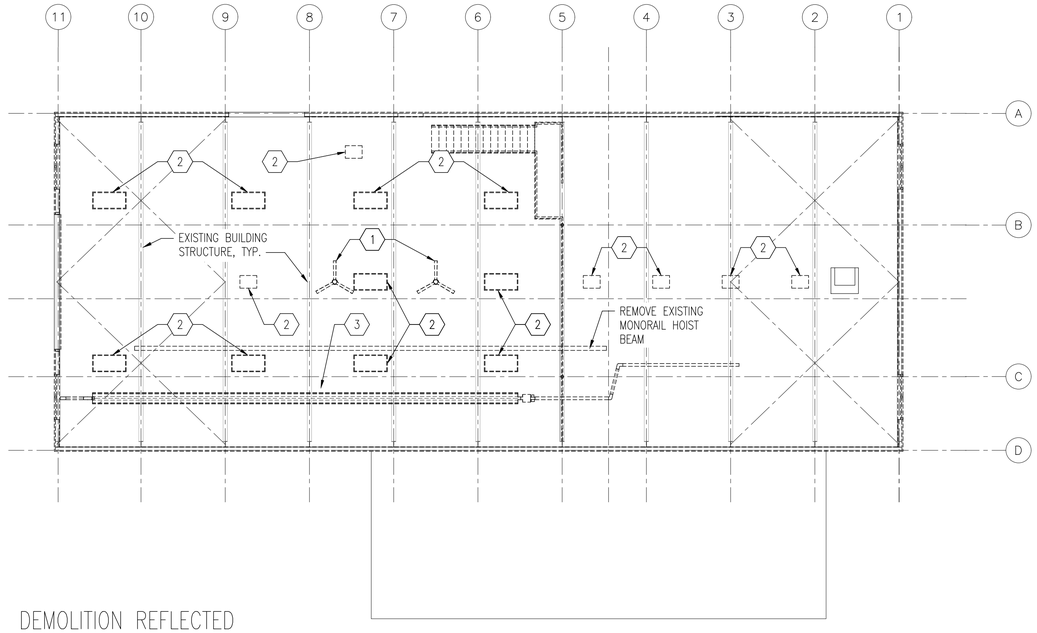
SEE GENERAL DEMOLITION NOTES ON SHEET A-001

KEYED DEMOLITION NOTES:

1. REMOVE EXISTING CEILING FANS. REMOVE ALL ELECTRICAL LINES BACK TO CLOSEST JUNCTION BOX OR ELECTRICAL PANEL. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. EXISTING CEILING AND FIXTURES SHALL BE REMOVED. REMOVE ALL ELECTRICAL LINES, JUNCTION BOXES, AND CONDUITS BACK TO ELECTRICAL PANEL. REMOVE UNISTRUTS AND WIREWAYS RELATED TO LIGHTING SYSTEM. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. REMOVE EXISTING RADIANT HEATERS AND ASSOCIATED PIPING. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
4. REMOVE EXISTING ASBESTOS 12X12 CEILING TILE ABOVE EXISTING SUSPENDED CEILING SYSTEM. ASBESTOS TILE SHALL BE REMOVED BY ABATEMENT CONTRACTOR.



DEMOLITION REFLECTED CEILING PLAN – FIRST FLOOR
SCALE: 1/8" = 1'-0"



DEMOLITION REFLECTED CEILING PLAN – MEZZANINE
SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

Dr Date
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Consumers Energy
JACKSON, MICHIGAN

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MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
ASBESTOS ABATEMENT & DEMOLITION REFLECTED CEILING PLAN

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-002
Rev G

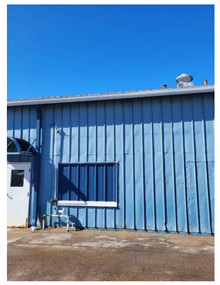
SEE GENERAL DEMOLITION NOTES ON SHEET A-001

KEYED DEMOLITION NOTES:

1. REMOVE EXISTING WINDOWS. WINDOWS AND CAULKING CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. COVER OPENING W/ EXTERIOR GRADE PLYWOOD AND MAKE OPENING WEATHER-TIGHT. REFER TO PHOTOGRAPHS D17 & D18 ON THIS SHEET.
2. REMOVE EXISTING TRANSITE CEILING PANELS AND BATT INSULATION. PANELS AND INSULATION CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. REFER TO PHOTOGRAPH D6, D7 & D8. CONTRACTOR SHALL TEMPORARILY SUPPORT EXISTING ELECTRICAL CONDUIT AND DEVICES TO ALLOW FOR REMOVAL OF CEILING PANELS.
3. REMOVE EXISTING TRANSITE WALL PANELS AND BATT INSULATION. PANELS AND INSULATION CONTAIN ASBESTOS AND SHALL BE HANDLED BY ABATEMENT CONTRACTOR. REFER TO PHOTOGRAPH D5, D6, D7 & D8. CONTRACTOR SHALL TEMPORARILY SUPPORT EXISTING ELECTRICAL CONDUIT AND DEVICES TO ALLOW FOR REMOVAL OF CEILING PANELS.
4. REMOVE EXISTING METAL WALL LINER PANELS.
5. REMOVE EXISTING DOORS AND FRAMES AND ALL ASSOCIATED HARDWARE.
6. REMOVE EXISTING GARAGE DOOR AND FRAME. REFER TO PHOTOGRAPH D6 & D7
7. REMOVE EXISTING EXTERIOR METAL WALL PANELS.
8. REMOVE EXISTING METAL PANEL CANOPY AND ASSOCIATED HARDWARE.
9. REMOVE EXISTING WALL PACKS, SALVAGE FOR REUSE. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
10. REMOVE WOODEN CURB IN AREAS WHERE WOODEN CURB IS LOCATED, REMOVE WOODEN CURB, CLEAN AND PREP AREA FOR NEW CONCRETE CURB TO MATCH EXISTING CONC. CURB. REFER TO PHOTOGRAPHS D19, D20, D21
11. REMOVE EXISTING METAL ROOF, ROOF CURBS, AND PENETRATIONS INCLUDING EXISTING SNOW GUARDS.

PHOTOGRAPH D19
SCALE: N.T.S.

PHOTOGRAPH D22
SCALE: N.T.S.

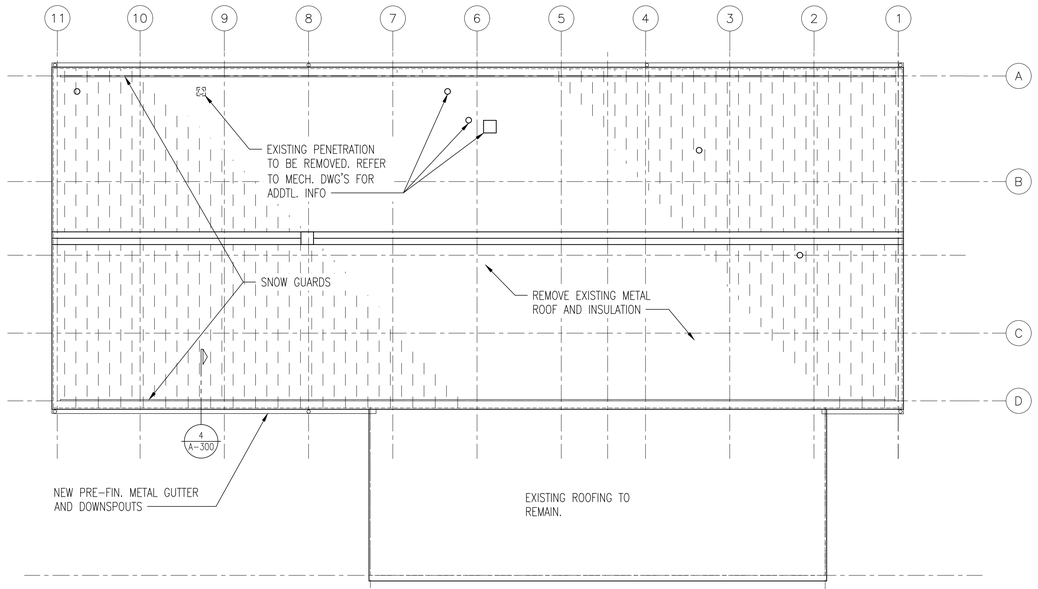


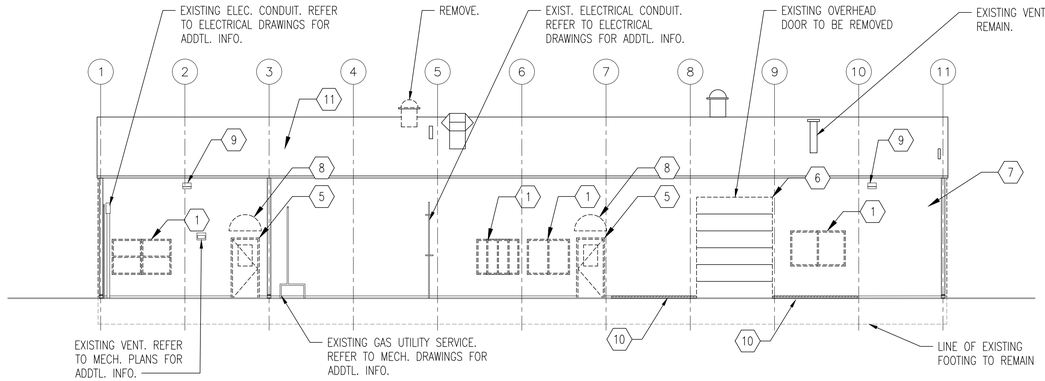
PHOTOGRAPH D18
SCALE: N.T.S.

PHOTOGRAPH D21
SCALE: N.T.S.

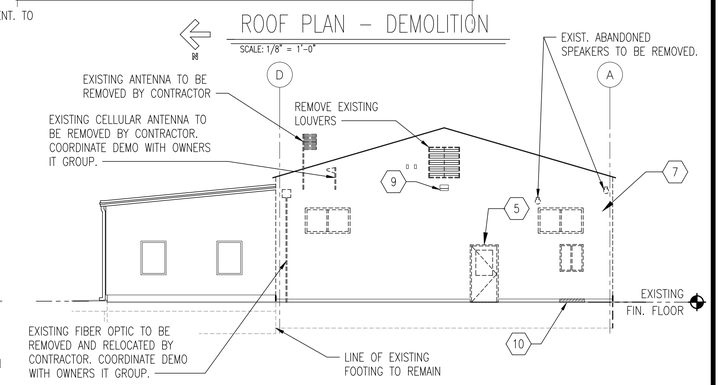
PHOTOGRAPH D17
SCALE: N.T.S.

PHOTOGRAPH D20
SCALE: N.T.S.

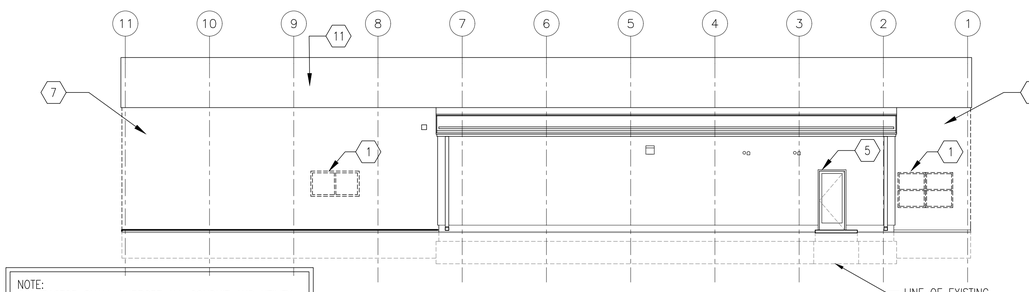




DEMOLITION EXTERIOR EAST ELEVATION
SCALE: 1/8" = 1'-0"

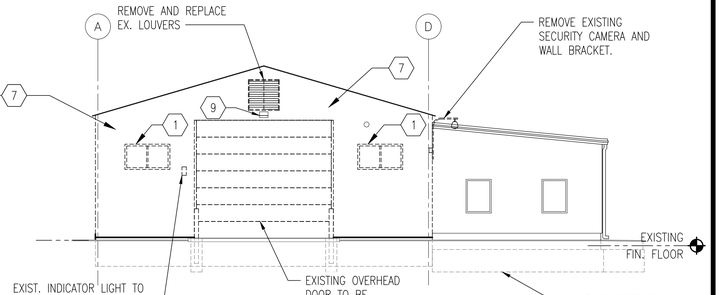


DEMOLITION EXTERIOR SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



NOTE:
CONTRACTOR SHALL SUPPORT ALL CONDUIT AND UTILITY PIPING ATTACHED TO PERIMETER WALLS TO ALLOW FOR REMOVAL OF EXISTING METAL WALL PANELS AND INSTALLATION OF NEW INSULATED WALL PANELS.

DEMOLITION EXTERIOR WEST ELEVATION
SCALE: 1/8" = 1'-0"



DEMOLITION EXTERIOR NORTH ELEVATION
SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID - FINAL	PA	EK

Dr Date
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Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

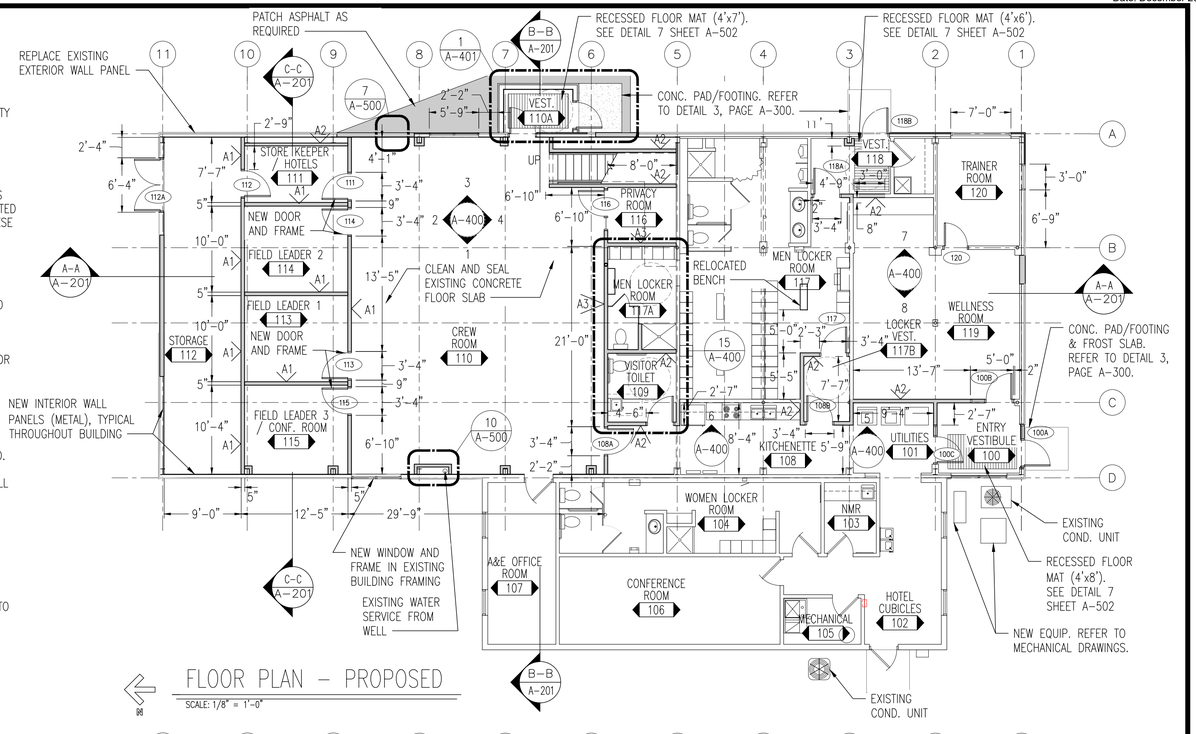
Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" WELD SHOP RENOVATIONS

Sheet Title
ASBESTOS ABATEMENT & DEMOLITION ELEVATIONS

Scale: AS NOTED
Work Order # 41910555
Drawing Number
Sheet A-003
Rev G

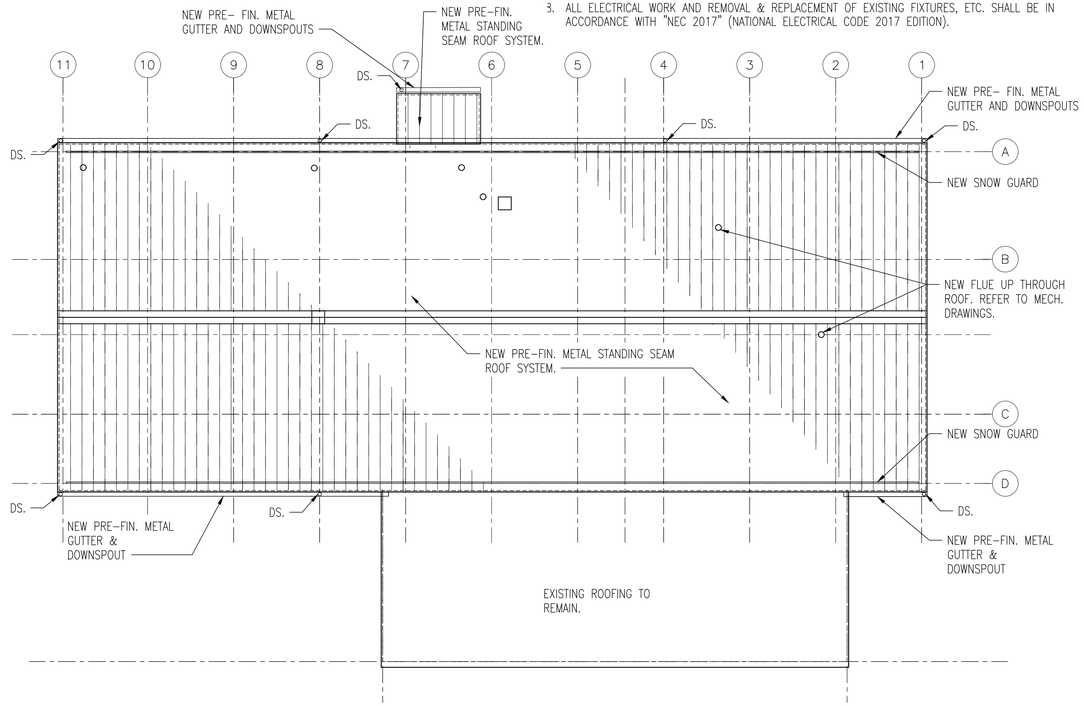
GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL, STATE, AND COUNTY CODES / ORDINANCES AND BUILDING REGULATIONS OF THE CITY OF MARION / OSHA / AND THE INSTRUCTIONS OF INSPECTING AUTHORITIES.
2. TIME IS OF THE ESSENCE OF THE CONTRACT. ALL WORK SHALL PROCEED AS EXPEDITIOUSLY AS POSSIBLE IN A WORKMANLIKE MANNER.
3. CONTRACTOR SHALL VISIT THE PREMISES AND SHALL BE THOROUGHLY ACQUAINTED WITH THE CONDITIONS TO BE ENCOUNTERED, AS NO EXTRA COSTS WILL BE ALLOWED TO COVER WORK WHICH THE CONTRACTOR HAS NOT INCLUDED IN HIS TENDER DUE TO HIS FAILURE TO THOROUGHLY EXAMINE THE PREMISES.
4. THE BIDDER SHALL PROMPTLY NOTIFY THE ARCHITECT OF ANY AMBIGUITY, INCONSISTENCY OR ERROR WHICH HE MAY DISCOVER UPON EXAMINATION OF THE BIDDING DOCUMENTS OR OF THE SITE.
5. SUBMISSION OF BID INDICATES THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED AS PER DRAWINGS AND SPECIFICATIONS.
6. CONTRACTOR SHALL INCLUDE COSTS OF ALL PERMIT AND FEES IN BASE BID.
7. ALL SUBSTITUTIONS SHALL BE APPROVED BY ARCHITECT/OWNER PRIOR TO BIDDING.
8. DO NOT SCALE DRAWINGS, USE ONLY THE DIMENSIONS PROVIDED.
9. FIELD CHECK ALL DIMENSIONS. THE CONTRACTOR SHALL EXAMINE AND FIELD VERIFY ALL EXISTING AND GIVEN DIMENSIONS AND CONDITIONS PRIOR TO COMMENCEMENT OF THE WORK AND FABRICATION OF CONSTRUCTION MATERIALS. VARIANCES AND DISCREPANCIES FROM THE DRAWINGS AND SPECIFICATIONS AND POTENTIAL INTERFERENCES SHALL BE REPORTED PROMPTLY TO THE ARCHITECT. THE CONTRACTOR SHALL INCORPORATE ACTUAL FIELD CONDITIONS AND DIMENSIONS IN THE WORK AND SHALL INDICATE CHANGES AND ADJUSTMENTS ON DRAWINGS SUBMITTED FOR APPROVAL. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO THE CONSTRUCTION DETAILS, MATERIAL QUANTITIES AND EXTENT OF THE CONSTRUCTION WORK SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PERFORM THE WORK TO MEET FIELD CONDITIONS ENCOUNTERED.
10. GENERAL CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THIS PROJECT, INCLUDING ALL NECESSARY SIGNS, BARRIERS AND SUPERVISION.
11. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
12. CONTRACTORS SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE & PROPER COMPLETION OF THE PROJECT AS INDICATED ON THE DRAWINGS & AS SPECIFIED HEREIN AND/OR AS REQUIRED.
13. THE CONTRACTOR SHALL PROVIDE NECESSARY BARRIERS AND PROTECTION ENCLOSURES AS REQUIRED TO ALLOW THE OWNER'S NORMAL AND SAFE USE OF SITE PARKING AND BUILDING PREMISES.
14. DURING CONSTRUCTION, MAINTAIN EXISTING MEANS OF EGRESS AND PASSAGEWAYS CLEAR OF OBSTRUCTIONS. TAKE ALL PRECAUTIONS NECESSARY TO INSURE THE SAFETY OF CONSUMER ENERGY EMPLOYEES AND CONSTRUCTION WORKERS.
15. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ADJACENT PRIVATE AND PUBLIC PROPERTY FROM DAMAGE DURING CONSTRUCTION.
16. ALL COLOR SELECTIONS SHALL BE BY THE OWNER/ ARCHITECT.
17. THE LOCATION OF ALL UTILITIES AND IMPROVEMENTS INDICATED HEREIN ARE APPROXIMATE ONLY AND WERE FROM SOURCES BELIEVED TO BE RELIABLE, BUT NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO LOCATION, TYPE OR EXTENT OF UTILITIES OR IMPROVEMENTS WHETHER OR NOT SAME ARE INDICATED OR SHOWN, AND THIS CONTRACTOR SHALL MAKE HIS OWN INVESTIGATION AS TO THE EXTENT OF THESE OR OTHER UTILITIES, AND SHALL BE RESPONSIBLE FOR PROTECTION AND RESTORATION OF SAME IF DAMAGED AS A RESULT OF HIS OPERATIONS.
18. OWNER SHALL HAVE FIRST CLAIM TO ALL SALVAGEABLE ITEMS.
19. CONSULT WITH OWNER REGARDING STORAGE OF ON SITE MATERIALS AND ACCESS TO SITE AS NOT TO INTERFERE WITH NORMAL OPERATIONS.
20. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.
21. ALL EXISTING CONSTRUCTION, EQUIPMENT AND FINISHES TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION.
22. WHERE EXISTING FINISHED SURFACES TO REMAIN ARE DAMAGED BY NEW CONSTRUCTION, THE CONTRACTOR SHALL POINT, TUCK, REPAIR OR OTHERWISE REPLACE DAMAGED SURFACES AS REQUIRED.
23. WHERE EXISTING EQUIPMENT TO REMAIN IS DAMAGED BY NEW CONSTRUCTION, THE CONTRACTOR SHALL REPAIR OR REPLACE THE DAMAGED EQUIPMENT OR COMPENSATE THE OWNER TO HIS SATISFACTION.
24. CONTRACTOR SHALL PERFORM ALL DEMOLITION REQUIRED FOR INSTALLATION OF NEW ROOF SYSTEM. FIELD VERIFY ITEMS TO BE DEMOLISHED. ANY DISCREPANCIES OR QUESTIONABLE ITEMS SHOULD BE BROUGHT TO THE OWNER/ARCHITECT'S ATTENTION IMMEDIATELY.
25. GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS FROM SITE AND LEGALLY DISPOSE OF.
26. ALL BROCHURES, OPERATING MANUALS, SHOP DRAWINGS, CATALOGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE JOB. CONTRACTOR SHALL PROVIDE OWNER WITH COMPLETE SET OF "AS-BUILT" DRAWINGS AT COMPLETION OF JOB.
27. CAULK AROUND ALL OPENINGS & WHERE WOOD OR METAL MEETS MASONRY.
3. ALL ELECTRICAL WORK AND REMOVAL & REPLACEMENT OF EXISTING FIXTURES, ETC. SHALL BE IN ACCORDANCE WITH "NEC 2017" (NATIONAL ELECTRICAL CODE 2017 EDITION).



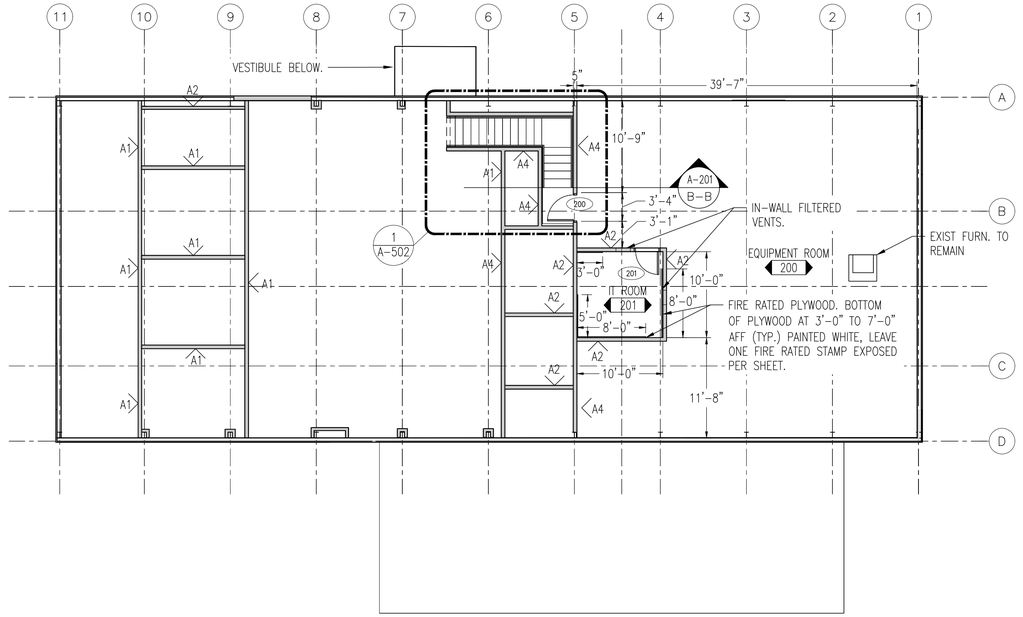
FLOOR PLAN – PROPOSED

SCALE: 1/8" = 1'-0"



ROOF PLAN – PROPOSED

SCALE: 1/8" = 1'-0"



FLOOR PLAN – MEZZANINE – PROPOSED

SCALE: 1/8" = 1'-0"

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							App		
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK	App		
Drawing No	Reference Drawings	Rev	Date	Description	By	App	Acad File CE.DWT	Plot Scale 1"=1"	

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PROPOSED FLOOR PLAN

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-100
Rev G

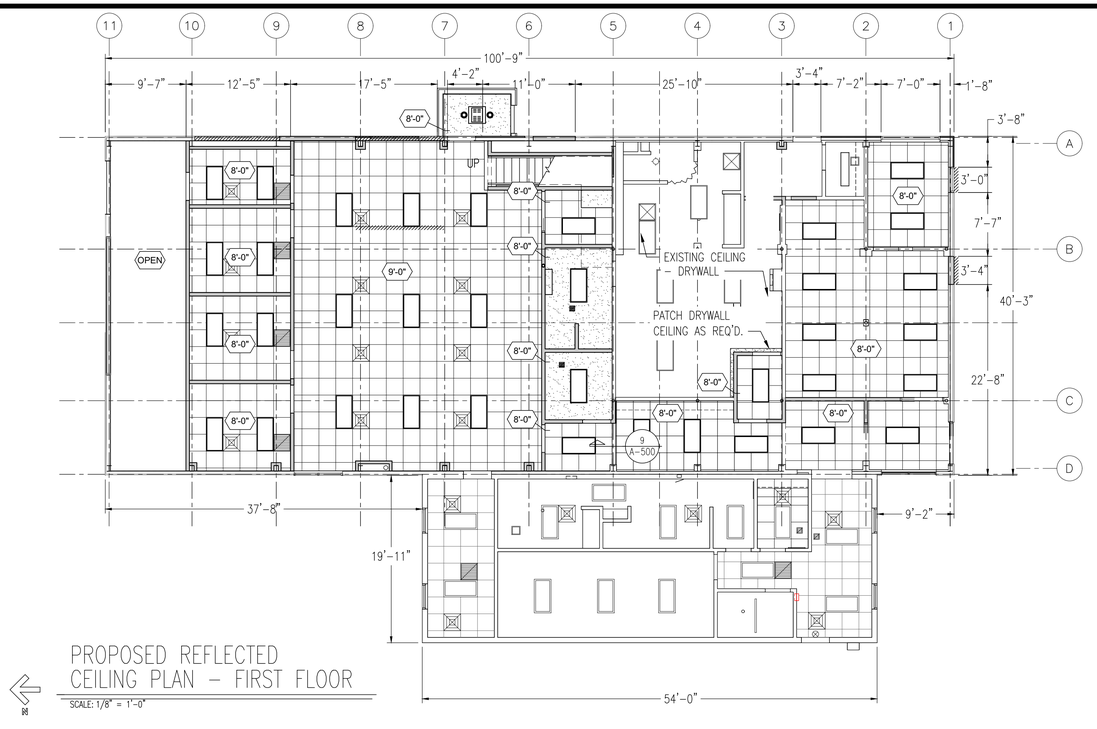
REFLECTED CEILING PLAN LEGEND

REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION ON LIGHT FIXTURES

- 2'x4' LED LAY–IN LIGHT FIXTURE
- 2'x4' LED LAY–IN LIGHT FIXTURE – EM
- 2'x2' LAY–IN SUPPLY DIFFUSER
- 2'x2' LAY–IN RETURN AIR GRILLE
- X'–X" INDICATES CEILING / SOFFIT HEIGHT
- SUSPENDED CEILING
- DRYWALL CEILING

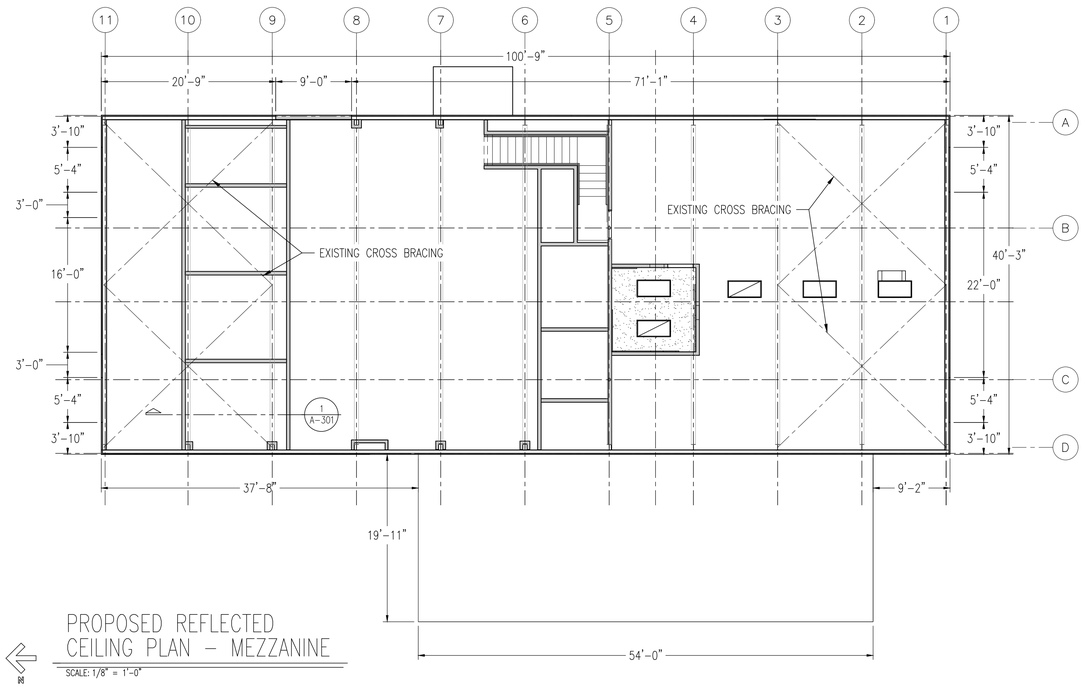
REFLECTED CEILING GENERAL NOTES

1. COORDINATE NEW AND EXISTING MECHANICAL AND ELECTRICAL COMPONENT QUANTITIES, TYPES AND SIZES WITH MECHANICAL AND ELECTRICAL CONTRACTOR. COORDINATE THE EXACT LOCATION OF MECHANICAL AND ELECTRICAL COMPONENTS LOCATED ABOVE OR WITHIN CEILING SPACE AS INDICATED ON MECHANICAL AND ELECTRICAL PLANS.
2. CEILING COMPONENTS SHALL BE CENTERED IN CEILING TILES UNLESS OTHERWISE NOTED.
3. WHERE EXISTING FIRE RATED WALLS OR CEILINGS ARE ALTERED OR PENETRATED TO INSTALL NEW CONSTRUCTION, PATCH AND SEAL OPENINGS WITH FIRE RATED CONSTRUCTION TO MAINTAIN INTEGRITY OF EXISTING WALL OR CEILING FIRE RATING.
4. REFER TO MECHANICAL AND ELECTRICAL PLANS FOR ADDITIONAL INFORMATION REGARDING LOCATION OF NEW AND RELOCATED MECHANICAL AND ELECTRICAL DEVICES
5. ALL EXISTING CEILING GRID AND TILE ARE TO BE REMOVED AND DISPOSED OF.



PROPOSED REFLECTED CEILING PLAN – FIRST FLOOR

SCALE: 1/8" = 1'–0"



PROPOSED REFLECTED CEILING PLAN – MEZZANINE

SCALE: 1/8" = 1'–0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

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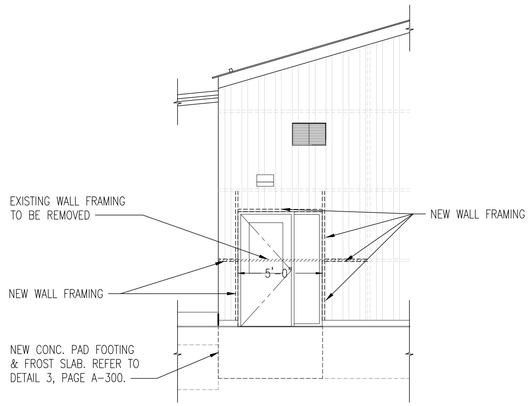
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

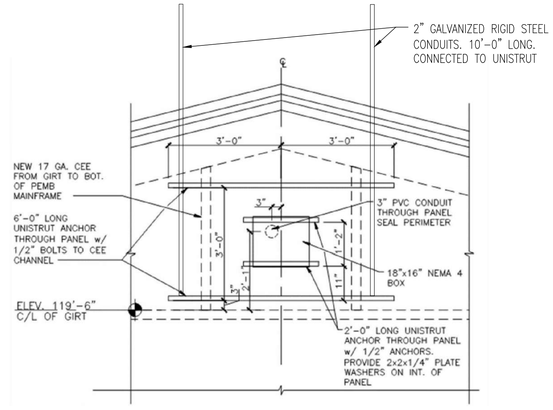
Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
REFLECTED CEILING PLAN

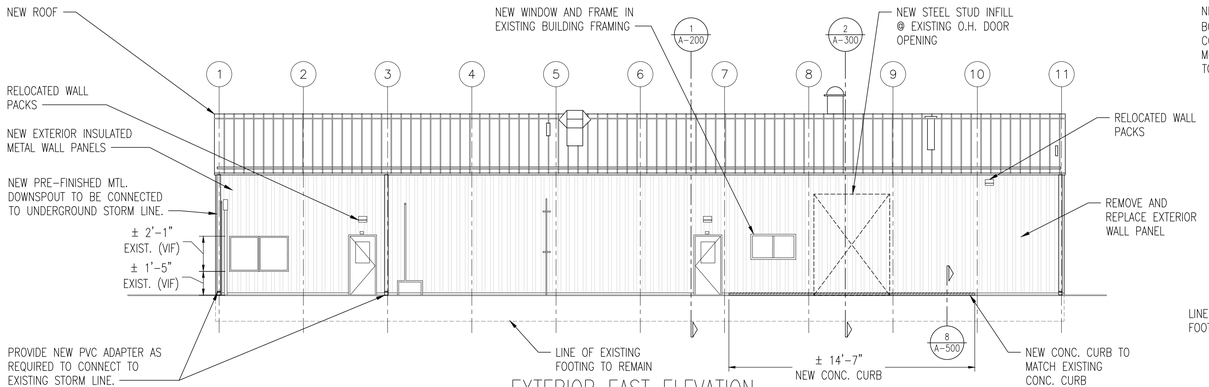
Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A–110
Rev G



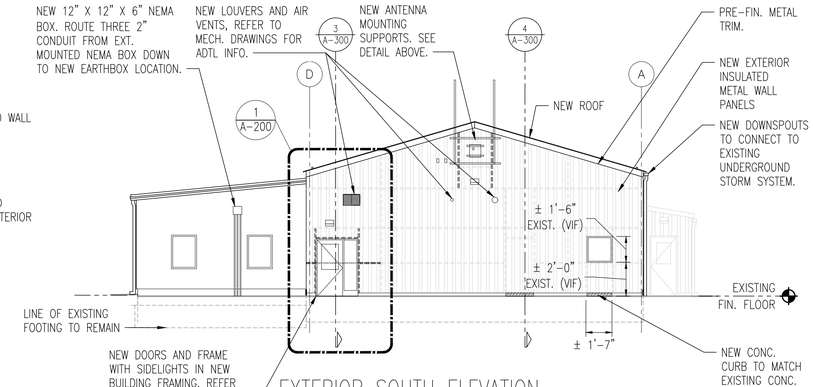
1 A-100 PARTIAL SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



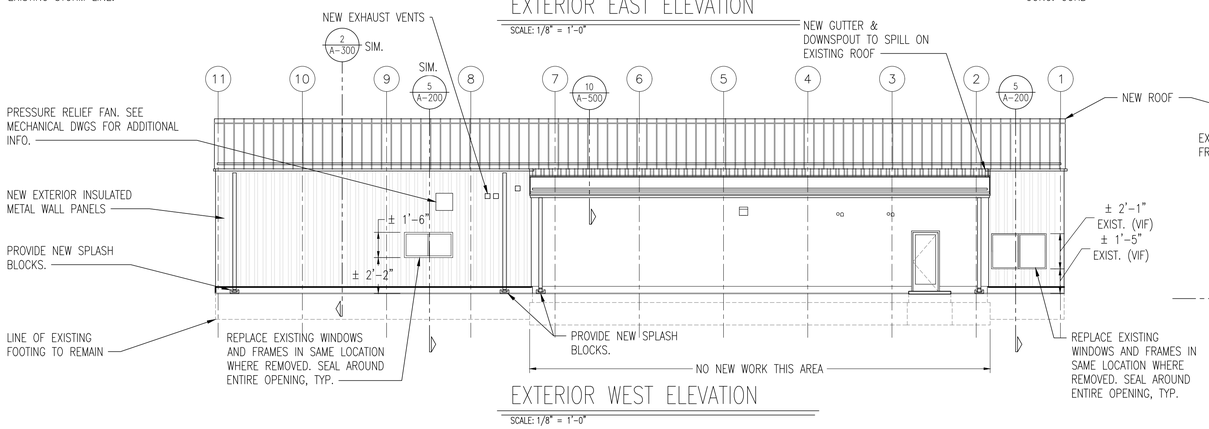
ANTENNA MOUNT DETAIL
SCALE: NTS



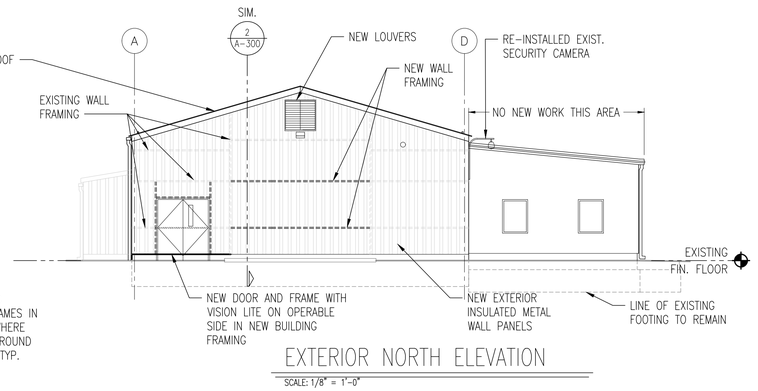
EXTERIOR EAST ELEVATION
SCALE: 1/8" = 1'-0"



EXTERIOR SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



EXTERIOR WEST ELEVATION
SCALE: 1/8" = 1'-0"



EXTERIOR NORTH ELEVATION
SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

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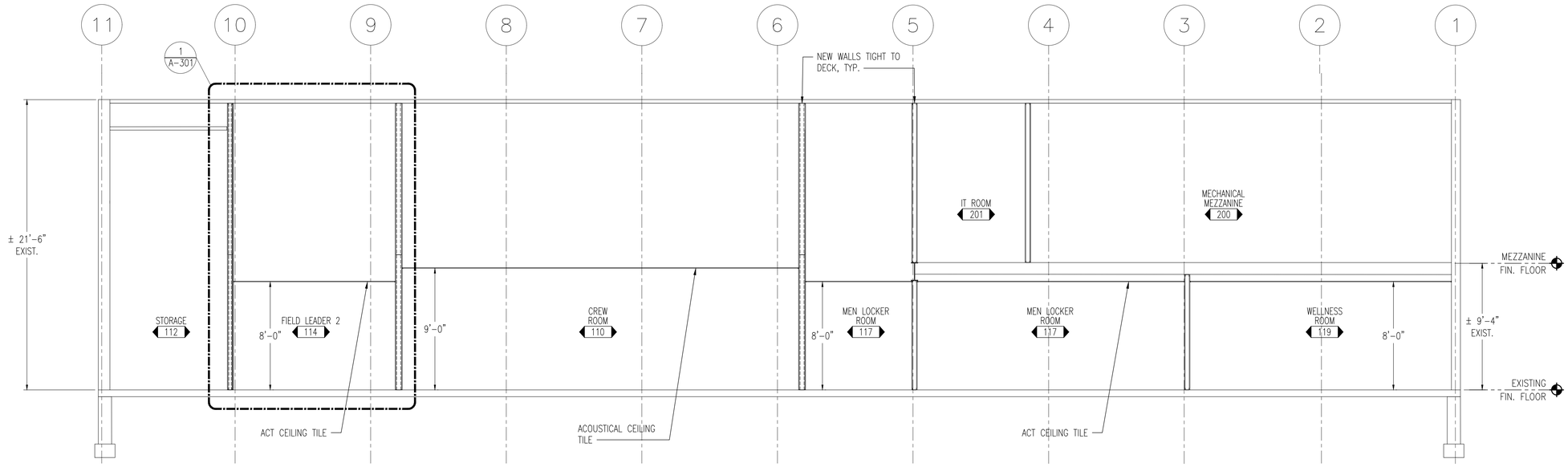
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION COMRRESSOR STATION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

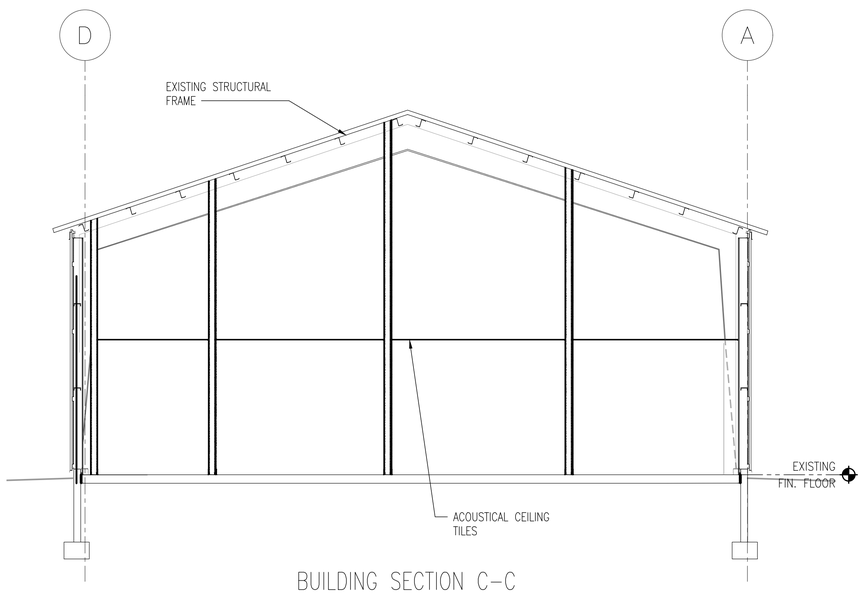
Sheet Title
EXTERIOR ELEVATIONS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-200
Rev G



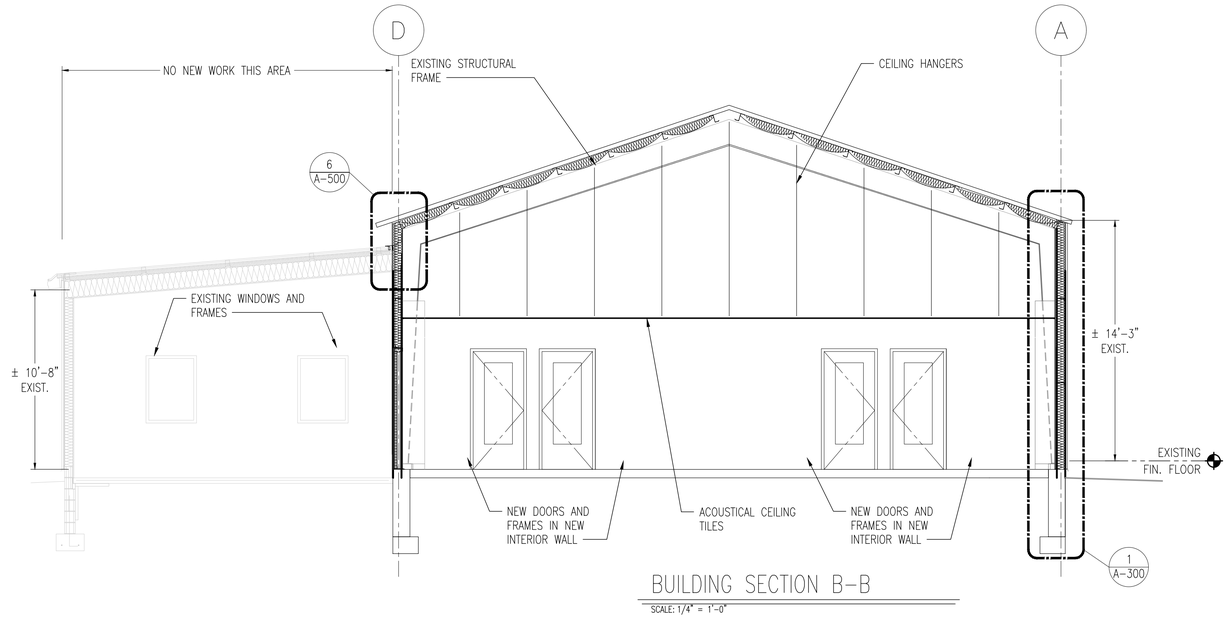
BUILDING SECTION A-A

SCALE: 1/4" = 1'-0"



BUILDING SECTION C-C

SCALE: 1/4" = 1'-0"



BUILDING SECTION B-B

SCALE: 1/4" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

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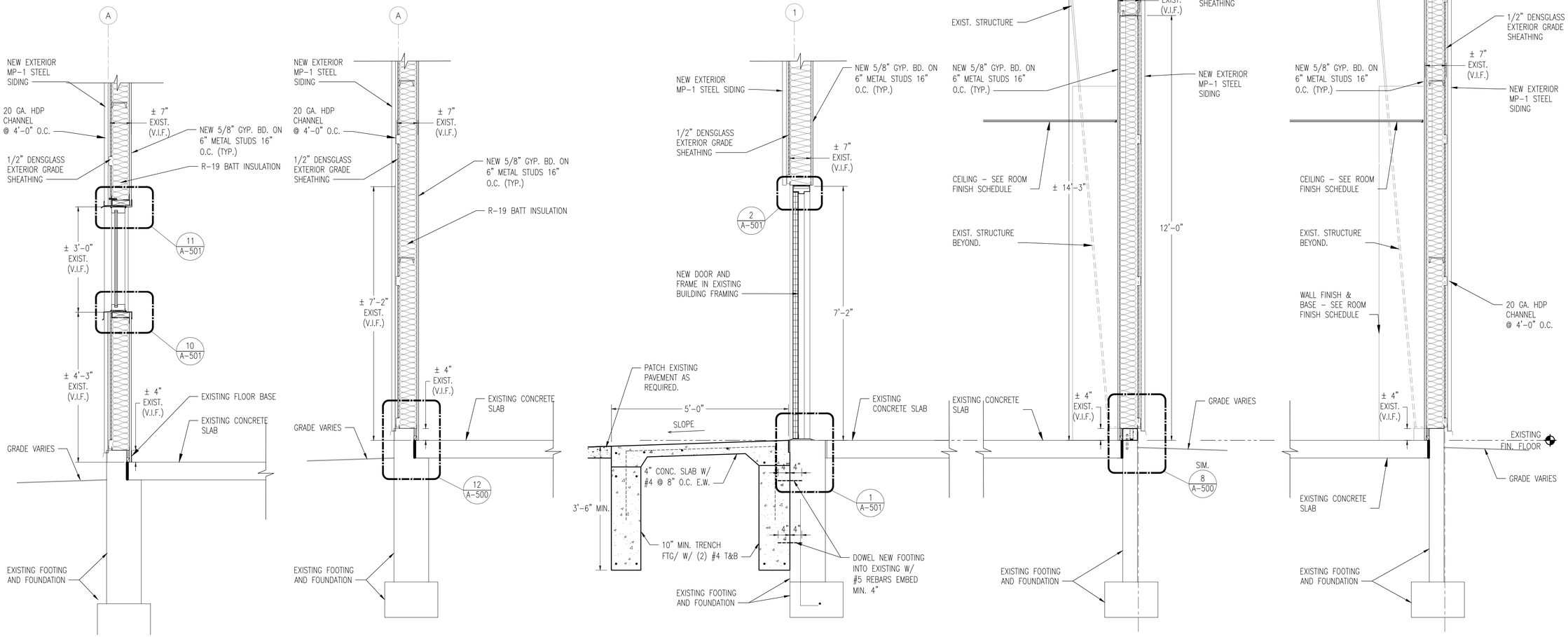
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
BUILDING SECTIONS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-201
Rev G



5 A-200 WALL SECTION ALONG COL. A
SCALE: 3/4" = 1'-0"

4 A-200 WALL SECTION ALONG COL. A
SCALE: 3/4" = 1'-0"

3 A-200 WALL SECTION ALONG COL. 1
SCALE: 3/4" = 1'-0"

2 A-200 WALL SECTION ALONG COL. A
SCALE: 3/4" = 1'-0"

1 A-200 WALL SECTION ALONG COL. 7A
SCALE: 3/4" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2026	ISSUED FOR BID - FINAL	PA	EK

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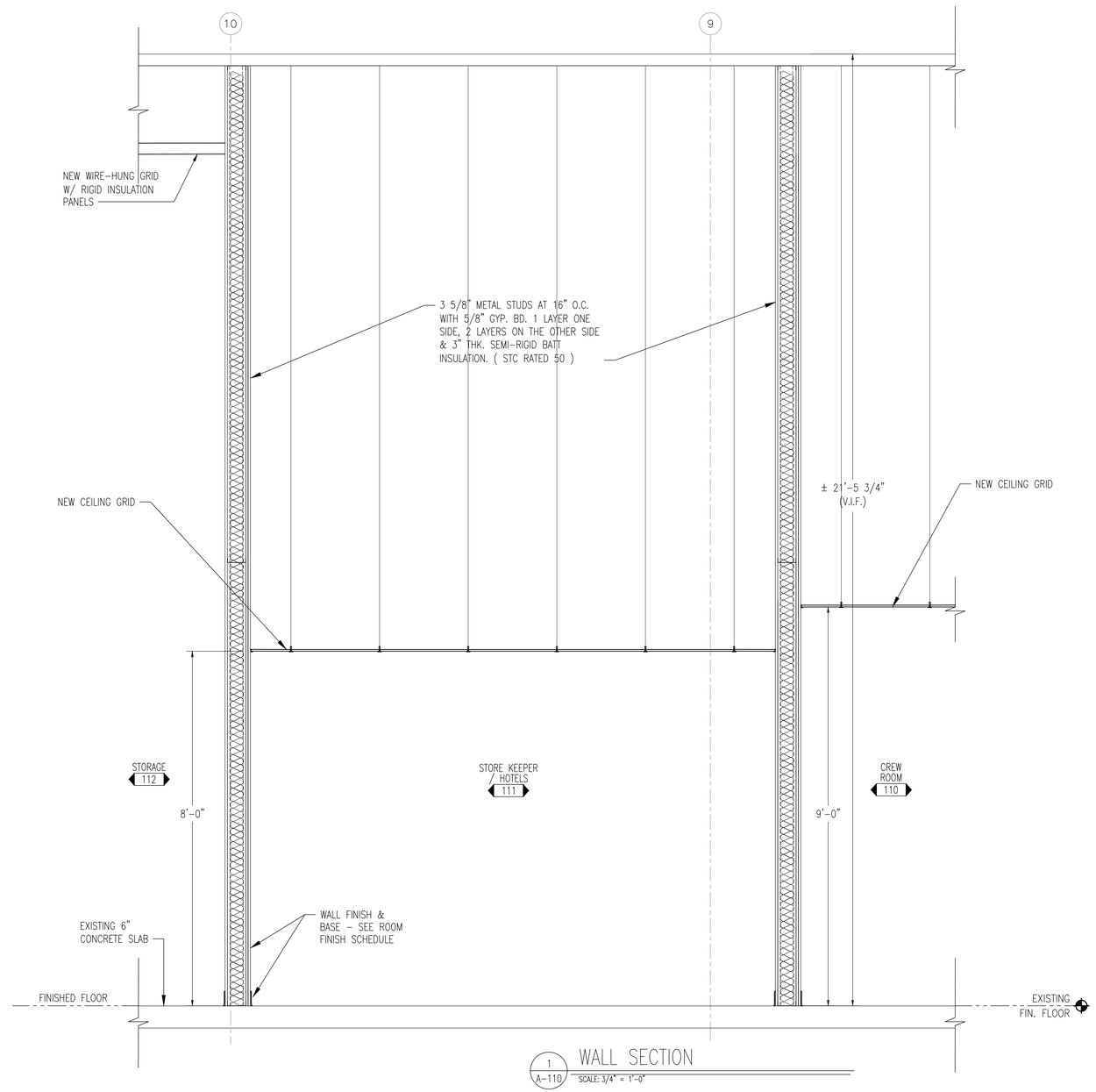
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
WALL SECTIONS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-300
Rev G



1 / A–110 WALL SECTION
SCALE: 3/4" = 1'–0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

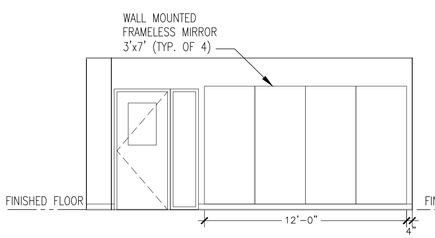
Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
WALL SECTIONS

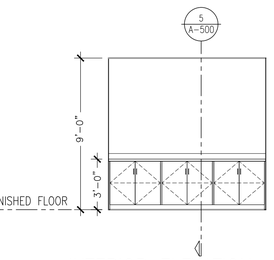
Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A–301
Rev G

FIXTURE & ACCESSORY LEGEND

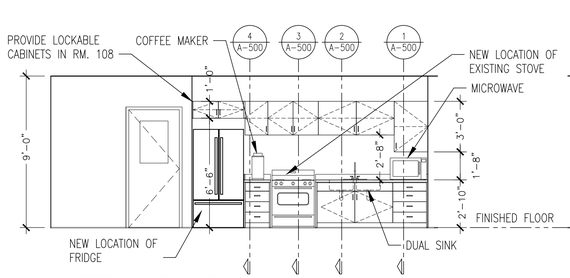
KEY	ITEM
1	FLOOR MOUNTED TANK TYPE TOILET
2	42" S.S. HORZ. GRAB BAR
3	36" S.S. HORZ. GRAB BAR
4	18" S.S. VERT. GRAB BAR
5	SURFACE MTD. TOILET TISSUE DISP.
6	TOWEL DISPENSER
7	METAL FRAMED MIRROR
8	WALL MOUNTED SOAP DISPENSER
10	WALL MOUNTED SINK
11	HAND DRYER



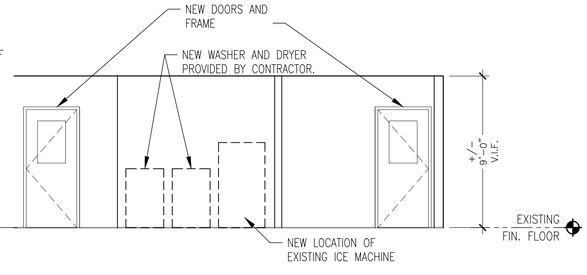
8 A-100 INTERIOR ELEVATION – RM. 119
SCALE: 1/4" = 1'-0"



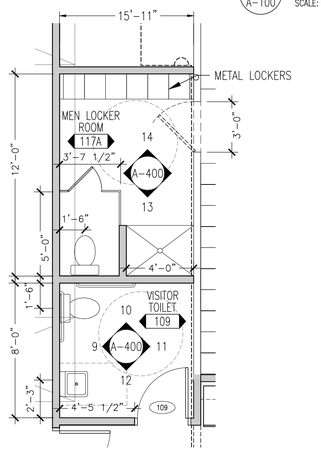
7 A-100 INTERIOR ELEVATION – RM. 119
SCALE: 1/4" = 1'-0"



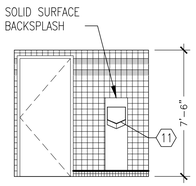
6 A-100 INTERIOR ELEVATION – RM. 108
SCALE: 1/4" = 1'-0"



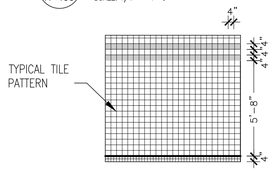
5 A-100 INTERIOR ELEVATION – RM. 108
SCALE: 1/4" = 1'-0"



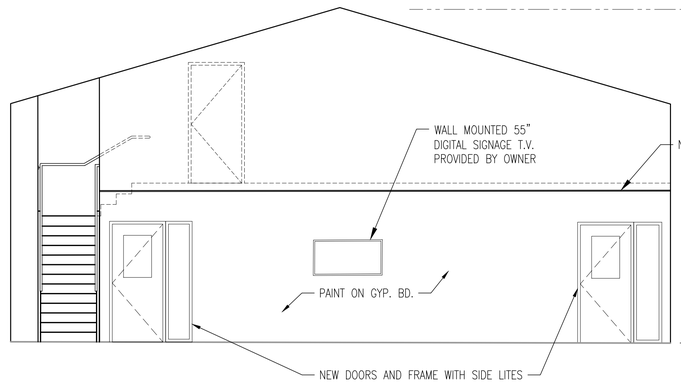
15 A-100 ENLARGED PLAN – ROOM 117A & 109
SCALE: 1/4" = 1'-0"



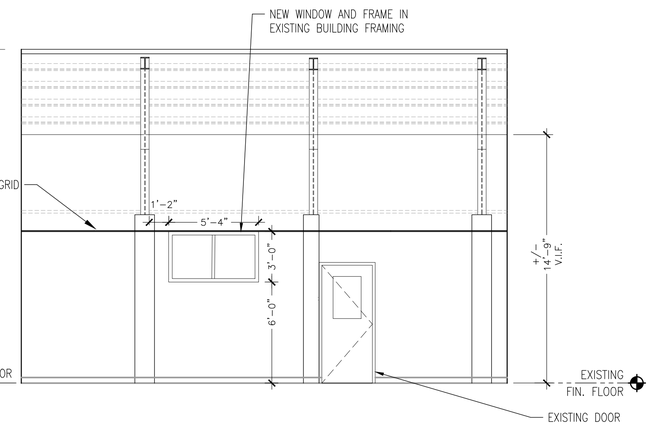
12 A-400 INTERIOR ELEVATION – RM. 109
SCALE: 1/4" = 1'-0"



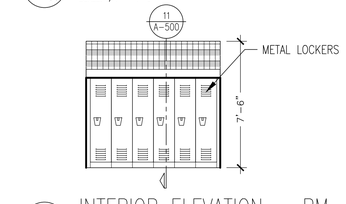
11 A-400 INTERIOR ELEVATION – ROOM 109
SCALE: 1/4" = 1'-0"



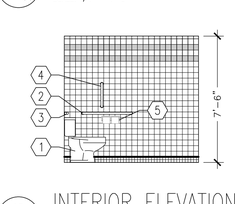
4 A-100 INTERIOR ELEVATION – RM. 110
SCALE: 1/4" = 1'-0"



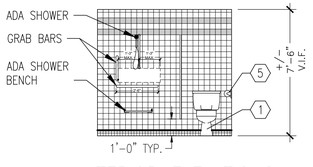
3 A-100 INTERIOR ELEVATION – RM. 110
SCALE: 1/4" = 1'-0"



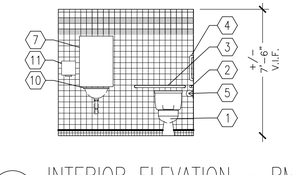
14 A-400 INTERIOR ELEVATION – RM. 117A
SCALE: 1/4" = 1'-0"



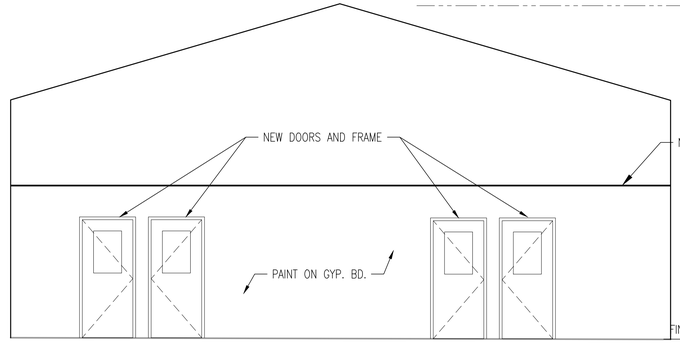
10 A-400 INTERIOR ELEVATION – RM. 109
SCALE: 1/4" = 1'-0"



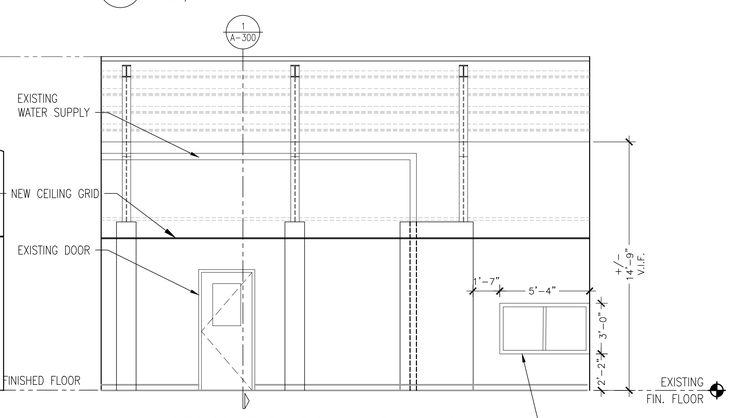
13 A-400 INTERIOR ELEVATIONS – RM. 117A
SCALE: 1/4" = 1'-0"



9 A-400 INTERIOR ELEVATION – RM. 109
SCALE: 1/4" = 1'-0"



2 A-100 INTERIOR ELEVATION – RM. 110
SCALE: 1/4" = 1'-0"



1 A-100 INTERIOR ELEVATION – RM. 110
SCALE: 1/4" = 1'-0"

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Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
INTERIOR ELEVATIONS & ENLARGED PLANS

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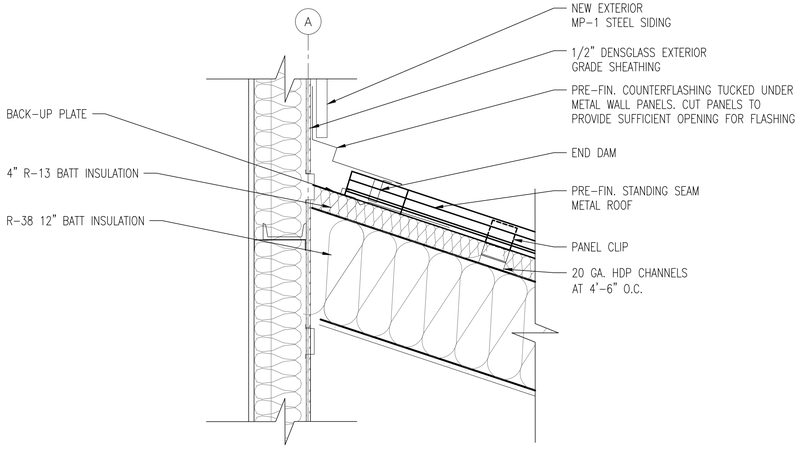
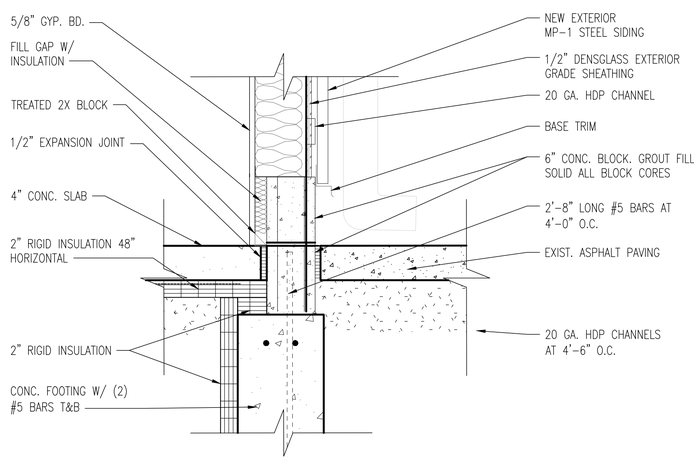
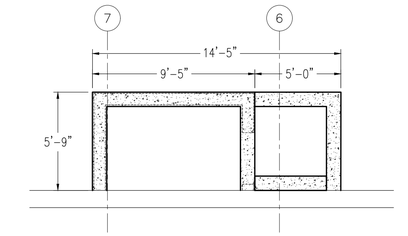


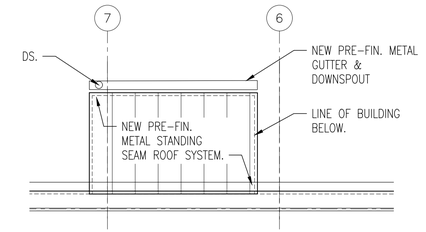
1 A-401 DETAIL
SCALE: 1 1/2" = 1'-0"



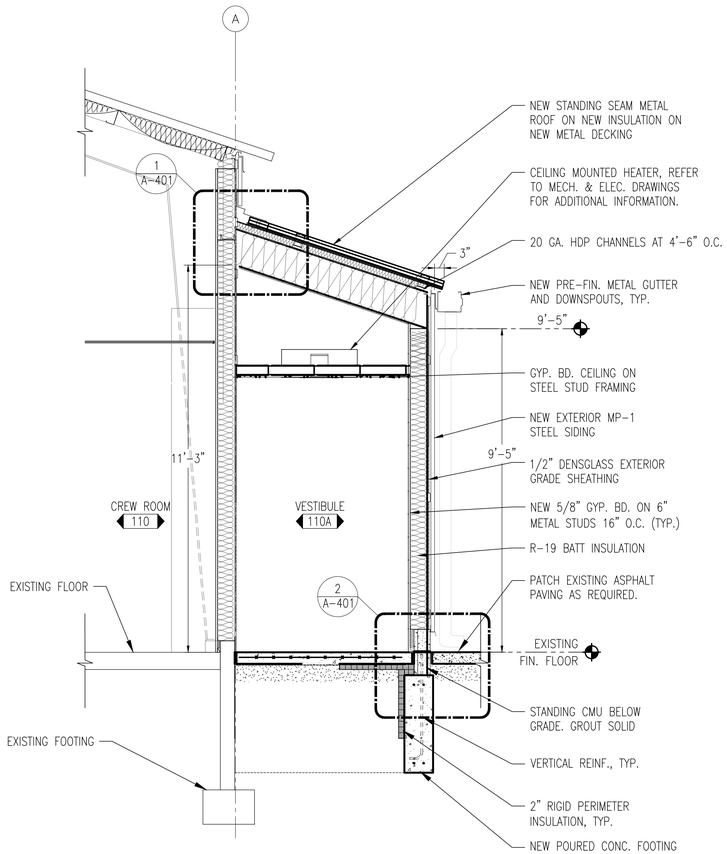
2 A-401 DETAIL
SCALE: 1 1/2" = 1'-0"



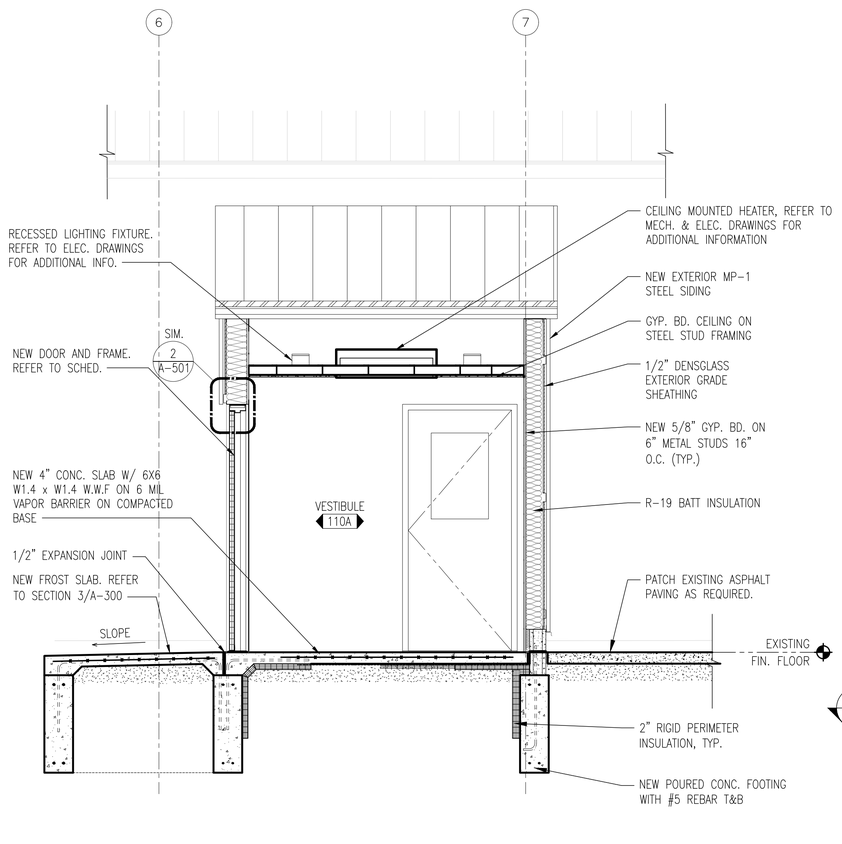
ENLARGED FOUNDATION PLAN – VESTIBULE
SCALE: 1/4" = 1'-0"



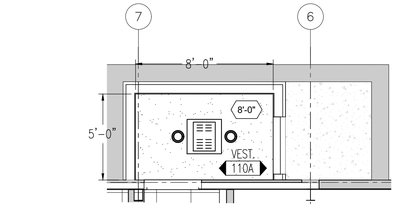
ENLARGED ROOF PLAN – VESTIBULE
SCALE: 1/4" = 1'-0"



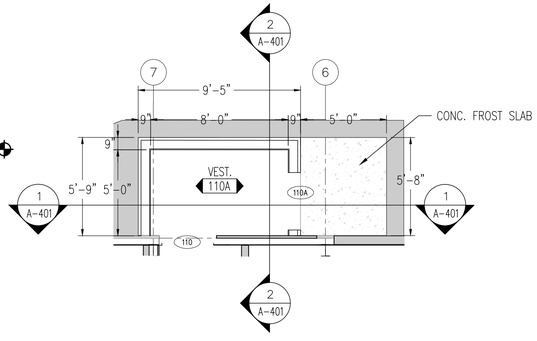
2 A-401 WALL SECTION
SCALE: 3/4" = 1'-0"



1 A-401 WALL SECTION
SCALE: 3/4" = 1'-0"



ENLARGED RCP PLAN – VESTIBULE
SCALE: 1/4" = 1'-0"



ENLARGED FLOOR PLAN – VESTIBULE
SCALE: 1/4" = 1'-0"

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Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
ENLARGED PLAN, SECTIONS & DETAILS

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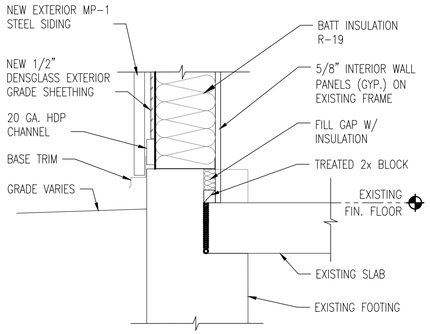
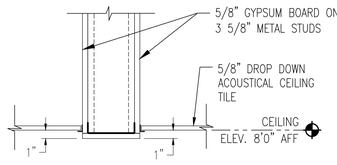
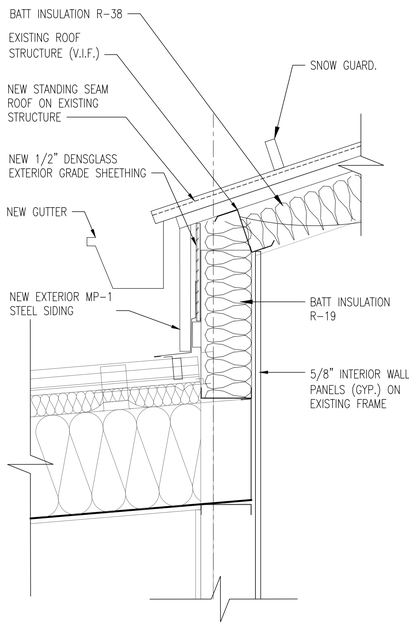


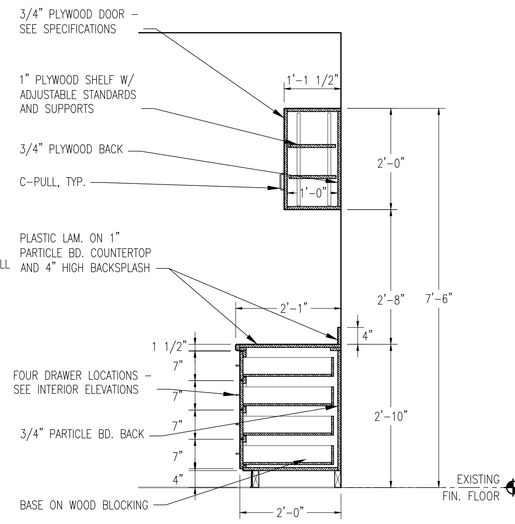
12 A300 BASE DETAIL @ EXISTING FND.
SCALE: 1 1/2" = 1'-0"



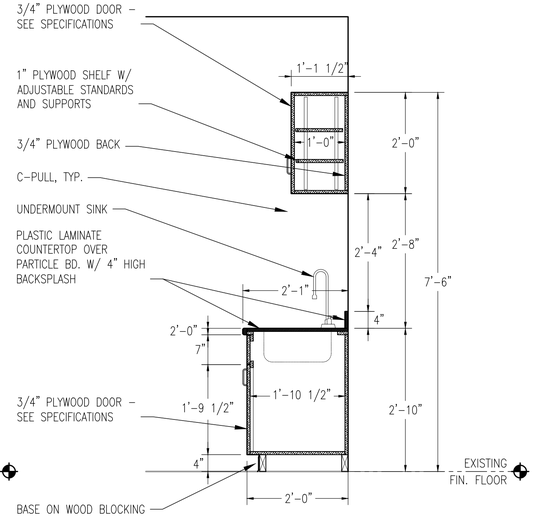
9 A110 BULKHEAD DETAIL
SCALE: 1 1/2" = 1'-0"



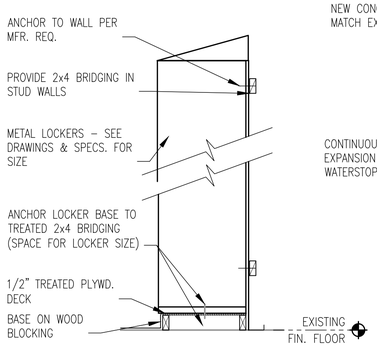
6 A201 ROOF DETAIL
SCALE: 1 1/2" = 1'-0"



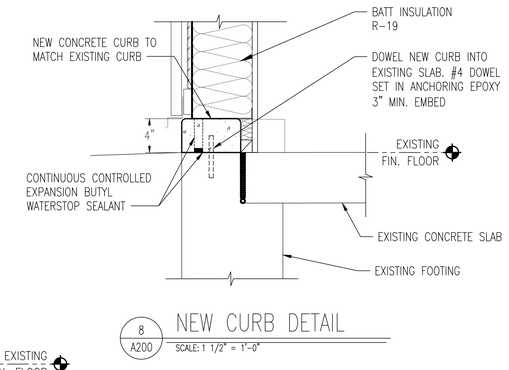
4 A400 CABINETRY DETAIL
SCALE: 3/4" = 1'-0"



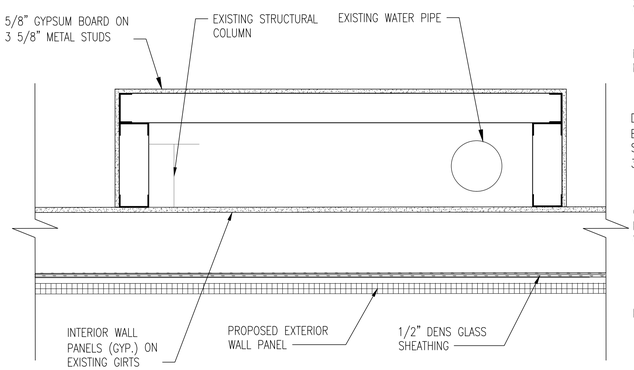
2 A400 CABINETRY DETAIL
SCALE: 3/4" = 1'-0"



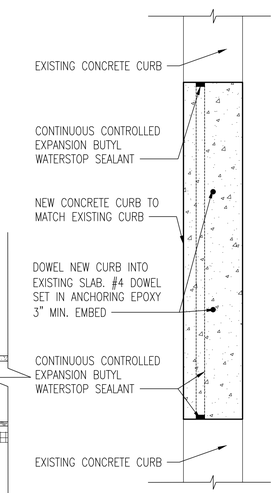
11 A400 LOCKER DETAIL
SCALE: 3/4" = 1'-0"



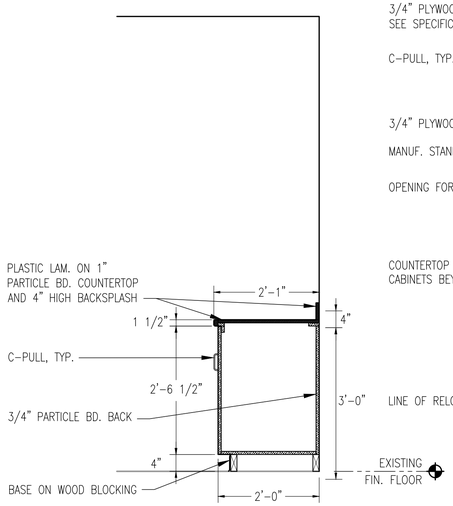
8 A200 NEW CURB DETAIL
SCALE: 1 1/2" = 1'-0"



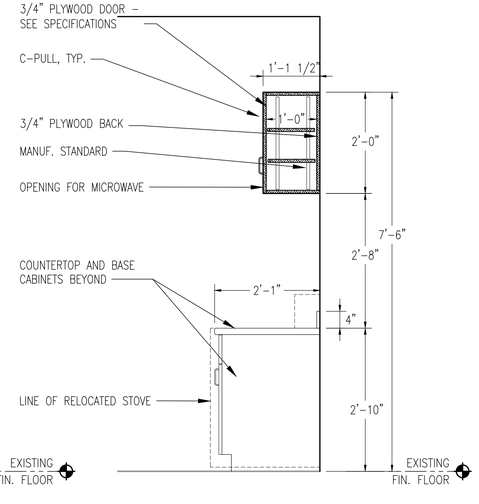
10 A110 COLUMN DETAIL
SCALE: 1 1/2" = 1'-0"



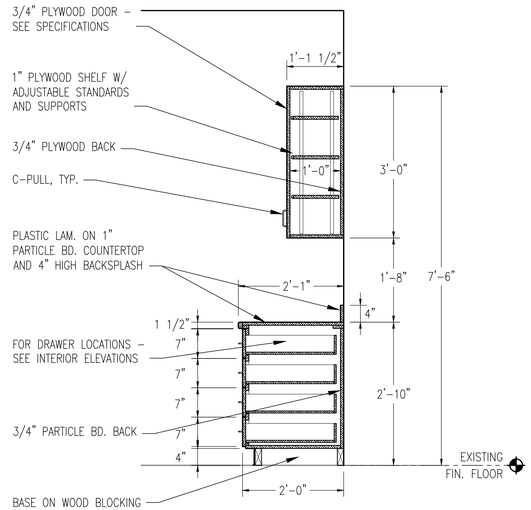
7 A100 CURB PLAN DETAIL
SCALE: 1 1/2" = 1'-0"



5 A400 CABINETRY DETAIL
SCALE: 3/4" = 1'-0"



3 A400 CABINETRY DETAIL
SCALE: 3/4" = 1'-0"



1 A400 CABINETRY DETAIL
SCALE: 3/4" = 1'-0"

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Plot Scale 1"=1'

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

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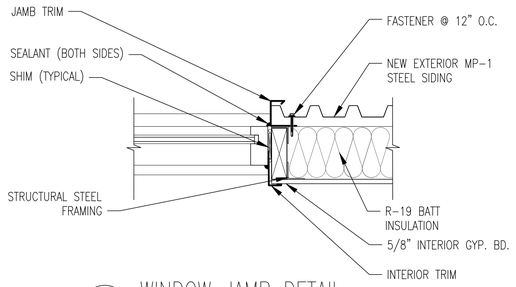
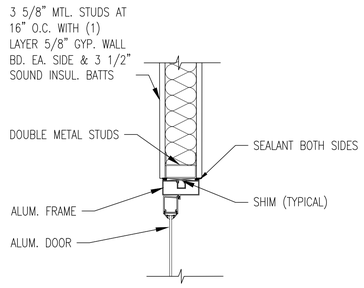
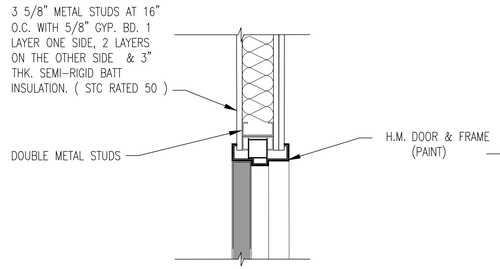


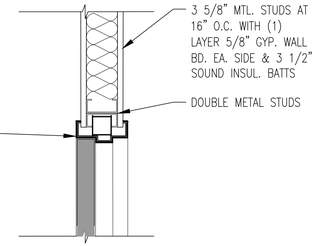
12 A300 WINDOW JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



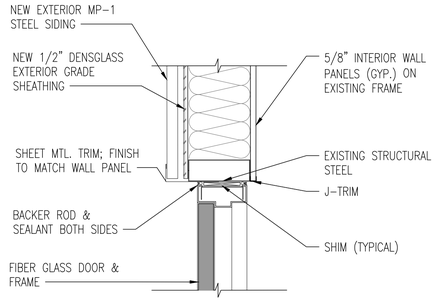
TYP. ALUMINUM DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



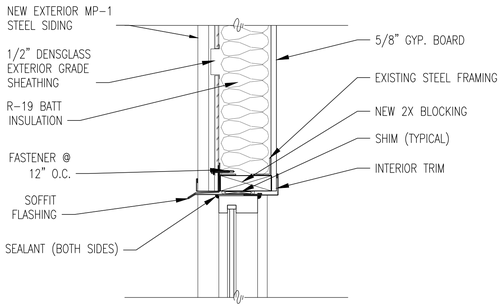
9 A300 DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



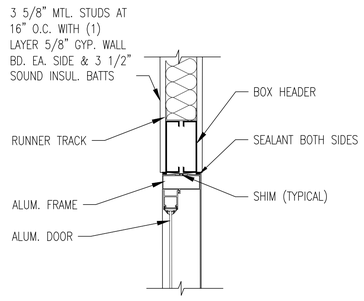
6 A300 DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



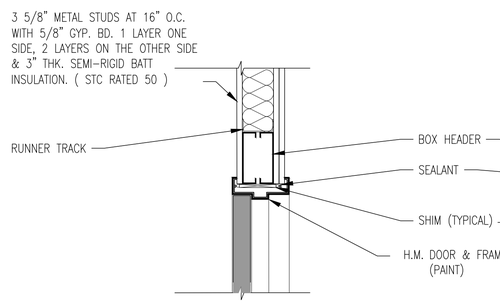
3 A300 DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



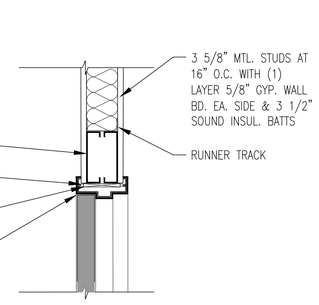
11 A300 WINDOW HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



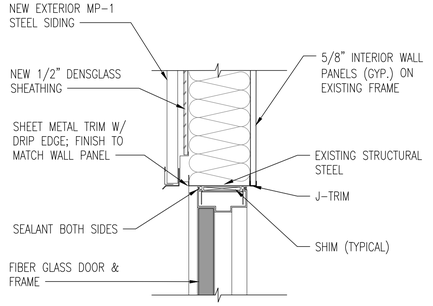
TYP. ALUMINUM DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



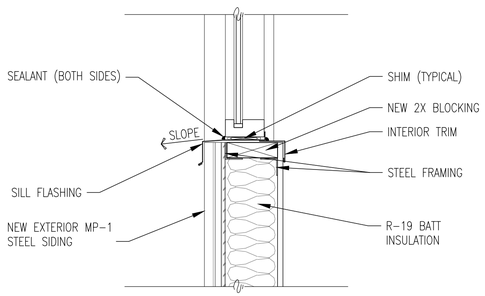
8 A300 DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



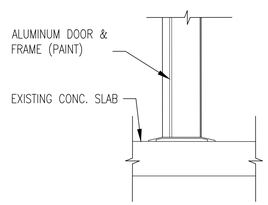
5 A300 DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



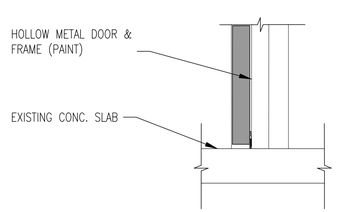
2 A300 DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



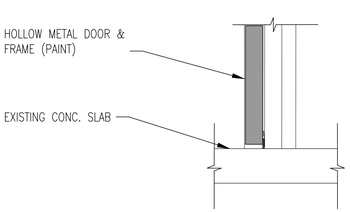
10 A300 WINDOW SILL DETAIL
SCALE: 1 1/2" = 1'-0"



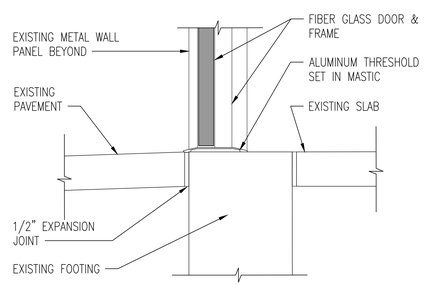
TYP. ALUMINUM THRESHOLD DETAIL
SCALE: 1 1/2" = 1'-0"



7 A300 DOOR THRESHOLD DETAIL
SCALE: 1 1/2" = 1'-0"



4 A300 DOOR THRESHOLD DETAIL
SCALE: 1 1/2" = 1'-0"



1 A300 DOOR THRESHOLD DETAIL
SCALE: 1 1/2" = 1'-0"

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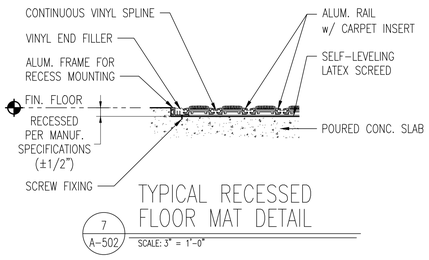
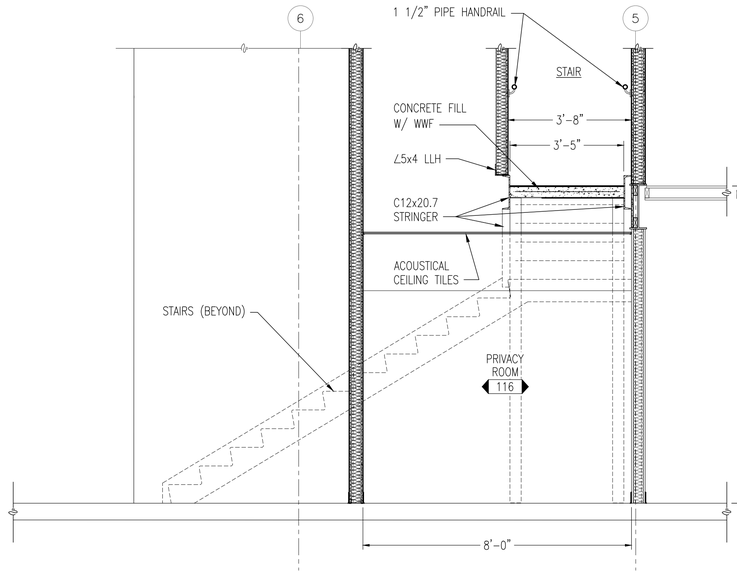


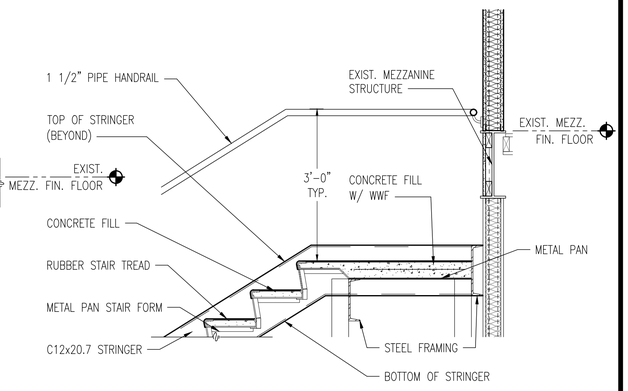
TYPICAL RECESSED FLOOR MAT DETAIL

7 A-502 SCALE: 3" = 1'-0"



STAIR SECTION

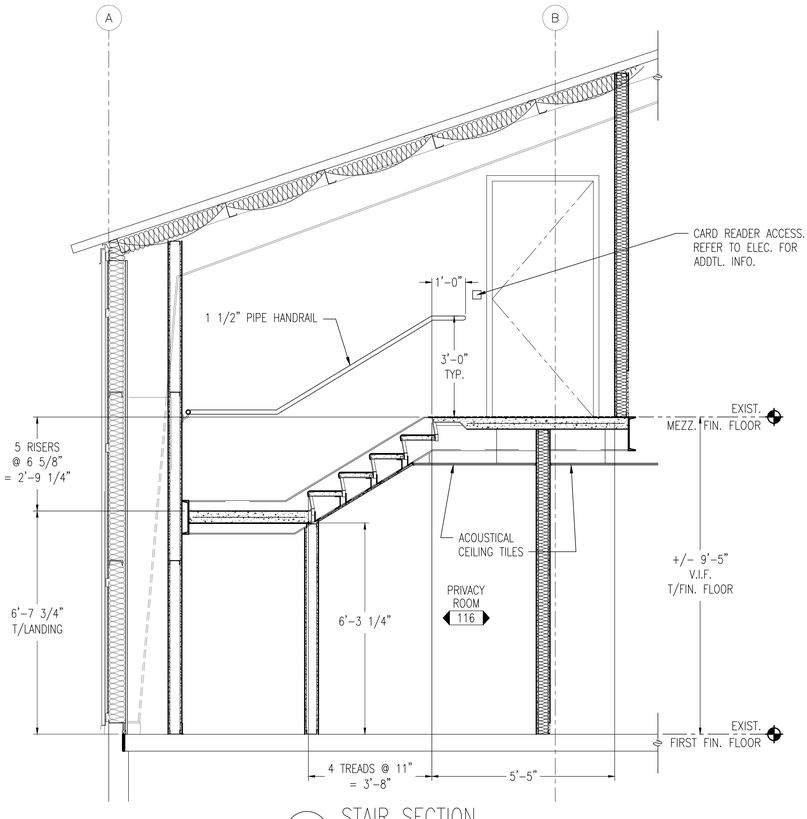
6 A-502 SCALE: 1/2" = 1'-0"



NOTE:
PAINT ALL EXPOSED STEEL SURFACES OF STAIR

STAIR DETAIL

5 A-502 SCALE: 3/4" = 1'-0"



STAIR SECTION

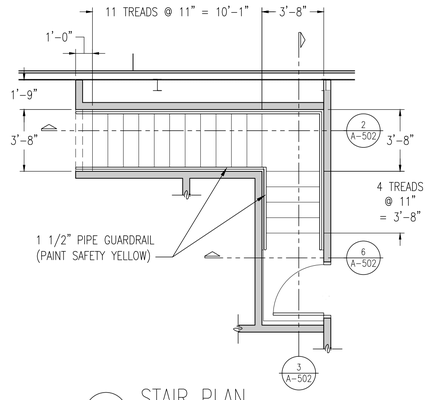
3 A-502 SCALE: 1/2" = 1'-0"

STAIR SECTION

2 A-502 SCALE: 1/2" = 1'-0"

STAIR DETAIL

4 A-502 SCALE: 3/4" = 1'-0"



STAIR PLAN

1 A-100 SCALE: 1/4" = 1'-0"

Drawing No	Reference Drawings

Rev	Date	Description	By	App
G	04/30/2026	ISSUED FOR BID – FINAL	PA	EK

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T & S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
STAIR DETAILS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A-502
Rev G

MARION BLDG. A – NUMBER SIGNAGE

ROOM NUMBER SIGN	ROOM NAME	QUANTITY	SIGNAGE TYPE	ADDITIONAL INFORMATION
MCS –100	ENTRY VESTIBULE	1	A	
MCS – 101	UTILITIES	1	A	
MCS – 107	A&E OFFICE ROOM	1	B–2	
MCS – 108	KITCHENETTE	1	B–2	
MCS – 109	VISITOR TOILET	1	D	
MCS – 110	CREW ROOM	1	B–2	
MCS– 110A	HOTEL CUBICLES	1	M	
MCS – 111	STORE KEEPER / HOTELS	1	B–2	
MCS – 112	STORAGE	1	D	
MCS – 113	FIELD LEADER 1	1	D	
MCS – 114	FIELD LEADER 2	1	B–2	
MCS – 115	FIELD LEADER 3/CONF. RM	1	A	
MCS – 116	PRIVACY ROOM	1	A	
MCS – 117	MEN LOCKER ROOM	1	A	
MCS – 118	VESTIBULE	1	A	
MCS – 119	WELLNESS ROOM	1	A	
MCS – 120	TRAINER ROOM	1	A	
MCS– 200	EQUIPMENT ROOM	1	B–2	
MCS– 201	IT ROOM	1	C–2	

ROOM FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR FINISH	BASE FINISH	WALLS				CLG.	CLG. FINISH	REMARKS
				NORTH	SOUTH	EAST	WEST			
100	ENTRY VESTIBULE	VCT–2/FM–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
101	UTILITIES	VCT–2	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
102	HOTEL CUBICLES	–	–	–	–	–	–	–	–	EXISTING
103	NURSING MOTHERS ROOM	–	–	–	–	–	–	–	–	EXISTING
104	WOMEN LOCKER ROOM	–	–	–	–	–	–	–	–	EXISTING
105	MECHANICAL	–	–	–	–	–	–	–	–	EXISTING
106	CONFERENCE ROOM	VCT–2	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
107	A&E OFFICE ROOM	–	–	–	–	–	–	–	–	EXISTING
108	KITCHENETTE	VCT–2	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
109	VISITOR TOILET	FT–1	BT–1	WT–1	WT–1	WT–1	WT–1	GYP.	–	WT–2 (ACCENT TILE)
110	CREW ROOM	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
110A	VESTIBULE	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	GYP.	–	–
111	STORE KEEPER / HOTELS	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	– EXP.	EXPOSED CONC.
112	STORAGE	–	RB–1	PT–1	PT–1	PT–1	PT–1	–		
113	FIELD LEADER 1	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
114	FIELD LEADER 2	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
115	FIELD LEADER 3/CONF. RM	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
116	PRIVACY ROOM	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
117	MEN LOCKER ROOM	FT–1	BT–1	WT–1	WT–1	WT–1	WT–1	GYP.	–	WT–2 (ACCENT TILE)
117A	MEN LOCKER ROOM	FT–1	BT–1	WT–1	WT–1	WT–1	WT–1	GYP.	–	WT–2 (ACCENT TILE)
117B	LOCKER ROOM VEST.	FT–1	BT–1	WT–1	WT–1	WT–1	WT–1	GYP.	–	WT–2 (ACCENT TILE)
118	VESTIBULE	VCT–2/FM–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
119	WELLNESS ROOM	RF–1	RB–1	PT–1	PT–1	PT–1	**PT–1**	ACT–1	–	–
120	TRAINER ROOM	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	ACT–1	–	–
200	EQUIPMENT ROOM	–	RB–1	PT–1	PT–1	PT–1		EXP.	–	–
201	IT ROOM	VCT–1	RB–1	PT–1	PT–1	PT–1	PT–1	GYP.	–	–

FINISH LEGEND

WT–1 CERAMIC WALL TILE
WT–2 CERAMIC WALL TILE
WT–4 BACKSPLASH

FT–1 PORCELAIN FLOOR TILE
RF–1 RESILIANT ATHLETIC FLOORING
VCT–2 BIO–BASED PLANK VCT
VCT–1 STANDARD 12X12 VCT
CONC. PAINTED CONCRETE

RB–1 RUBBER BASE
BT–1 PORCELAIN BASE TILE

FM–1 FLOOR MAT

EXP: EXPOSED
ACT–1: SAG RESISTANT ACOUSTIC LAY–IN CEILING–2'x2'x5/8"

GYP: GYPSUM BOARD – PAINTED

PT–1: PAINT – COLOR 1

DOOR AND OPENING SCHEDULE

DOOR	ROOM NAME	LEAF	SIZE	THK.	DOOR MATL.	DOOR TYPE	FIRE CODE	FRAME MATL.	FRAME TYPE	DOOR DETAIL			HD–WR. SET	REMARKS
										HEAD	JAMB	THRESH.		
100A	VESTIBULE	1	3070	1 3/4"	ALUM.	FG	–	ALUM.	4	2/A–501	3/A–501	1/A–501	1	–
100B	VESTIBULE	1	3070	1 3/4"	ALUM.	FG	–	ALUM.	1	–	–	–	6	–
100C	VESTIBULE	1	3070	1 3/4"	ALUM.	FG	–	ALUM.	1	–	–	–	6	–
108A	CREW ROOM	1	3070	1 3/4"	HM.	HG	–	HM	2	5/A–501	6/A–501	4/A–501	8	–
108B	LOCKER ROOM VESTIBULE	1	3070	1 3/4"	HM.	F	–	HM.	2	5/A–501	6/A–501	4/A–501	3	–
109	VISITOR TOILET	1	3070	1 3/4"	HM.	F	–	HM	2	5/A–501	6/A–501	4/A–501	5	–
110	CREW ROOM EXTERIOR	1	3070	1–3/4"	FG.	F	–	FG	2	2/A–501	3/A–501	1/A–501	1	–
111	STORE KEEPER/ HOTELS	1	3070	1 3/4"	HM.	HG	–	HM	2	8/A–501	9/A–501	7/A–501	8	–
112	STORAGE	1	3070	1 3/4"	HG	F	–	HM	2	5/A–501	6/A–501	4/A–501	7	–
112A	STORAGE	2	3070	1 3/4"	HM.	N	–	HM	2	5/A–501	6/A–501	4/A–501	7	–
113	FIELD LEADER 1	1	3070	1–3/4"	HM.	HG	–	HM	2	8/A–501	9/A–501	7/A–501	4	STC RATING 35
114	FIELD LEADER 2	1	3070	1–3/4"	HM.	HG	–	HM	2	8/A–501	9/A–501	7/A–501	4	STC RATING 35
115	FIELD LEADER 3	1	3070	1–3/4"	HM.	HG	–	HM	2	8/A–501	9/A–501	7/A–501	4	STC RATING 35
116	PRIVACY ROOM	1	3070	1 3/4"	HM.	HG	–	HM.	2	8/A–501	9/A–501	7/A–501	4	STC RATING 35
117	LOCKER ROOM VESTIBULE	1	3070	1 3/4"	HM.	F	–	HM	2	5/A–501	6/A–501	4/A–501	3	–
118A	VESTIBULE	1	3070	1 3/4"	HM.	F	–	HM	2	5/A–501	6/A–501	4/A–501	3	–
118B	VESTIBULE	1	3070	1 3/4"	FG.	HG	–	FG.	2	2/A–501	3/A–501	1/A–501	1	–
120	TRAINER ROOM	1	3068	1–3/4"	HM	HG	–	HM.	2	2/A–501	3/A–501	1/A–501	4	STC RATING 35
200	EQUIPMENT ROOM	1	3070	1–3/4"	HM.	F	–	HM	2	5/A–501	6/A–501	4/A–501	7	–
201	IT ROOM	1	3070	1–3/4"	HM.	F	–	HM	2	5/A–501	6/A–501	4/A–501	7	–

LEGEND: DOOR MATL.

FG FIBERGLASS
HM HOLLOW METAL
ALUM ALUMINUM

DOOR HARDWARE SCHEDULE

SET 1
1½ PR HINGES
1 MORTISE LOCKSET; ENTRY
1 EXIT DEVICE
1 CLOSER
1 ELECTRIC STRIKE
1 KICK PLATE
1 SET WEATHERSTRIP
1 SWEEP
1 THRESHOLD
1 ACCESS READER
1 POWER SUPPLY

SET 2
3 PR HINGES
2 CLOSERS
1 EXIT DEVICE
1 MORTISE LOCKSET; ENTRY
1 ELECTRIC STRIKE
1 THRESHOLD
2 SETS WEATHER STRIP
2 DOOR SWEEPS
1 ASTRAGAL
1 SET FLUSH BOLTS; TOP AND BOTTOM
2 KICK PLATE
1 ACCESS READER
1 POWER SUPPLY

SET 3
1½ PR HINGES
1 CLOSER
1 PULL
1 PUSH PLATE
1 KICK PLATE

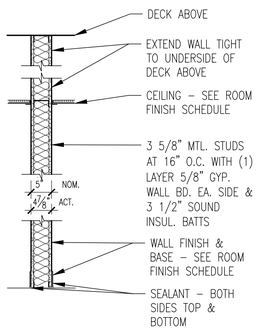
SET 4
1½ PR HINGES
1 MORTISE LOCKSET; OFFICE
1 CLOSER
1 SET ACOUSTIC SEAL
1 AUTOMATIC BOTTOM SEAL
1 DOOR STOP

SET 5
1½ PR HINGES
1 MORTISE LOCKSET; PRIVACY
1 CLOSER
1 KICK PLATE
1 DOOR STOP

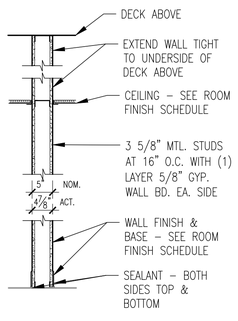
SET 6
1½ PR HINGES
1 MORTISE LOCKSET; PASSAGE
1 EXIT DEVICE
1 CLOSER
1 SET WEATHERSTRIP
1 KICK PLATE
1 DOOR SWEEP
1 THRESHOLD

SET 7
1½ PR HINGES
1 MORTISE LOCKSET; STOREROOM
1 CLOSER
1 ELECTRIC STRIKE
1 ACCESS READER
1 POWER SUPPLY
1 DOOR STOP

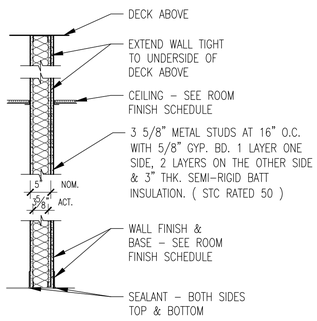
SET 8
1½ PR HINGES
1 PASSAGE SET
1 CLOSER
1 SET ACOUSTIC SEAL
1 AUTOMATIC BOTTOM SEAL
1 DOOR STOP



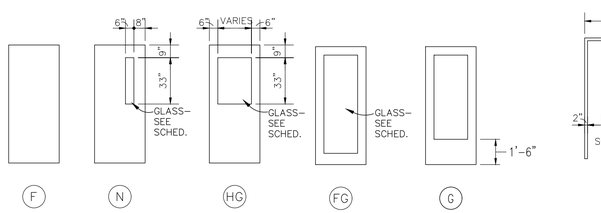
PARTITION TYPE A3
SCALE: 3/4" = 1'–0"



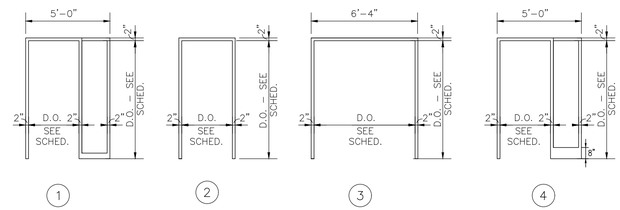
PARTITION TYPE A2
SCALE: 3/4" = 1'–0"



PARTITION TYPE A1
SCALE: 3/4" = 1'–0"
(STC RATED 50)



DOOR TYPES



FRAME TYPES

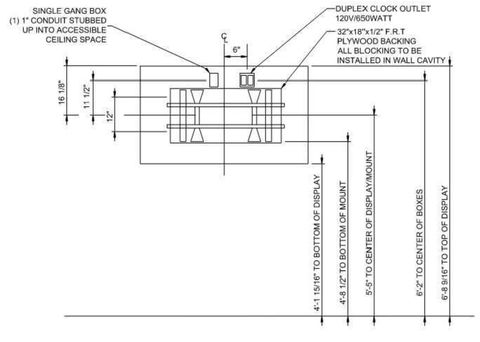
								Dr	Date
								Des	
								App	
		G	04/30/2024	ISSUED FOR BID – FINAL		PA	EK	App	
Drawing No	Reference Drawings	Rev	Date	Description		By	App	Acad Title CE.DWT	Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

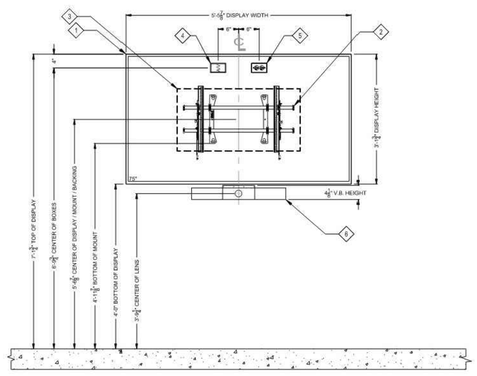
Sheet Title
DOOR / ROOM FINISH SCHEDULE AND WALL PARTITIONS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet A–600
Rev G



BREAKROOM AND WELLNESS ROOM MONITOR DETAIL

SCALE: NTS

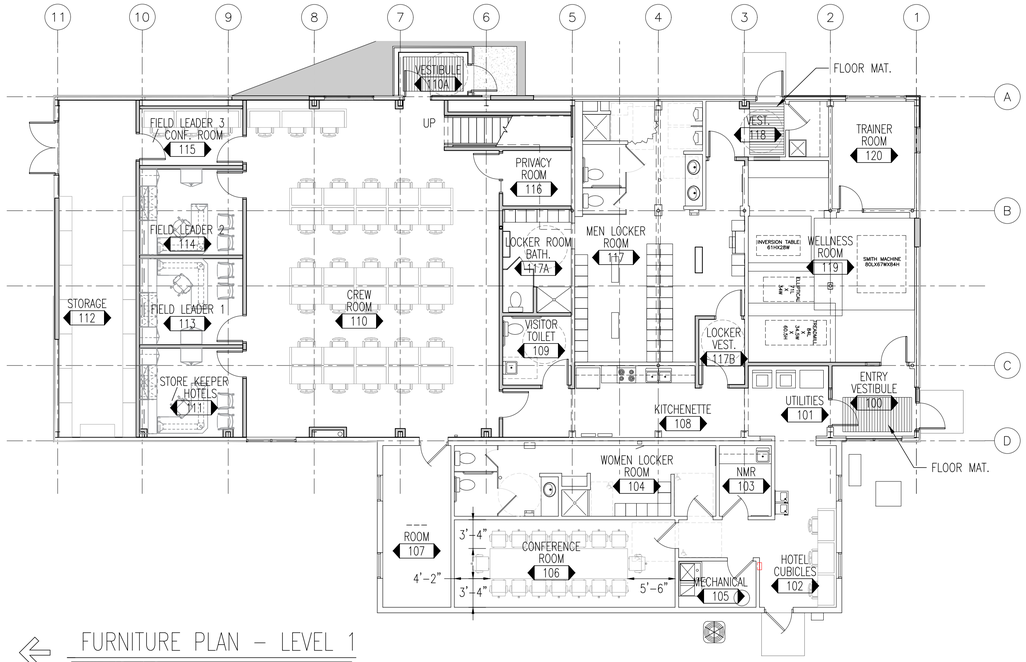


ELEVATION KEYED NOTES:

1. 75" WALL MOUNTED DISPLAY
2. CHIEF LTA1U LARGE FUSION WALL MOUNT
3. 36.00"L X 18.00"W X 3/4"THK PLYWOOD SUPPORT BACKING. MUST ATTACH TO AT LEAST TWO STUDS - BY OTHERS. FOLLOW ALL LOCAL CODES.
4. 1" CONDUIT FOR VOICE, DATA & UTILITY WITHIN A SINGLE GANG BOX
5. 120V/20AMP DUPLEX CLOCK OUTLET IN A SINGLE GANG BOX
6. POLY STUDIO USB VIDEO BAR

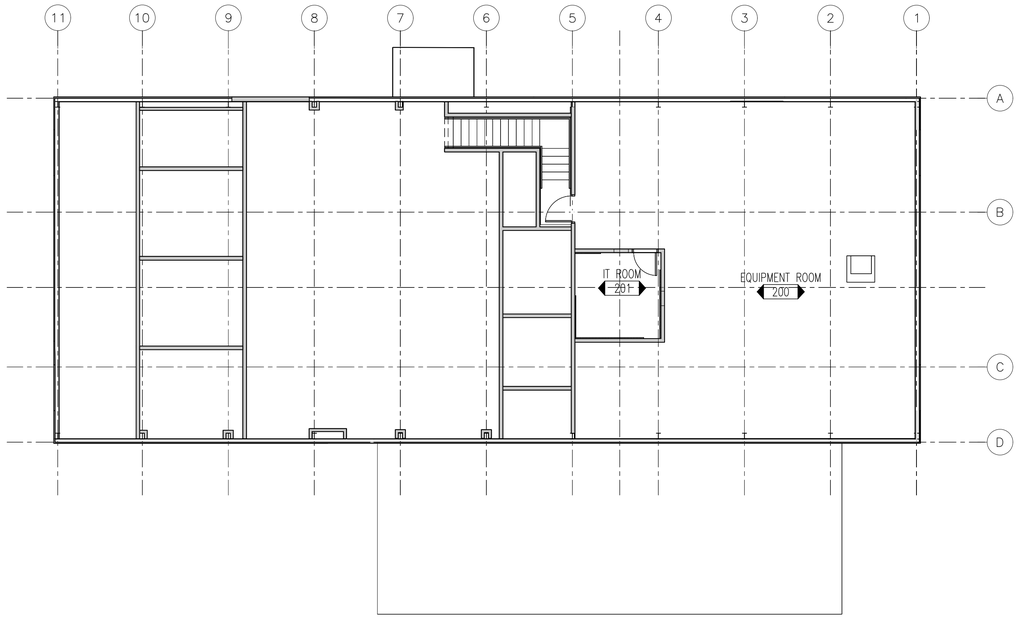
CONFERENCE ROOM MONITOR DETAIL

SCALE: NTS



FURNITURE PLAN – LEVEL 1

SCALE: 1/8" = 1'-0"



FURNITURE PLAN – MEZZANINE

SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	PA	EK

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
FURNITURE PLAN

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet F-100
Rev G

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
$	SINGLE POLE TOGGLE SWITCH
$2	TWO POLE TOGGLE SWITCH
$3	3 WAY TOGGLE SWITCH
$4	4 WAY TOGGLE SWITCH
$K	KEY OPERATED SWITCH
$3K	3 WAY KEY OPERATED SWITCH
$4K	4 WAY KEY OPERATED SWITCH
$D	DIMMER SWITCH MATCH LIGHTING FOR LINE OR 0–10V
$3D	3 WAY DIMMER SWITCH
$P	PILOT SWITCH (EQUAL TO HUBBELL RSD115 PLW)
$OS	MANUAL ON/AUTO OFF OCCUPANCY SENSOR WALL SWITCH
$L	LOCKABLE SINGLE POLE SWITCH
$M	HORSE POWER RATED SWITCH
$D OS	MANUAL ON/AUTO OFF OCCUPANCY SENSOR WITH DIMMING – MATCH LIGHTING FOR LINE OR 0–10V
OS	CEILING MOUNTED OCCUPANCY SENSOR
D	CEILING MOUNTED DAYLIGHT SENSOR
P	OCCUPANCY SENSOR POWER PACK
LC	PROGRAMMABLE LIGHT CONTROL SWITCH
TC	TIMER CONTROLLER
C	CONTACTOR
PE	PHOTOELECTRIC CONTROLLER
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE MOUNTED 42" AFF OR 6" ABOVE COUNTER TOP. (UNLESS AFF HEIGHT IS OTHERWISE NOTED) (SIMILAR FOR EMERGENCY RECEPTACLES)
GFI	DUPLEX RECEPTACLE–GROUND FAULT INTERRUPTER
GFI	DUPLEX RECEPTACLE MOUNTED 42" AFF OR 6" ABOVE COUNTER TOP (UNLESS NOTED OTHERWISE) WITH GROUND FAULT INTERRUPTER
IG	DUPLEX ISOLATED GROUND RECEPTACLE WITH DEDICATED NEUTRAL CONDUCTOR
USB	COMBINATION 2A USB / 20A RECEPTACLE PASS&SEYMOUR TR5361USB OR EQUAL
AW	DUPLEX RECEPTACLE MOUNTED ABOVE WINDOW FOR SHOW WINDOW RECEPTACLE
TR	DUPLEX RECEPTACLE WITH TAMPER RESISTANT COVER
PP	POWER POLE

SYMBOL	DESCRIPTION
IG	QUAD ISOLATED GROUND RECEPTACLE WITH DEDICATED NEUTRAL CONDUCTOR
F	QUAD FLOOR MOUNTED RECEPTACLE
F	DUPLEX FLOOR MOUNTED RECEPTACLE
	SPECIAL RECEPTACLE–NEMA CONFIGURATION AS NOTED
F	QUAD RECEPTACLE/LOW VOLTAGE SYSTEM FLOOR BOX
F	DUPLEX RECEPTACLE/LOW VOLTAGE SYSTEM FLOOR BOX (REFER TO DETAIL ON THIS SHEET)
	VERTICAL RISER FOR SURFACE RACEWAY
	SURFACE RACEWAY
	BUS DUCT
	PANEL 480/277 VOLT
	PANEL 208Y/120 VOLT
	DISTRIBUTION PANEL
	MAIN DISTRIBUTION PANEL/MAIN SWITCHBOARD MOTOR CONTROL CENTER
T	TRANSFORMER
	ELECTRIC MOTOR
	MANUAL MOTOR STARTER
P	MANUAL MOTOR STARTER WITH PILOT LIGHT
	MOTOR STARTER
	COMBINATION MOTOR STARTER
	NON–FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	PUSH BUTTON
	JUNCTION BOX
	HARD WIRE POWER CONNECTION
	HARD WIRE CONNECTION AT FLOOR BOX
	CIRCUIT BREAKER
	SWITCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
G	ENGINE GENERATOR
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
PNL	PANEL (LIGHTING OR RECEPTACLE)
	NODE
	GROUND
	TRANSFORMER GROUND
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION

SYMBOL	DESCRIPTION
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
S	SPEAKER
S	DOUBLE FACE SPEAKER – WALL MOUNTED
S	SPEAKER – WALL MOUNTED
M	MICROPHONE
V	VOLUME CONTROL
	SINGLE FACE CLOCK – CEILING MOUNTED
	SINGLE FACE CLOCK WALL MOUNTED (MOUNT 7'–6" AFF TO CENTER)
	DOUBLE FACE CLOCK – WALL MOUNTED
MD	MOTION DETECTOR
DC	DOOR CONTACT
KP	KEY PAD
	SECURITY CAMERA
CR	CARD READER
NC	NURSE CALL DEVICE
F	MANUAL FIRE ALARM STATION
SD	SMOKE DETECTOR
DS	DUCT SMOKE DETECTOR
DSD	DUCT SMOKE DAMPER. CONNECT 120V TO SMOKE DAMPER AND FIRE ALARM CONNECTION TO SMOKE DAMPER AS WELL AS DUCT SMOKE DETECTORS AS REQUIRED PER NFPA – COORDINATE WITH MECH TRADES. PROVIDE RESET SWITCH IN ACCESSIBLE LOCATION IN AREA SERVED BY DUCT.
DSA	DUCT SMOKE AUDIBLE/VISUAL ALARM DEVICE WITH KEYED TEST AND RESET SWITCH
HD	THERMAL DETECTOR
KF	KITCHEN FIRE CONTROLS
H	FIRE ALARM HORN
S	FIRE ALARM STROBE
HS	FIRE ALARM HORN/STROBE
DR	MAGNETIC DOOR RELEASE
TS	TAMPER SWITCH
FS	FLOW SWITCH
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL

SPECIAL SYSTEMS

	SINGLE GANG OUTLET BOX FOR LOW VOLTAGE SYSTEMS. STUB 1" CONDUIT UP INTO ACCESSIBLE CEILING SPACE. PROVIDE BUSHING. PROVIDE BLANK COVERPLATE. WIRING BY OTHERS.
	SINGLE GANG OUTLET BOX FOR LOW VOLTAGE SYSTEMS MOUNTED 42" AFF OR 6" ABOVE COUNTERTOP (COORDINATE WITH MILLWORK) UNLESS NOTED OTHERWISE. STUB UP RACEWAY INTO ACCESSIBLE CEILING SPACE. PROVIDE BUSHING. PROVIDE BLANK COVERPLATE. WIRING BY OTHERS.
TV	SINGLE GANG OUTLET BOX FOR TV. STUB UP RACEWAY INTO ACCESSIBLE CEILING SPACE. PROVIDE BUSHING. PROVIDE BLANK COVERPLATE. WIRING BY OTHERS.
	TELECOMMUNICATIONS BACKBOARD

ALL "SPECIAL SYSTEMS" (TYPICALLY TELEPHONE, TV, AND DATA) WIRING AND DEVICES BY OTHERS, UNLESS NOTED ON PLANS OR SPECIFICATIONS.
E.C. TO PROVIDE BOXES, RACEWAYS, BACKBOARDS, AND COVERPLATES (PER SPECIFICATIONS IF APPLICABLE).
COORDINATE EXACT REQUIREMENTS OF RACEWAY AND BOX SIZES WITH LOW VOLTAGE CONTRACTOR. PRIOR TO INSTALLATION.

ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	AMPHERE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CAPACITY
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
CB	CIRCUIT BREAKER
CIR/CKT	CIRCUIT
CLG	CEILING
CP	CIRCULATION PUMP
CUH	CABINET UNIT HEATER
DED	DEDICATED
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DWG	DRAWING
EBU	EMERGENCY BATTERY UNIT
EF	EXHAUST FAN
EM	EMERGENCY
EM/NL	EMERGENCY/NIGHT LIGHT
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
FLA	FULL LOAD AMPS
F	FUSE
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
GRC	GALVANIZED RIGID CONDUIT
HACR	HEATING, AIR CONDITIONING, REFRIGERATION
HOA	HAND–OFF–AUTO
HP	HORSEPOWER
HZ	HERTZ
IG	ISOLATED GROUND
JB	JUNCTION BOX
KW	KILOWATT
KWH	KILOWATT – HOURS
KVA	KILO VOLT–AMPERES
LP	LIGHTING PANEL
LO	LOCK–ON
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MUA	MAKE–UP AIR UNIT

ABBREVIATION	DESCRIPTION
NC	NORMALLY CLOSED
NF	NON–FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
RECEPT.	RECEPTACLE
RP	RECEPTACLE PANEL
RTU	ROOF TOP UNIT
SD	SMOKE DETECTOR
SPEC	SPECIFICATION
TELCOM	TELECOMMUNICATIONS
TYP	TYPICAL
UH	UNIT HEATER
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
WG	WIRE GUARD
T#	TRANSFORMER
TR	TAMPER RESISTANT
(E)	EXISTING
(R)	RELOCATED
(N)	NEW

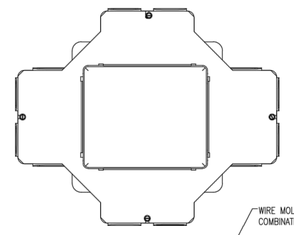
STANDARD MOUNTING HEIGHTS

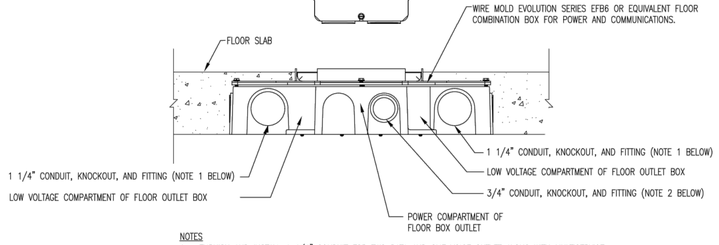
CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS AND LOW VOLTAGE SYSTEMS OUTLETS NOT OTHERWISE SPECIFIED	18" AFF TO CENTER OF BOX
CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS AND LOW VOLTAGE SYSTEMS OUTLETS NOT OTHERWISE SPECIFIED IN CMU WALLS	24" AFF TO TOP OF BOX
LIGHT SWITCHES, MOTOR CONTROL DEVICES AND FIRE ALARM PULL STATIONS NOT OTHERWISE SPECIFIED	48" AFF TO CENTER OF BOX
FIRE ALARM HORNS, SPEAKERS, STROBES	80" AFF OR 6" BELOW CEILING, WHICHEVER IS LESS
CLOCKS AND COMBINATION DEVICES NOT OTHERWISE SPECIFIED	96" AFF OR 6" BELOW CEILING, WHICHEVER IS LESS
GFI RECEPTACLES IN TOILET ROOMS AND JANITOR CLOSETS NOT OTHERWISE SPECIFIED	42" AFF TO CENTER OF BOX
LIGHTING AND RECEPTACLE BRANCH CIRCUIT PANELBOARDS AND LIGHTING CONTROLLERS NOT OTHERWISE SPECIFIED	6'–6" AFF TO TOP OF ENCLOSURE

** COORDINATE EXACT MOUNTING HEIGHTS WITH ARCHITECT/MILLWORK PRIOR TO ROUGH–IN. **

LUMINAIRE SCHEDULE

SYMBOL	TYPE	DESCRIPTION	VOLT	LAMP	MANUFACTURER
	LA	2' x 4' FLAT PANEL FLUSH IN GYP BOARD CEILING, SMOOTH ACRYLIC LENS. PROVIDE 700 LUMEN EMERGENCY BATTERY FOR (EM) AND (EM/NL) FIXTURES WHERE INDICATED ON DRAWINGS. 0–10V DIMMING DOWN TO 1%	M–VOLT	4000 LUMEN LED 32 WATT 4800 LUMEN LED 38 WATT 4000K 82 CRI	LITHONIA: EPANL SERIES HE WILLIAMS: BP–24 SERIES OR EQUAL
	LB	2' x 4' LAY–IN FLAT PANEL, SMOOTH ACRYLIC LENS. PROVIDE 1400 LUMEN EMERGENCY BATTERY FOR (EM) AND (EM/NL) FIXTURES WHERE INDICATED ON DRAWINGS. 0–10V DIMMING DOWN TO 1%	M–VOLT	4000 LUMEN LED 32 WATT 4800 LUMEN LED 38 WATT 4000K 82 CRI	LITHONIA: EPANL SERIES HE WILLIAMS: BP–24 SERIES OR EQUAL
	LC	2' x 4' SUSPENDED FLAT PANEL, SMOOTH ACRYLIC LENS. PROVIDE 700 LUMEN EMERGENCY BATTERY FOR (EM) AND (EM/NL) FIXTURES WHERE INDICATED ON DRAWINGS. 0–10V DIMMING DOWN TO 1%	M–VOLT	4000 LUMEN LED 32 WATT 4800 LUMEN LED 38 WATT 4000K 82 CRI	LITHONIA: EPANL SERIES HE WILLIAMS: BP–24 SERIES OR EQUAL
	LD	4'L SURFACE MOUNTED FIXTURE, CLEAR CURVED ACRYLIC LENS, INTEGRAL OCCUPANCY SENSOR, OPERATOR AT 10% OUTPUT IN UNOCCUPIED MODE, 1400 LUMEN POWER SUPPLY.	M–VOLT	3000 LUMEN LED 3500K 80 CRI 28 WATT	LITHONIA: WL4 SERIES OR EQUAL BY H.E. WILLIAMS
	LE	6"DIA DOWNLIGHT WITH MATTE DIFFUSED REFLECTOR, INTEGRAL TRIM RING, MEDIUM DISTRIBUTION, 0–10V DIMMING, UL LISTED FOR DAMP LOCATIONS, PROVIDE EMERGENCY BATTERY WHERE 'EM' INDICATED.	M–VOLT	2000 LUMEN LED 3500K 82 CRI 20 WATT	LITHONIA: EVO SERIES HE WILLIAMS: 6DR–TL SERIES OR EQUAL
	REM	POLYCARBONATE SURFACE MOUNTED WEATHERPROOF REMOTE EMERGENCY (2) HEAD UNIT – CONNECT TO EXIT LIGHT (EXIT REQUIRES HIGH POWER BATTERY	M–VOLT	(2) 0.75 WATT LED	LITHONIA/ERGWTSQ SERIES HE WILLIAMS: WETDHRL SERIES OR EQUAL CHLORIDE: CLL2R SERIES
	X	DIE CAST ALUMINUM LED EXIT SIGN WITH UNIVERSAL MOUNTING, 6" HIGH WITH 3/4" STROKE RED LETTER, BRUSHED ALUMINUM/WHITE/BLACK FINISH, AND EMERGENCY BATTERY PACK CAPABLE OF OPERATING EXIT WITH FULL INTENSITY FOR A MINIMUM OF 90 MINUTES. PROVIDE SELF DIAGNOSTICS. PROVIDE STEM MOUNTING FOR ALL AREAS THAT EXCEED 12FT IN HEIGHT AND WALL MOUNT IS NOT AN OPTION.	120V/277V	LED	LIGHTOLIER: LD SERIES LITHONIA: LE SERIES SURE–LITES: CAX SERIES LSI: EXC SERIES HE WILLIAMS: CA SERIES





NOTES
1. FURNISH AND INSTALL 1 1/4" CONDUIT FOR TWO DATA AND ONE VOICE OUTLET ALONG WITH MULTISERVICE ACCESSORIES TO MATCH OWNER REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. FURNISH AND INSTALL 3/4" CONDUIT FOR TWO DUPLEX RECEPTACLES ALONG WITH MULTISERVICE ACCESSORIES TO ACCOMMODATE OUTLETS.
3. FURNISH AND INSTALL WITH INTERNAL DUPLEX RECEPTACLE BRACKETS CIHT–D & COMMUNICATION BRACKETS CILT–4TKO.

DETAIL OF IN–SLAB FLOOR BOX FOR POWER AND COMMUNICATIONS

SCALE: NOT TO SCALE

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	KS	DS

Dr Date
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Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MICHIGAN 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
ELECTRICAL SYMBOLS LIST & LIGHTING SCHEDULE

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet E–000
Rev G

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GENERAL DEMOLITION NOTES:

1. ELECTRICAL FIXTURES, DEVICES, PANELBOARDS, AND OTHER ITEMS OF ELECTRICAL EQUIPMENT ON THIS DRAWING SHOWN HATCHED SHALL BE DISCONNECTED AND REMOVED BY THE CONTRACTOR. REMOVE ASSOCIATED WIRING, TERMINATION'S AND CONDUIT BACK TO THE SOURCE.

2. ALL UNUSED LOW VOLTAGE WIRING SHALL BE REMOVED IN ITS ENTIRETY.

3. REMAINING LUMINAIRES, SWITCHES, RECEPTACLES, MOTORS, ETC., NOT PART OF THE REMODELING SHALL BE CHECKED FOR PROPER OPERATION, AND CIRCUITS OPENED BY THE REMODELING WORK SHALL BE PROPERLY RECONNECTED.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING AND PATCHING OF EXISTING WALLS, FLOORS, AND CEILINGS REQUIRED FOR THE INSTALLATION OF ELECTRICAL WORK IN THE REMODELED PORTIONS OF THE EXISTING BUILDING. OPENINGS SHALL BE NEATLY DRILLED OR CUT.

5. PATCHING SHALL BE PERFORMED BY A WORKMAN SKILLED IN THE TRADE INVOLVED, AND PATCH WORK SHALL MATCH THE EXISTING SURFACE AND FINISH IN A MANNER ACCEPTABLE TO THE ARCHITECT.

6. ALL DISCREPANCIES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIDS. IN OTHERWISE DOING SO, THE ELECTRICAL CONTRACTOR SHALL BE LIABLE FOR ANY REQUIRED REVISIONS.

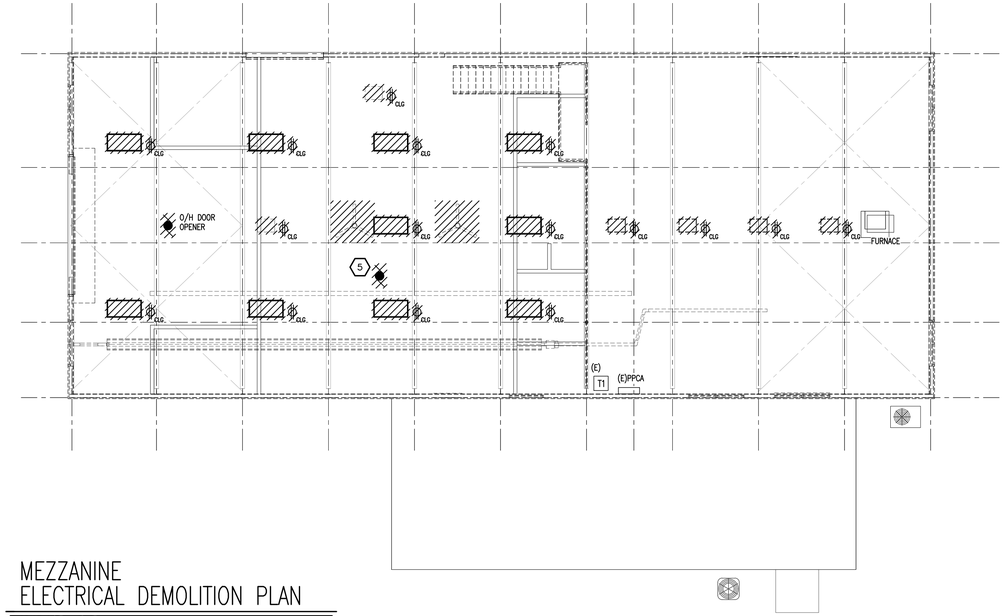
ELECT. DEMOLITION KEYNOTES:

1. DISCONNECT AND REMOVE ALL DEVICES SHOWN HATCHED.
2. FLUSH BACKBOX OF PREVIOUS LOAD CENTER OR PANELBOARD USE AS WIRING CABINET TO BE REMOVED. TO THE EXTENTS POSSIBLE, REROUTE WIRING TO NEW JUNCTION BOXES ABOVE CEILING. WIRING THAT CANT BE REWORKED IS TO BE REMOVED AND REPLACED.
3. DISCONNECT AND REMOVE POWER AND CONTROLS FOR HOIST.
4. DISCONNECT AND REMOVE POWER, DISCONNECT SWITCH, ETC. FOR COMPRESSOR/POWER WASHER.
5. DISCONNECT POWER FROM VEHICLE EXHAUST FAN BEING REMOVED.
6. DISCONNECT AND REMOVE TO RELOCATE RECEPTACLE FOR NEW FURRED OUT WALL.
7. BUILDING MOUNTED FIXTURE TO BE REMOVED AND REINSTALLED ON NEW FACADE.

COORDINATE REMOVAL OF ELECTRICAL DEVICES, EQUIPMENT AND EXISTING TO REMAIN DEVICES WITH ABATEMENT CONTRACTOR.

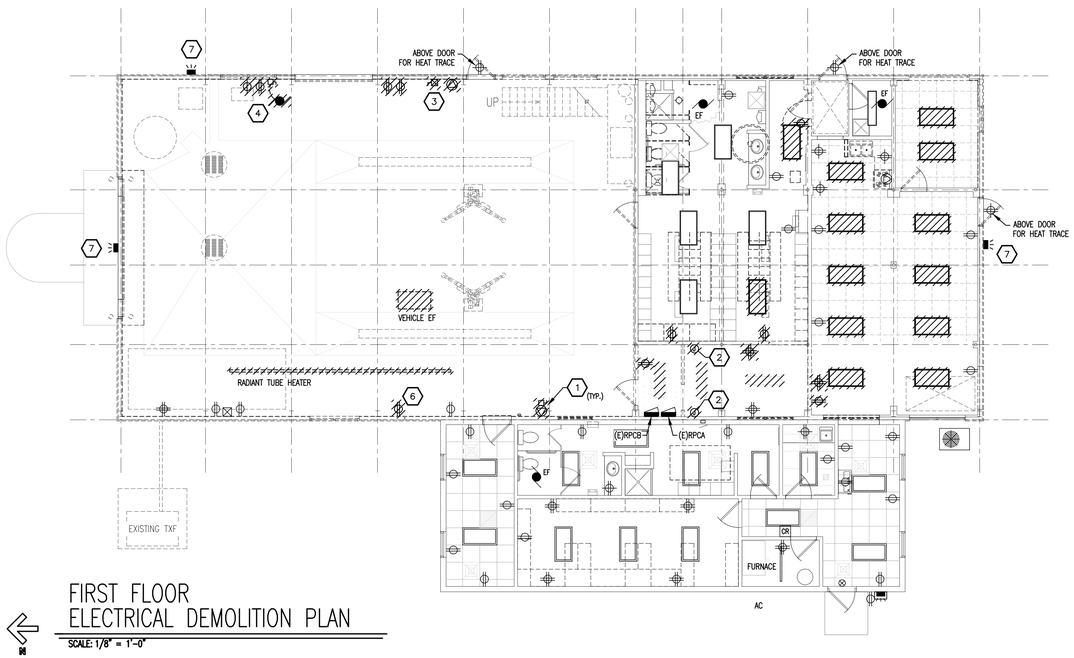
2

2



MEZZANINE ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



FIRST FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	KS	DS

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
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MARION, MICHIGAN 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
DEMOLITION ELECTRICAL PLANS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet E-001
Rev G

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GENERAL POWER NOTES:

1. ALL ELECTRICAL DEVICES AND ASSOCIATED OUTLET BOXES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED. ALL CONDUIT AND WIRING SHALL BE CONCEALED WHERE PHYSICALLY POSSIBLE, SURFACE RACEWAY SHALL ONLY BE PERMITTED WHERE NOTED.

2. PROVIDE (1) NO. 10 AWG NEUTRAL CONDUCTOR FOR ANY 20 AMP SINGLE PHASE CIRCUITS SHARING A NEUTRAL IN A SINGLE CONDUIT. WHERE MULTIWIRE BRANCH CIRCUITS ARE USED, PROVIDE SIMULTANEOUS DISCONNECTING MEANS IN PLACE OF SINGLE POLE BREAKERS.

3. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR WITHIN THE RACEWAYS ALONG WITH PHASE CONDUCTORS FOR ALL FEEDERS AND BRANCH CIRCUITS. CONDUIT IS NOT PERMITTED TO ACT AS AN EQUIPMENT GROUNDING CONDUCTOR UNLESS NOTED. AN ISOLATED GROUND CONDUCTOR (GREEN/WHITE) IS REQUIRED FOR ALL ISOLATED GROUND CIRCUITS.

4. WHEREVER 4 OR MORE CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A SINGLE RACEWAY, E.C. SHALL INCREASE CONDUCTOR SIZE AS REQUIRED FOR DERATING PER NEC 315.B.2.9.

5. GROUND FAULT INTERRUPTING DEVICES ARE REQUIRED FOR ALL CORD AND PLUG CONNECTED KITCHEN EQUIPMENT THAT IS LESS THAN 150V TO GROUND AND 50 AMPS OR LESS FOR SINGLE PHASE AND 100 AMPS OR LESS FOR THREE PHASE EQUIPMENT.
GROUND FAULT INTERRUPTING DEVICES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS AND NOT ALLOWED BEHIND FIXED IN PLACE OR UNMOVABLE EQUIPMENT. REMOTE DEVICES OR GFCI BREAKERS MAY BE REQUIRED.

6. ALL CIRCUITS SHALL USE A MINIMUM OF 12 AWG FOR 20 AMP CIRCUITS UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR SHALL CONFIRM CONDUCTOR AND CONDUIT SIZES FOR VOLTAGE DROP, A MAXIMUM OF 3% FOR BRANCH AND FEEDER AND 5% OVERALL.

7. COORDINATE WITH OTHER TRADES FOR ANY ELECTRICAL DEVICE LOCATIONS PRIOR TO ROUGH-IN. COMPLY WITH ALL APPLICABLE CODES FOR PROPER MOUNTING HEIGHTS, NFPA, NEC, ADA, ETC.

8. WHERE LOW VOLTAGE DEVICES AND RECEPTACLES ARE SHOWN NEXT TO EACH OTHER, INSTALL AS CLOSE AS POSSIBLE, DO NOT SCALE DRAWINGS.

9. ALL "SPECIAL SYSTEMS" WIRING AND DEVICES (IE. TELEPHONE, DATA, TV,) SHALL BE PROVIDED AND INSTALLED BY OTHERS UNLESS NOTED ON PLANS OR SPECIFICATIONS. E.C. TO PROVIDE BOXES AND RACEWAYS PER LEGEND AND SPECIFICATIONS. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER/SUPPLIER.

10. ALL DISCREPANCIES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIDS. IN OTHERWISE DOING SO, THE ELECTRICAL CONTRACTOR SHALL BE LIABLE FOR ANY REQUIRED REVISIONS.

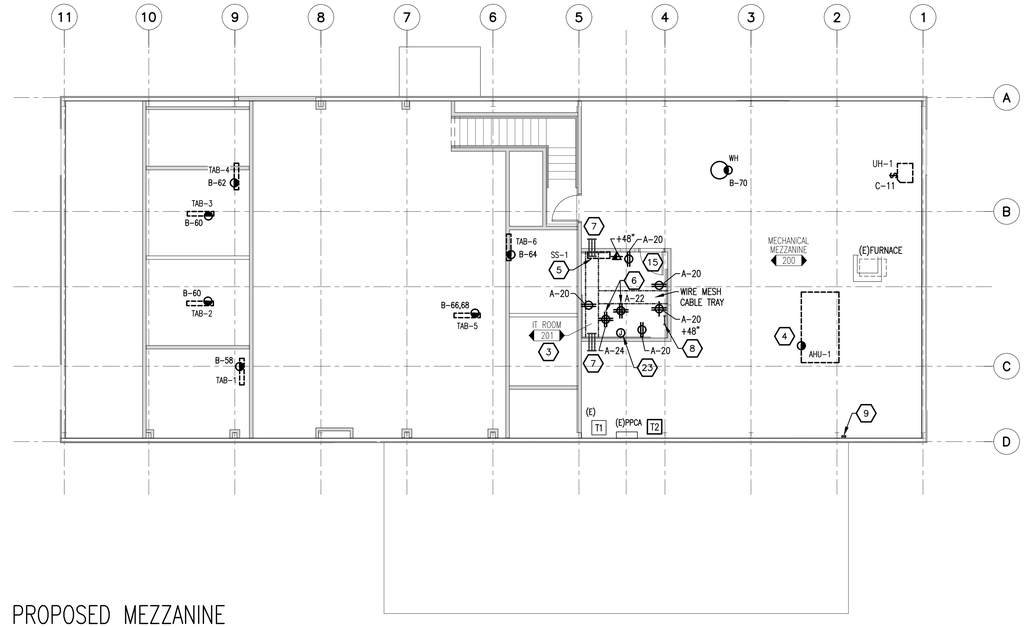
11. E.C. TO COORDINATE EXACT EQUIPMENTS OF ALL OTHER SYSTEMS WITH MANUFACTURER AND OTHER TRADES PRIOR TO ROUGH-IN AND PURCHASE OF ANY ELECTRICAL EQUIPMENT ASSOCIATED WITH SYSTEM. ANY DISCREPANCIES WITH THIS PLAN AND MANUFACTURER REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO PURCHASE OR ELECTRICAL ROUGH-IN OF THIS EQUIPMENT.

12. ALL ITEMS SHOWN ON PLAN ARE NEW UNLESS MARKED AS (E) FOR EXISTING OR (R) FOR RELOCATED.

ALL A-CIRCUITS ASSIGNED TO RPCA PANEL.
ALL B-CIRCUITS ASSIGNED TO RPCB PANEL.

POWER KEYNOTES:

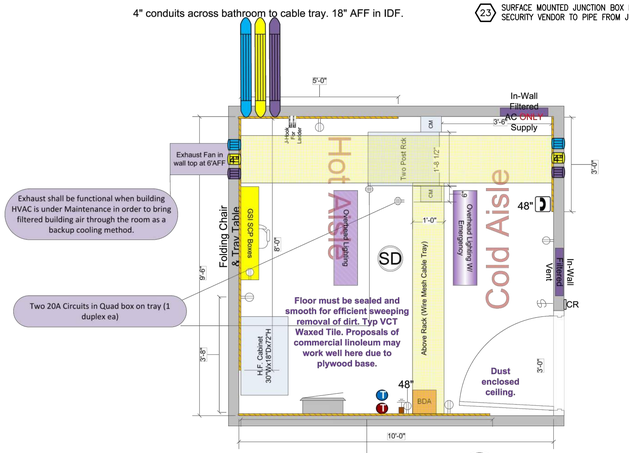
1. CONNECT EXHAUST FAN TO LOCAL LIGHTING CIRCUIT AND CONTROLS.
2. CONNECT TO NEW CIRCUIT BREAKER IN (E)PPCA. SEE ONE-LINE DIAGRAM.
3. COORDINATE LOCATION AND MOUNTING OF ELECTRICAL DEVICES WITH OWNER. INSTALL CONDUIT SLEEVES AS DIRECTED BY OWNER.
4. CONNECT TO EXISTING SPARE BREAKER IN (E)PPCA. SEE ONE-LINE DIAGRAM.
5. INSTALL POWER TO SS-1 FROM SSCU-1 PER MANUFACTURERS INSTRUCTIONS.
6. RECEPTACLE MOUNTED TO CABLE TRAY.
7. (3) 4" CONDUIT SLEEVES PER CONSUMERS ENERGY STANDARDS.
8. VERTICAL GROUND BAR AT 5'6"AFF CONNECTED WITH BARE #6 TO BUILDING SERVICE GROUND. GROUND BAR TO BE EQUAL TO HUBBELL #HBBB14416H.
9. (2) 4" SLEEVES THROUGH FLOOR. CONFIRM WITH CONSUMERS ENERGY I.T. GROUP FOR FINAL LOCATION.
10. 2" CONDUIT SLEEVE(S) AS SHOWN.
11. 12" x 12" x 6" NEMA 3R BOX ON EXTERIOR WALL AT A HEIGHT ABOVE INTERIOR CEILING. INSTALL (3) 2" SLEEVES ABOVE CEILING.
12. CE IT GROUP STANDARD BOXES ARE:
    QUAZITE B162436ZM 24"X36"X24", TIER 22, MOUSEHOLES
    ALTERNATES MAY BE CONSIDERED HOWEVER THEY SHALL REMAIN RATED FOR 20,000 LB. LOADING
    UNLESS IT'S PLANNED FOR A LOCATION NOT ACCESSIBLE BY VEHICLE TRAFFIC.
    FURNISH AND INSTALL FLUSH GRADE MOUNTED COVER, SHALL BE SPLIT LID DESIGN WHEN OFFERED.
    HANDHOLE/EARTH BOXES SHALL BE SET ON 12" COMPACTED CRUSHED STONE AGGREGATE BASE
    FLUSH TO BOTTOM OF EARTH BOX.
    PLACE ONE ROUND, ORANGE TOPPED, UTILITY MARKER POLE AT CORNER OF EACH BOX.
    TYPICALLY, THE MARKER IS SUPPLIED BY I.T. AND IS OFTEN INSTALLED BY I.T. CABLING VENDOR.
    UTILIZE 22.5/45 DEGREE ELBOW OPTIONS NEAR HANDHOLE TO BRING IN CONDUIT THROUGH BOTTOM.
    NO SIDE PENETRATIONS.
    COVER SHALL BE LABELED AS:
    CONSUMERS ENERGY
    TELECOM
    517-788-2275
13. FIELD VERIFY ROUTE OF EXISTING SECURITY CONDUIT PATH. ROUTE EXISTING CONDUIT INTO NEW FIBER BOX.
14. FIELD VERIFY EXISTING FIBER CONDUIT PATH. EXTEND HDPE DUCT INTO NEW EARTH BOX WITH LIKE MATERIAL. COORDINATE WITH CONSUMERS ENERGY I.T. GROUP FOR CUTOVER.
15. SEE I.T. ROOM DETAIL ON THIS SHEET FOR CONSUMERS ENERGY EXACT REQUIREMENTS.
16. ADD EXTENSION TO EXISTING BOX TO ACCOMODATE FURRED OUT WALL AND RECONNECT RECEPTACLE.
17. DUAL CHANNEL POWER POLE EQUAL TO WIREMOLD 25DTP SERIES FOR HARD-WIRED CONNECTION OF FURNITURE WHIPS TO INDICATED CIRCUIT. VERIFY CONFIGURATION AND FURNITURE WIRING REQUIREMENT WITH APPROVED SUBMITTALS PRIOR TO ROUGH-IN.
18. EXTEND NEWLY INSTALLED (3) 2" CONDUITS INTO BUILDING MEZZANINE AREA.
19. SEE 60" MONITOR DETAIL ON A-100.
20. SEE 75" MONITOR DETAIL ON A-100.
21. SEE GROUND BOX DETAIL ON E-000.
22. STUB CONDUITS ABOVE CEILING ABOVE MONITOR.
23. SURFACE MOUNTED JUNCTION BOX FOR SECURITY PANEL CIRCUIT (A-38). SECURITY VENDOR TO PIPE FROM JUNCTION BOX DIRECTLY INTO SECURITY PANEL.



PROPOSED MEZZANINE ELECTRICAL POWER PLAN

SCALE: 1/8" = 1'-0"

4" conduits across bathroom to cable tray. 18" AFF in IDF.



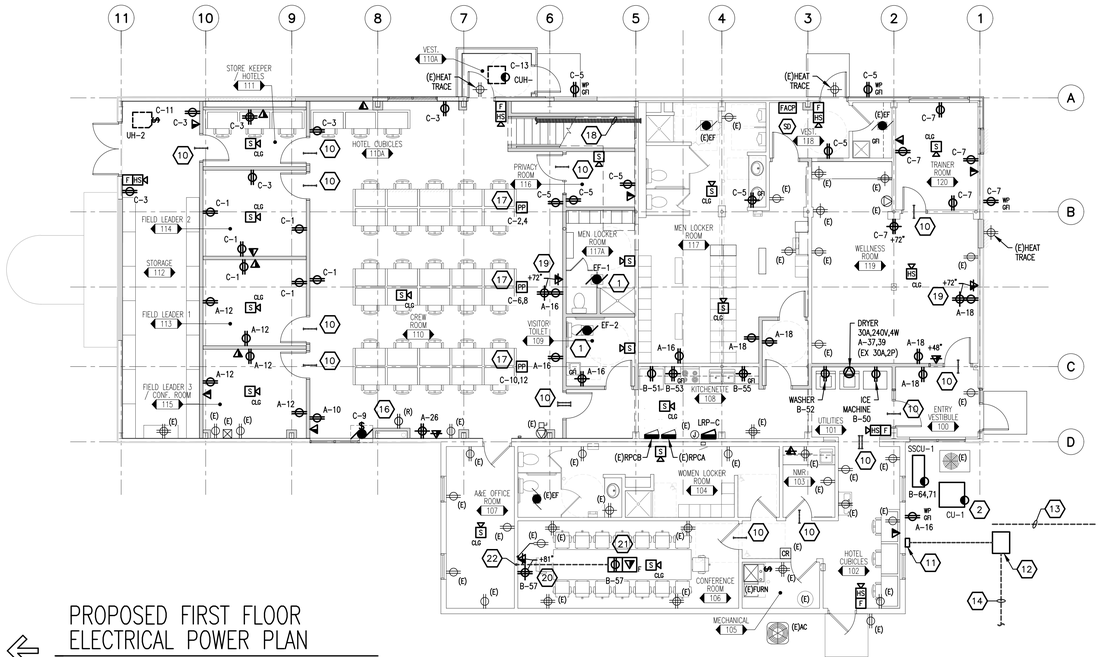
I.T. ROOM DETAIL

SCALE: NONE

Legend:

- Light Switch with Motion or timer
- Duplex 20 amp on Generator Power - 18"AFF Standard. White if not on Generator.
- Double Duplex on UPS; one duplex per 20 amp circuit – Typ. Mount back of Cable Tray.
- L6-30R on UPS
- L5-20R on UPS
- Firerated Plywood
- Points to front of rack
- Vertical TMGB 5'6" AFF Centered
- Conduit
- Fire Monitor Device is building has a system
- Electrical Panel
- 4" Cable Sleeve
- Thermometer
- Thermostat

Responsible Organization	IT Facilities Management
Date	11/30/2023
Created By	Eric A. Morrison
File Location	K:\IT\FM\Sites\Marion\BLDG1
Title	Marion_IDF_A_LayoutR0



PROPOSED FIRST FLOOR ELECTRICAL POWER PLAN

SCALE: 1/8" = 1'-0"

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		G	04/30/2024	ISSUED FOR BID – FINAL	KS	DS	App	
Drawing No	Reference Drawings	Rev	Date	Description	By	App	Acad Title CE.DWT	Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MICHIGAN 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PROPOSED ELECTRICAL POWER PLANS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet E-101
Rev G

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GENERAL LIGHTING NOTES:

1. FOR LUMINAIRES INFORMATION, REFER TO LUMINAIRES SCHEDULE ON SHEET E-000 UNLESS OTHERWISE NOTED.

2. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LUMINAIRES PRIOR TO INSTALLATION. COORDINATE ALL CEILING TRIMS AND MOUNTING HARDWARE WITH ARCHITECTURAL AND STRUCTURAL TRADES.

3. REFER TO ARCHITECTURAL DETAILS FOR ALL MOUNTING HEIGHTS OF LUMINAIRES IN EXPOSED CEILING AREAS. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS TO AVOID INTERFERENCE WITH MECHANICAL DUCTWORK, PIPING AND STRUCTURAL STEEL.

4. ALL EMERGENCY AND EXIT LIGHTS SHALL BE CONNECTED TO LOCAL LIGHTING CIRCUIT AHEAD OF CONTROLS, UNLESS OTHERWISE STATED. FOR LUMINAIRES SHOWN AS EMERGENCY (EM ONLY), POWER LOSS SENSING LEAD TO BE CONNECTED AHEAD OF CONTROL AND LUMINAIRES TO BE SWITCHED.

5. LUMINAIRES SHOWN AS NIGHT LIGHTS (NL ONLY) SHALL REMAIN ON 24 HOURS AND SHALL BE CONNECTED TO LOCAL CIRCUIT AHEAD OF CONTROL (UNLESS OTHERWISE NOTED).

6. LUMINAIRES SHOWN AS NL/EM OR EM/NL SHALL BE WIRED WITH EMERGENCY BATTERY AND SHALL REMAIN ON 24 HOURS CONNECTED TO LOCAL CIRCUIT AHEAD OF CONTROL (UNLESS OTHERWISE NOTED).

7. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE LIGHTING CONTROL REQUIREMENTS TO MEET ASHRAE 2013 90.1 WITH SELECTED PRODUCT MANUFACTURE FOR ALL OCCUPANCY/VACANCY SENSORS, DIMMING CONTROLS AND DAYLIGHT SENSORS REQUIRED. MANUFACTURE TO PROVIDE DOCUMENTS FOR LAYOUT AND CONNECTIONS FOR CONTROLS USING A WIRED OR WIRELESS SYSTEM.

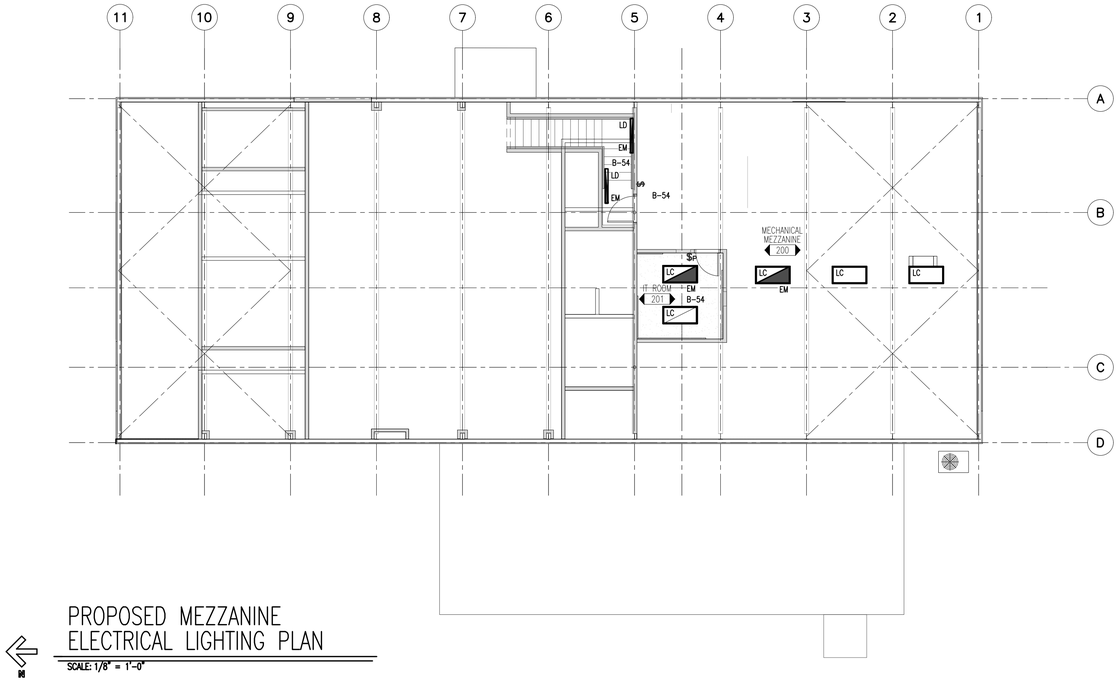
8. ELECTRICAL CONTRACTOR TO INCLUDE COST FOR FUNCTIONAL TESTING FOR LIGHTING CONTROLS AND SHALL BE PERFORMED BY A THIRD PARTY COMMISSIONING AGENT NOT RESPONSIBLE FOR THE DESIGN. VERIFY THAT THE INSTALLED LIGHTING CONTROLS MEET OR EXCEED ALL DOCUMENTED PERFORMANCE CRITERIA PER ASHREA 2013 9.4.3 WHEN REQUIRED BY A.H.J.

9. ALL DISCREPANCIES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIDS. IN OTHERWISE DOING SO, THE ELECTRICAL CONTRACTOR SHALL BE LIABLE FOR ANY REQUIRED REVISIONS.

10. ALL ITEMS SHOWN ON PLAN ARE NEW UNLESS MARKED AS (E) FOR EXISTING OR (R) FOR RELOCATED.

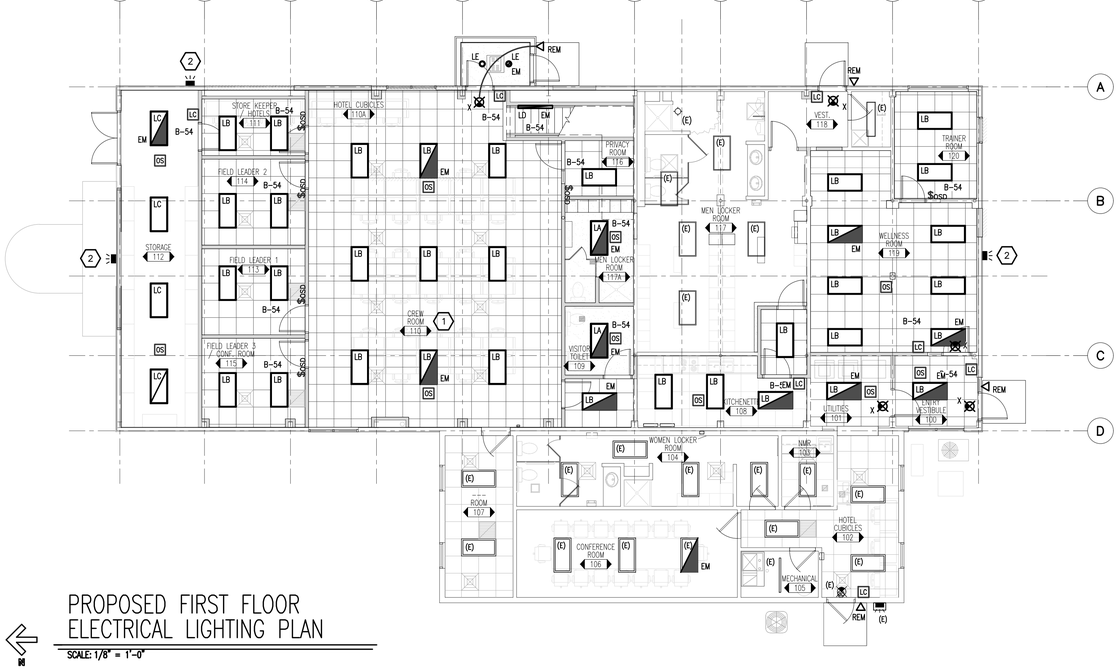
LIGHTING KEYNOTE:

1. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING HEIGHT AND FIXTURE MOUNTING HEIGHTS.
2. REINSTALL AND RECONNECT BUILDING MOUNTED FIXTURE. REWORK CIRCUIT AS NEEDED.



PROPOSED MEZZANINE ELECTRICAL LIGHTING PLAN

SCALE: 1/8" = 1'-0"



PROPOSED FIRST FLOOR ELECTRICAL LIGHTING PLAN

SCALE: 1/8" = 1'-0"

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	KS	DS

Dr Date
Des
App
App
Acad Title CE.DWT
Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MICHIGAN 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PROPOSED ELECTRICAL LIGHTING PLANS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet E-201
Rev G

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RPCA (EXISTING)

LOCATION - KITCHENETTE 108 — MTG - SURFACE
VOLTAGE, PHASE, WIRE - 120/240V, 1PH, 3W — MINIMUM AIC - 10K
150A MCB — BKR. TYPE - PLUG-IN

CIR. NO.	BKR	DESCRIPTION	REC. VA	LTG VA	MISC. VA	CIR. NO.	BKR	DESCRIPTION	REC VA	LTG VA	MISC. VA
1	20/2	(EX) HEAT TAPE				2	20/2	HOIST			
3						4					
5	50/2	(EX) AC				6	20/1	(EX) WELLNESS REC	1080		
7						8	20/1	(EX) WELLNESS REC	1080		
9	30/2	(EX) GATE				10	20/1	DED REC. PRINTER	180		
11						12	20/1	(5) RECEPTACLES	900		
13	20/1					14	20/1	(EX) EXTERIOR LTG		500	
15	20/1					16	20/1	(5) RECEPTACLES	900		
17	20/1					18	20/1	(6) RECEPTACLES	1080		
19	20/1					20	20/1	(1) REC. IT	180		
21	20/1					22	20/1	(2) REC. IT	360		
23	20/1					24	20/1	(2) REC. IT	360		
25	20/1					26	20/1	LAPTOP STORAGE REC.	180		
27	20/1					28	20/1	SECURITY PANEL			100
29	20/1					30	20/1				
31	20/1					32	20/1				
33	20/1					34	20/1				
35	20/1					36	20/1				
37	30/2	NEW DRYER			5000	38	20/1	(EX) FLAG POLE LIGHTS			
39		3#10, 1#10EG, 3/4"C.				40	20/1	(EX) EXT LTG/			
41	20/1	SPACE				42	20/1	SPACE			

TOTAL RECEPTACLES (RPCA & RPCB)	**16.4 KVA**	**71.2 AMP**
TOTAL LIGHTING (RPCA & RPCB)	**0.5 KVA**	**2.2 AMP**
TOTAL MISCELLANEOUS (RPCA & RPCB)	**7.9 KVA**	**34.2 AMP**
TOTAL CONNECTED	**24.7 KVA**	**107.6 AMP**
TOTAL DEMAND	**21.7 KVA**	**94.3 AMP**

NOTES:
1. ALL MECHANICAL EQUIPMENT TO BE SERVICED USING HACR BREAKER.
2. AIC RATINGS SHALL BE CALCULATED AND CONFIRMED PRIOR TO ORDERING EQUIPMENT
3. ALL UNSWITCHED LIGHT LOADS TO BE SERVICED USING SWITCH DUTY BREAKER.
4. DEMAND LOAD COMPUTED AS FOLLOWS:
   RECEPTACLES: 10KVA @ 100% OVER 10KVA @ 50% PER TABLE 220.44
   LIGHTING (CONTINUOUS LOAD): 125% OF CONNECTED LOAD PER 210.19
   MISCELLANEOUS (NON-CONTINUOUS LOAD): 100% OF CONNECTED LOAD PER 210.19
   KITCHEN LOAD @ 65% PER TABLE 220.56
5. SHARED NEUTRALS ARE NOT ALLOWED.

RPCB (EXISTING)

LOCATION - KITCHENETTE 108 — MTG - SURFACE
VOLTAGE, PHASE, WIRE - 120/240V, 1PH, 3W — MINIMUM AIC - 10K
150A MLO — BKR. TYPE - PLUG-IN

CIR. NO.	BKR	DESCRIPTION	REC. VA	LTG VA	MISC. VA	CIR. NO.	BKR	DESCRIPTION	REC VA	LTG VA	MISC. VA
43	20/2	(EX) LIFT STATION				44	30/2	(EX) WELL PUMP			
45						46					
47	20/2	(EX) LIFT STATION				48	20/1	(EX) LIFT STATION CNTLS			100
49						50	20/1	(1) REC. ICE MACHINE	1000		
51	20/1	(1) REC. REFRIGERATOR	900			52	20/1	(1) LAUNDRY REC	1000		
53	20/1	(1) REC. KITCHENETTE	180			54	20/1	NEW LIGHTING		1336	
55	20/1	(1) REC. KITCHENETTE	180			56	20/1	(EX) LIGHTING		1200	
57	20/1	(1) REC. CONF. ROOM	180			58	20/1	TAB-1			1000
59	20/1					60	20/1	TAB-2,3			1000
61	20/1					62	20/1	TAB-4			1000
63	20/1					64	20/1	TAB-6			500
65	20/1					66	30/2	TAB-5			7000
67	20/1					68	*	2#10, 1#10EG, 3/4"C.			
69	15/2	SS-1				70	15/1**	WH BLOWER AND CTLS			200
71	**	2#12, 1#12EG, 3/4"C.				72	20/1				
73	20/1					74	20/1	(EX) RECEPTACLES			
75	30/2	(EX) AC				76	20/1				
77						78	20/1	(EX) EXTERIOR LIGHTS		500	
79	30/2	IT TWIST LOCK			3500	80	20/1				
81	*					82	20/1				
83	20/1					84	20/1				

TOTAL RECEPTACLES	**3.4 KVA**	**15.0 AMP**
TOTAL LIGHTING	**3.0 KVA**	**13.2 AMP**
TOTAL MISCELLANEOUS	**14.3 KVA**	**62.2 AMP**
TOTAL CONNECTED	**20.8 KVA**	**90.3 AMP**
TOTAL DEMAND	**21.5 KVA**	**93.6 AMP**

NOTES:
1. ALL MECHANICAL EQUIPMENT TO BE SERVICED USING HACR BREAKER.
2. AIC RATINGS SHALL BE CALCULATED AND CONFIRMED PRIOR TO ORDERING EQUIPMENT
3. ALL UNSWITCHED LIGHT LOADS TO BE SERVICED USING SWITCH DUTY BREAKER.
4. DEMAND LOAD COMPUTED AS FOLLOWS:
   RECEPTACLES: 10KVA @ 100% OVER 10KVA @ 50% PER TABLE 220.44
   LIGHTING (CONTINUOUS LOAD): 125% OF CONNECTED LOAD PER 210.19
   MISCELLANEOUS (NON-CONTINUOUS LOAD): 100% OF CONNECTED LOAD PER 210.19
   KITCHEN LOAD @ 65% PER TABLE 220.56
5. SHARED NEUTRALS ARE NOT ALLOWED.

* REPLACE EXISTING 20A, 2P BREAKER WITH 30A, 2P BREAKER.
** REPLACE EXISING 20A, 1P BREAKERS WITH 15A, 1P BREAKER.

LRP-C (NEW)

LOCATION - KITCHENETTE 108 — MTG - SURFACE
VOLTAGE, PHASE, WIRE - 120/240V, 1PH, 3W — MINIMUM AIC - 10K
100A MCB — BKR. TYPE - PLUG-IN

CIR. NO.	BKR	DESCRIPTION	REC. VA	LTG VA	MISC. VA	CIR. NO.	BKR	DESCRIPTION	REC VA	LTG VA	MISC. VA
1	20/1	(6) RECEPTACLES	1080			2	20/1	FURNITURE CONNECTION	900		
3	20/1	(7) RECEPTACLES	1260			4	20/1	FURNITURE CONNECTION	900		
5	20/1	(7) RECEPTACLES	1260			6	20/1	FURNITURE CONNECTION	900		
7	20/1	(6) RECEPTACLES	1080			8	20/1	FURNITURE CONNECTION	900		
9	20/1	EF-3			1176	10	20/1	FURNITURE CONNECTION	900		
11	15/1	UH-1, UH-2			90	12	20/1	FURNITURE CONNECTION	900		
13	20/1	CUH-			1500	14	20/1	SPARE			
15	20/1	SPARE				16	20/1	SPARE			
17	20/1	SPARE				18	20/1	SPARE			
19	20/1	SPARE				20	20/1	SPARE			
21	20/1	SPARE				22	20/1	SPARE			
23	20/1					24	20/1				
25	20/1					26	20/1				
27	20/1					28	20/1				
29	20/1					30	20/1				

TOTAL RECEPTACLES	**10.1 KVA**	**43.8 AMP**
TOTAL LIGHTING	**0.0 KVA**	**0.0 AMP**
TOTAL MISCELLANEOUS	**2.8 KVA**	**12.0 AMP**
TOTAL CONNECTED	**12.8 KVA**	**55.9 AMP**
TOTAL DEMAND	**12.8 KVA**	**55.7 AMP**

NOTES:
1. ALL MECHANICAL EQUIPMENT TO BE SERVICED USING HACR BREAKER.
2. AIC RATINGS SHALL BE CALCULATED AND CONFIRMED PRIOR TO ORDERING EQUIPMENT
3. ALL UNSWITCHED LIGHT LOADS TO BE SERVICED USING SWITCH DUTY BREAKER.
4. DEMAND LOAD COMPUTED AS FOLLOWS:
   RECEPTACLES: 10KVA @ 100% OVER 10KVA @ 50% PER TABLE 220.44
   LIGHTING (CONTINUOUS LOAD): 125% OF CONNECTED LOAD PER 210.19
   MISCELLANEOUS (NON-CONTINUOUS LOAD): 100% OF CONNECTED LOAD PER 210.19
   KITCHEN LOAD @ 65% PER TABLE 220.56
5. SHARED NEUTRALS ARE NOT ALLOWED.

CIRCUITING AND PANELBOARD DIRECTORIES BASED ON FIELD OBSERVATION OF EXISTING PANELBOARD SCHEDULES. ELECTRICAL CONTRACTOR TO MAKE ADJUSTMENTS AS NECESSARY AND INSTALL COMPLETE AND ACCURATE TYPED DIRECTORY.

GENERAL RISER NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL CONTACT THE LOCAL UTILITY COMPANY AND SUBMIT REQUIRED INFORMATION FOR PERMANENT ELECTRICAL SERVICE WHEN REQUIRED PRIOR TO CONSTRUCTION. ALL UTILITY ARRANGEMENTS SHALL BE CONFIRMED BY THE LOCAL UTILITY PRIOR TO ORDERING EQUIPMENT. ALL UTILITY EQUIPMENT LOCATIONS SHOWN ON THIS DRAWING SHALL BE VERIFIED WITH THE LOCAL UTILITY PRIOR TO INSTALLATION.

2. ALL CONCRETE PADS REQUIRED SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND MEET ALL LOCAL UTILITY AND MUNICIPALITY REQUIREMENTS.

3. ALL ITEMS SHOWN AS HATCHED SHALL BE DISCONNECTED AND REMOVED BY THE ELECTRICAL CONTRACTOR. REMOVE ASSOCIATED WIRING, TERMINATIONS AND CONDUIT BACK TO THE SOURCE.

4. ALL WIRE SIZES INDICATED ON THIS DRAWING SHALL BE COPPER WITH TEMP RATING OF 75 DEGREES C. PER 2017 NEC TABLE 310.15(B)(16) UNLESS OTHERWISE NOTED.

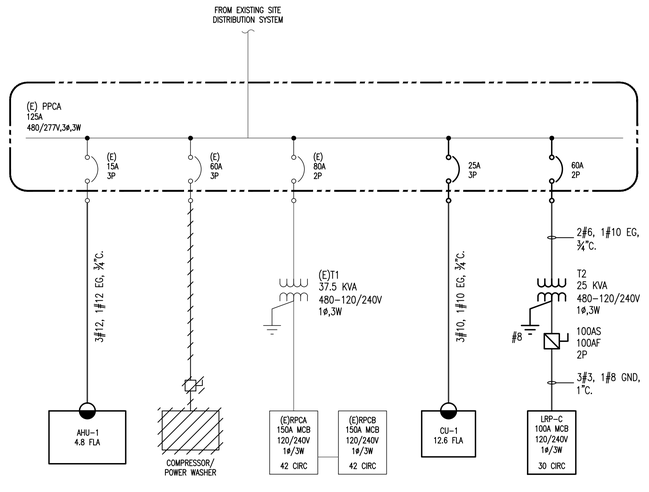
5. PROVIDE AND INSTALL "ARC-FLASH" LABELS IN ACCORDANCE WITH NEC 110.16.

6. ALL DISCREPANCIES WITH THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION PRIOR TO BIDS. IN OTHERWISE DOING SO, THE ELECTRICAL CONTRACTOR SHALL BE LIABLE FOR ANY REQUIRED REVISIONS.

7. ALL ITEMS SHOWN ON PLAN ARE NEW UNLESS MARKED AS (E) FOR EXISTING OR (R) FOR RELOCATED.

8. WHERE MAIN G.F.I. IS SHOWN FOR PROJECT, E.C. TO PROVIDE PROPER SETTINGS FOR MAIN G.F.I. RELAY TRIP SETTINGS AND TIME DELAY PERFORMED BY AN INDEPENDENT TESTING COMPANY INCLUDED IN E.C. CONTRACT. PROVIDE ACTUAL DOCUMENTATION AT THE COMPLETION OF THE PROJECT FROM THE INDEPENDENT TESTING COMPANY.

9. E.C. TO COORDINATE EXACT EQUIPMENTS OF ALL OTHER SYSTEMS (INCLUDING ELEVATORS AND HVAC EQUIPMENT) WITH MANUFACTURER AND OTHER TRADES PRIOR TO ROUGH-IN AND PURCHASE OF ANY ELECTRICAL EQUIPMENT ASSOCIATED WITH SYSTEM. ANY DISCREPANCIES WITH THIS PLAN AND MANUFACTURER REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO PURCHASE OR ELECTRICAL ROUGH-IN OF THIS EQUIPMENT.



ELECTRICAL ONE-LINE DIAGRAM

SCALE: NONE

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		G	04/30/2024	ISSUED FOR BID – FINAL	KS	DS

Dr — Date
Des
App
App
Acad Title CE.DWT — Plot Scale 1"=1"

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MICHIGAN 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
ELECTRICAL ONE-LINE DIAGRAM & PANEL SCHEDULE

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet E-300
Rev G

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HVAC ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
C	COMMON
CO	CLEANOUT
CFSD	CONTROL/FIRE/SMOKE DAMPER
DN	DOWN
DPG (0–2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
EA	EXHAUST/RELIEF AIR
MA	MIXED AIR
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
PS	PRESSURE SWITCH
RA	RETURN AIR
SA	SUPPLY AIR
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL
UC–1	DOOR UNDERCUT BY OTHERS (1" TYPICAL)
UON	UNLESS OTHERWISE NOTED

VIEW KEY

NAME — LEVEL NAME
10'–0" — HEIGHT ABOVE PROJECT 0'–0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
———— NEW
- - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
———— EXISTING
- - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

"TAG"–E TAGS WITH DASH "E" INDICATES THE REFERENCED OBJECT IS EXISTING

TAG–1 UNDERLINED TAG INDICATES OBJECT IS IN–SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

HVAC SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
DPP	DRAIN
G	NATURAL GAS
GV	GAS REGULATOR VENT
LIQ	REFRIGERANT LIQUID
REF	REFRIGERANT
SUC	REFRIGERANT SUCTION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	BALANCING VALVE (NUMBER INDICATES GPM)
	SOLENOID VALVE
	CHECK VALVE
	SAFETY/RELIEF VALVE
	TRIPLE DUTY VALVE (IN–LINE TYPE)
	PUMP
	VACUUM BREAKER
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER – REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
SP	STATIC SWITCH
FM	FLOW METER
F	FLOW SWITCH
FS	FLOW SENSOR

HVAC SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
SD–1 6/11	AIR TERMINAL PROPERTIES — SYMBOL / NECK SIZE/CFM
###	TERMINAL AIR BOX (REFER TO SCHEDULE)
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
	DIFFERENTIAL PRESSURE SENSOR
H	HUMIDISTAT SENSOR
H	HUMIDISTAT / SENSOR (DUCT MOUNTED)
C	CARBON MONOXIDE SENSOR
C	CARBON DIOXIDE SENSOR
C_2	CARBON DIOXIDE SENSOR
T	THERMOSTAT/SENSOR
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)

VENTILATION GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO A TERMINAL AIR BOX (TAB) SHALL MATCH THE INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH DUCT SHALL BE SIZED AT A PRESSURE DROP OF 0.07" W.C. PER 100' OF DUCTWORK.
2. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO AN AIR TERMINAL SHALL MATCH THE INLET SIZE.
3. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
4. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL..

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
4. THE GENERAL CONTRACTORIS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
5. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
7. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED. REFER TO CE OUTAGE REQUIREMENTS FOR PRE–NOTIFICATION TIMEFRAME AND PLANNING MEETINGS.
8. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
9. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
10. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ). ALSO PROVIDE DOCUMENTATION TO THE OWNER FOR THEIR RECORDS INCLUDING APPLIANCE EQUIPMENT INFORMATION WITH AMOUNT OF REFRIGERANT ON APPLIANCE DISPOSAL REPORT, SERVICE TECHNICHIAN'S LICENSE/CERTIFICATION ON CONTRACTOR INPUT FORM, AND RECOVERY EQUIPMENT USED ON RECOVERY/RECYCLING EQUIPMENT INPUT FORM. DOCUMENTATION TO BE PLACED ON OWNER'S ONSITE REFRIGERANT COMPLIANCE MANUAL.

PIPING GENERAL NOTES:

1. THE SIZE OF BRANCH PIPING TO TERMINAL HEATING DEVICES AND COILS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
2. PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.
3. INSTALL ALL REFRIGERANT LIQUID AND SUCTION PIPING SIZED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON–INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL WALL AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON–FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK COIL AND FAN PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'–6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'–0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'–0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'–0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

DUCTWORK APPLICATION SCHEDULE

USAGE	MATERIAL	PRESSURE CLASS	SEAL CLASS†	INSULATION (REFER TO SECTION 23 07 13 FOR INSULATION TYPES)
SUPPLY DUCT FROM FAN TO TERMINAL AIR BOXES – SINGLE WALL	GALVANIZED SHEET METAL - RECTANGULAR	+ 6"	A	1-1/2" THICK TYPE A OR 1" THICK TYPE C
SUPPLY DUCT FROM FAN TO TERMINAL AIR BOXES – SINGLE WALL	GALVANIZED SHEET METAL - ROUND	+ 6"	A	1-1/2" THICK TYPE A OR 1" TYPE G
RETURN DUCT	GALVANIZED SHEET METAL - ROUND OR RECTANGULAR	(- 2")	A	1-1/2" THICK TYPE A OR 1" THICK TYPE C OR NONE
GENERAL EXHAUST DUCT	GALVANIZED SHEET METAL - ROUND OR RECTANGULAR	(- 1")	A	NONE OR 1" THICK TYPE C
COMBUSTION AIR DUCT	GALVANIZED SHEET METAL - ROUND OR RECTANGULAR	(- 1")	A	1-1/2" THICK TYPE B
RELIEF/EXHAUST AIR DUCT FROM FAN TO EXHAUST OUTLET	GALVANIZED SHEET METAL	+ 2"	A	1-1/2" THICK TYPE A OR 1" THICK TYPE C OR NONE
FUME EXHAUST DUCT	REFER TO "FUME EXHAUST DUCT" IN SECTION 23 31 00	---	---	1-1/2" THICK TYPE A WITHIN 15' OF PENETRATION OF EXTERIOR WALL OR ROOF
OUTSIDE AIR INTAKE FROM LOUVER TO HEATING COIL	GALVANIZED SHEET METAL	(- 2")	A	1-1/2" THICK TYPE B
DUCTWORK ACCESSORIES (FABRIC FLEX CONNECTORS, EQUIPMENT FLANGES, ETC.)	---	---	---	1-1/2" THICK TYPE A
ALL TERMINAL AIR BOX/ REHEAT COIL HEADERS AND DUCT MOUNTED COIL HEADERS	---	---	---	1-1/2" THICK TYPE A
† SEAL CLASS IS PER SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL				

PIPE INSULATION SCHEDULE (HVAC)

GENERAL NOTES:
1. REFER TO THE SPECIFICATIONS FOR TYPE DESCRIPTIONS AND JACKETING REQUIREMENTS.
2. TYPE A INSULATION IS NOT ALLOWED IN NON-AIR CONDITIONED SPACES, SUCH AS MECHANICAL ROOMS, EXTERIOR, ATTICS, ETC.
3. TYPE B INSULATION GREATER THAN 1" THICK SHALL BE INSTALLED USING MULTIPLE LAYERS OF 3/4" OR 1" WITH STAGGERED SEAMS.
4. TYPE E IS NOT ALLOWED IN RETURN AIR PLENUMS. UNLESS LISTED AND LABELED AS 25/50 RATED PER ASTM E84/UL723
5. TYPE G 4" SHALL BE INSTALLED IN TWO (2) 2" LAYERS WITH STAGGERED SEAMS.
6. PROVIDE RIGID INSERT AT HANGERS, EITHER PRE-MANUFACTURED COUPLINGS (REFER TO PIPE HANGER AND SUPPORTS SPECIFICATIONS) OR TYPE C, D, OR E INSULATION. SEE SPEC. FOR MORE DETAILS.
7. DIRECT BUIRED PIPING SHALL ONLY USE TYPE C OR TYPE E. REDUCTION IN THICKNESS FOR DIRECT BURED PIPING IS ALLOWED PER ASHRAE / IECC AS APPLICABLE.

SYMBOL	PIPE SYSTEM	INSULATION TYPE	INSULATION THICKNESS PER NOMINAL PIPE OR TUBE SIZE					NOTES
			< 1"	1" TO < 1.5"	1.5" TO < 4"	4" TO < 8"	≥ 8"	
23 PIPING – COOLING WATER								
DPP	DRAIN – PIPING	A (GlsFbr), B (Elasto), C (CelGla)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO LOW TEMP DRAINS (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
23 PIPING – REFRIGERANT								
LIQ	REFRIGERANT LIQUID	A (GlsFbr), B (Elasto), C (CelGla)	1/2"	1/2"	1"	1"	1"	
SUC	REFRIGERANT SUCTION	A (GlsFbr), B (Elasto), C (CelGla)	1/2"	1/2"	1"	1"	1"	

HVAC SHEET INDEX

M000	HVAC COVERSHEET
M101	LEVEL 01 PLANS – HVAC
M102	LEVEL 01 PLANS – PIPING
M103	MEZZANINE PLANS – HVAC
M104	MEZZANINE PLANS – PIPING
M400	HVAC DETAILS
M401	HVAC DETAILS
M500	HVAC DIAGRAMS
M501	HVAC DIAGRAMS
M600	HVAC SCHEDULES
M601	HVAC SCHEDULES
GRAND TOTAL: 11	

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Drawing No	Reference Drawings	Rev	Date	Description	By	App
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Des MRM 12/27/2023
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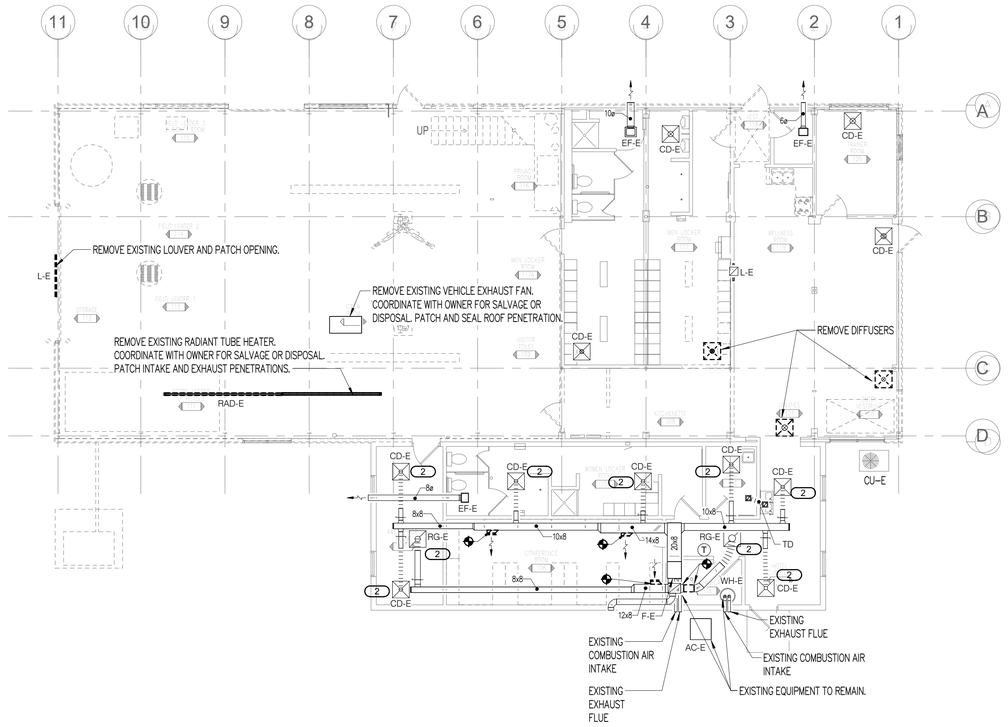
IMEG Project #23004331.00
Plot Scale

Consumers Energy
JACKSON, MICHIGAN

Proj Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

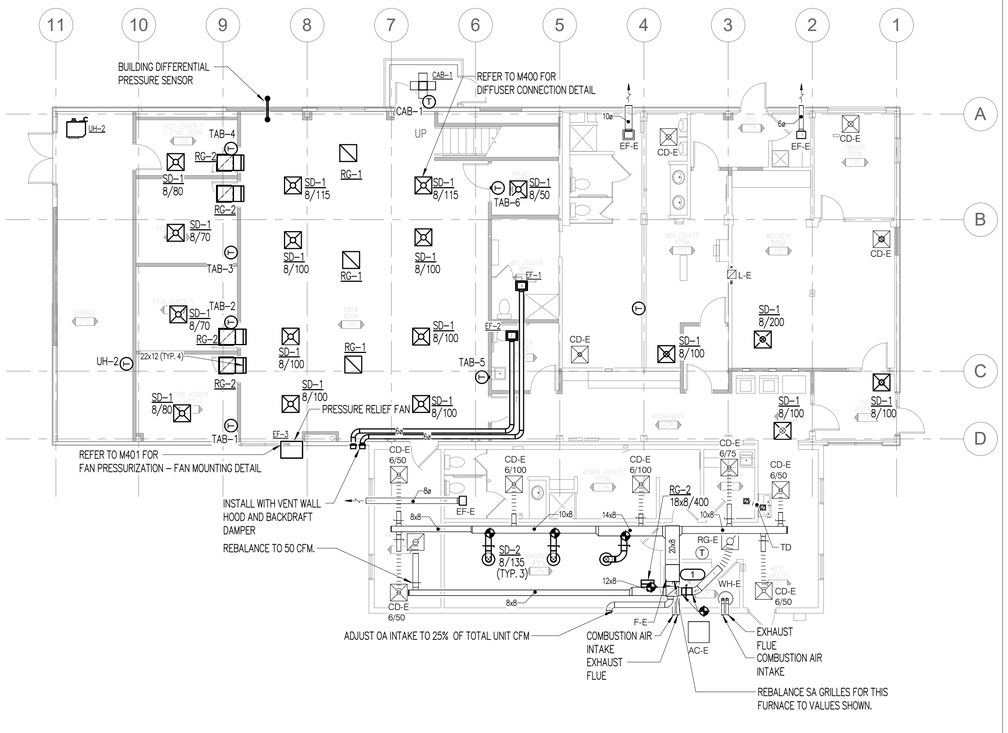
Sheet Title
HVAC COVERSHEET

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M000
Rev A



LEVEL 01 DEMOLITION PLAN – HVAC

1/8" = 1'-0"



LEVEL 01 PLAN – HVAC

1/8" = 1'-0"

KEYNOTES: (#)

1. BALANCE DAMPER TO 100 CFM.
2. EXISTING TO REMAIN GRILLES. REBALANCE TO CFM SHOWN ON NEW WORK PLAN.

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MARION, MI 49665
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Sheet Title
LEVEL 01 PLANS – HVAC

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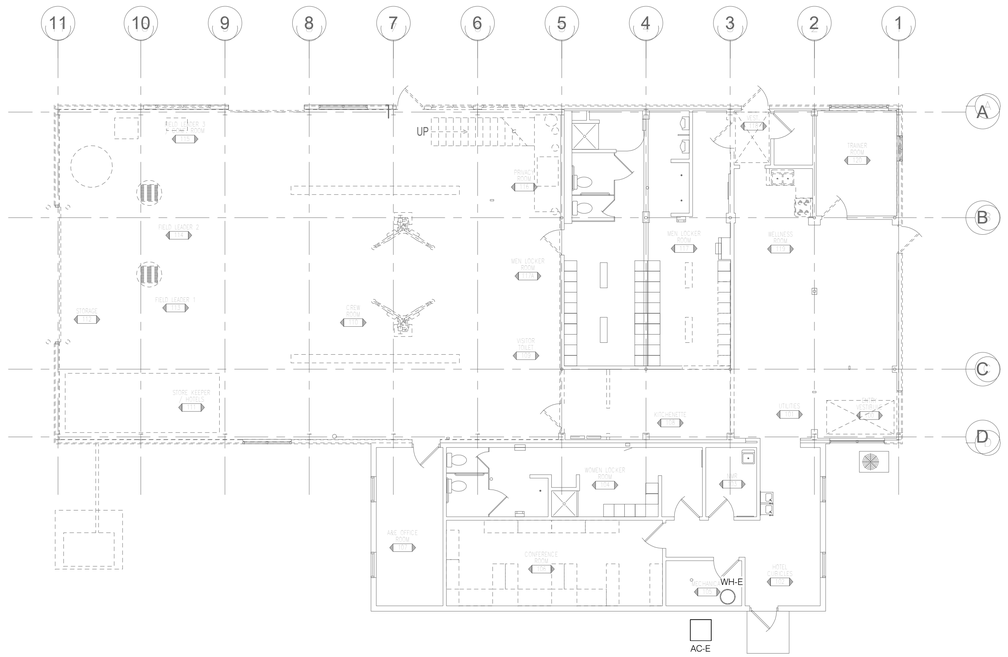
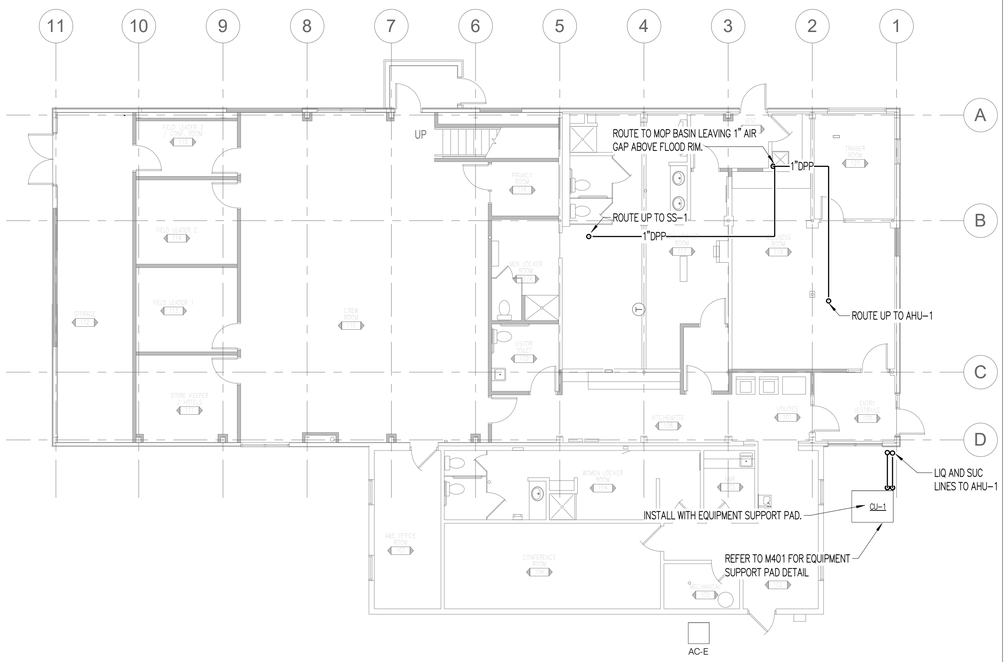
Work Order # 41198794
Drawing Number
Sheet M101
Rev A



LEVEL 01 DEMOLITION PLAN – PIPING

1/8" = 1'-0"



LEVEL 01 PLAN – PIPING

1/8" = 1'-0"

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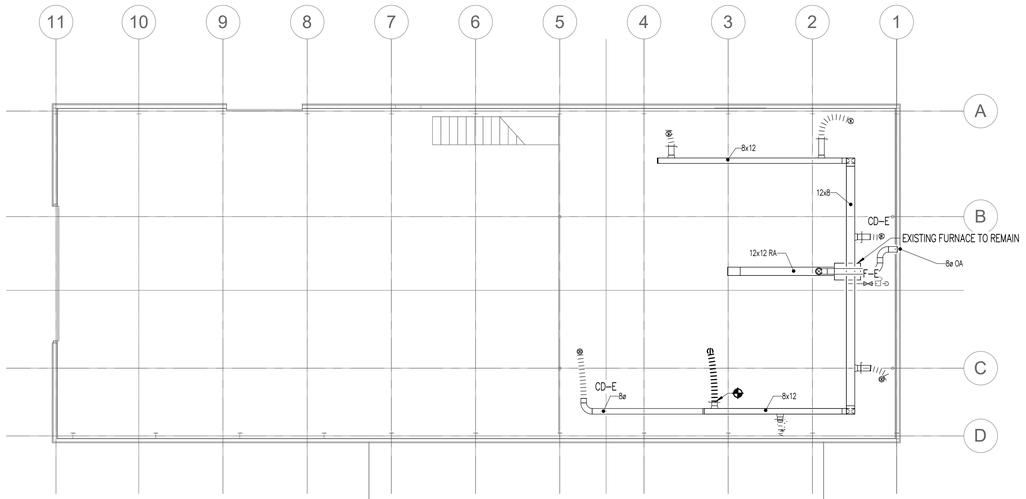
MARION BUILDING "1" CREW ROOM EXPANSION

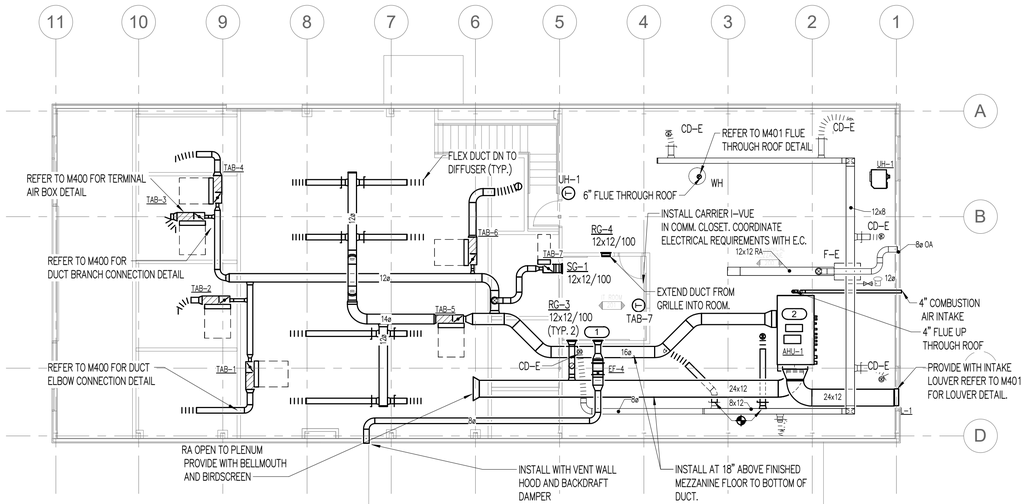
Sheet Title
LEVEL 01 PLANS – PIPING

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M102
Rev A



MEZZANINE DEMOLITION PLAN – HVAC

1/8" = 1'–0"



MEZZANINE PLAN – HVAC

1/8" = 1'–0"

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Sheet Title
MEZZANINE PLANS – HVAC

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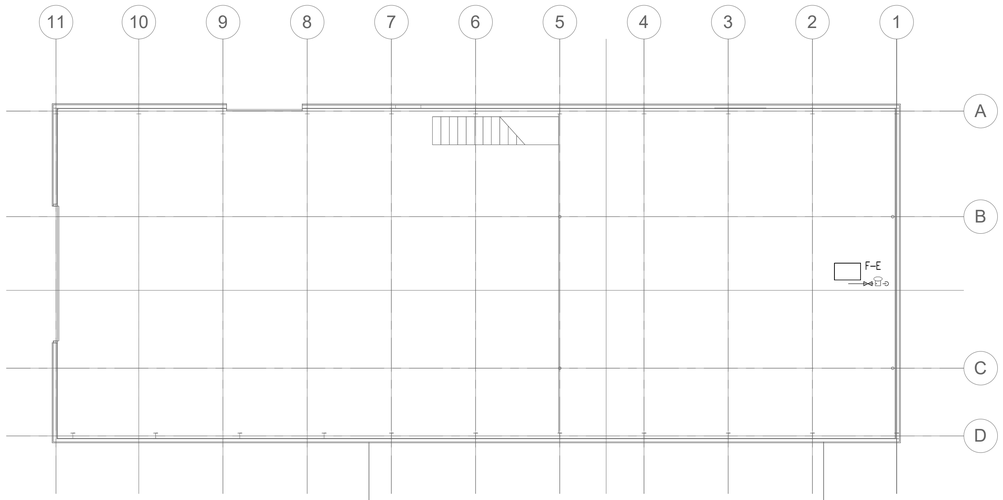
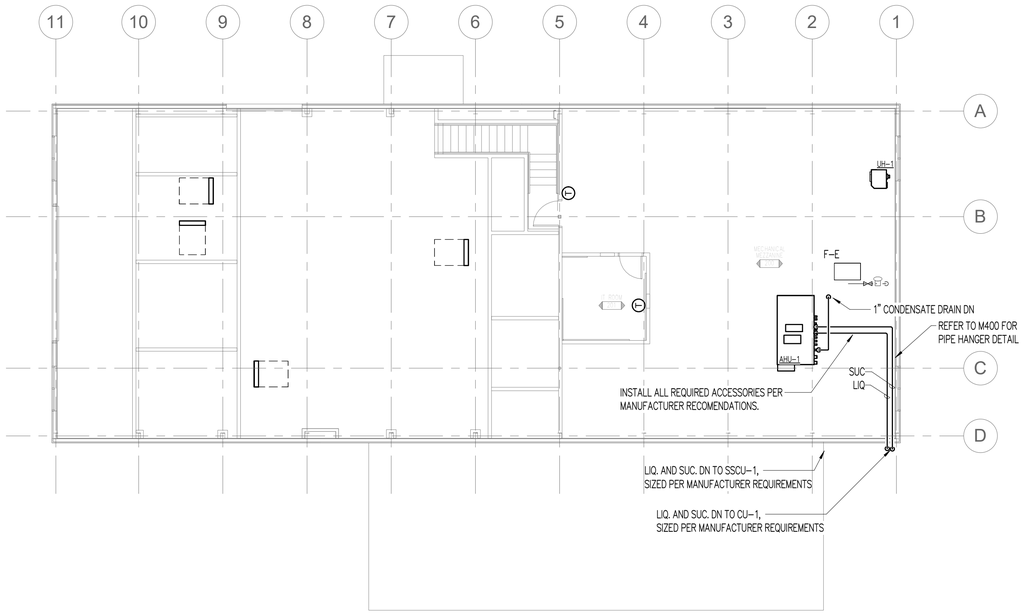


MEZZANINE DEMOLITION PLAN – PIPING

1/8" = 1'-0"



MEZZANINE PLAN – PIPING

1/8" = 1'-0"

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Sheet Title
MEZZANINE PLANS – PIPING

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Work Order # 41198794
Drawing Number
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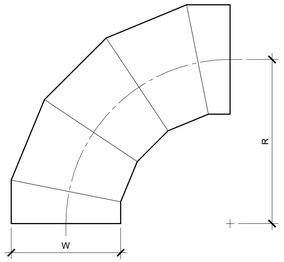
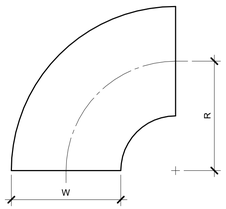
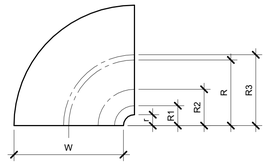


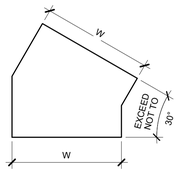
OVAL / ROUND
RADIUS ELBOW
SMOOTH OR 5 CORE (MINIMUM)
R/W = 1.5 (MINIMUM)



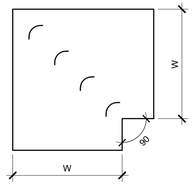
RECTANGULAR
RADIUS ELBOW
TYPE RE1
R/W = 1.0 (MINIMUM)
R/W < 1.0 SHALL BE TYPE RE3



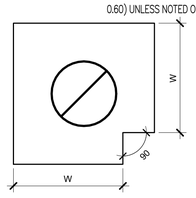
RECTANGULAR
RADIUS ELBOW WITH VANES
TYPE RE3
REFER TO SMACNA HVAC SYSTEMS DUCT DESIGN MANUAL, FOURTH EDITION, SECTION 5.14 "SPLITTER VANES" AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS, THIRD EDITION, FIGURES 4–2 AND 4–9 AND CHARTS 4–1 AND 4–1M. ELBOW SHALL HAVE THREE SPLITTER VANES AND r/W = 0.10 (R/W = 0.60) UNLESS NOTED OTHERWISE.



RECTANGULAR
MITERED ELBOW
TYPE RE6
USE ONLY AS PART OF OFFSETS AND TRANSITIONS PER FIGURE 4–7 TYPE 2 OR AS SHOWN ON DRAWINGS. OFFSETS ABOVE 30° SHALL BE TYPE RE1.

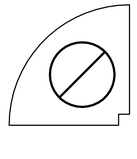


RECTANGULAR
MITERED ELBOW
WITH VANES
TYPE RE2



RECTANGULAR / OVAL / ROUND
MITERED ELBOW
WITHOUT VANES
TYPE RE4

NOT ALLOWED



RECTANGULAR
RADIUS ELBOW WITH
SQUARE THROAT

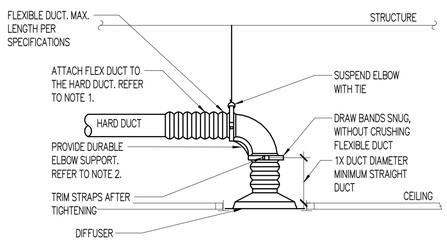
NOT ALLOWED

DUCT – ELBOW CONSTRUCTION

NO SCALE

NOTES:

1. BEAD, CROSSBREAK, AND REINFORCE FLAT SURFACES AS IN STRAIGHT DUCT.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. DEFAULT ELBOW SHALL BE TYPE "RE1".
4. ELBOW TYPES SHALL BE INSTALLED AS SHOWN AND NOT BE SUBSTITUTED WITHOUT PERMISSION. EXCEPTION: RE1 OR RE3 MAY BE SUBSTITUTED FOR RE2.

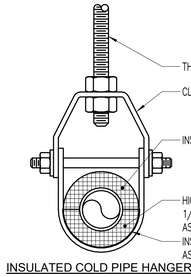


DIFFUSER CONNECTION DETAIL

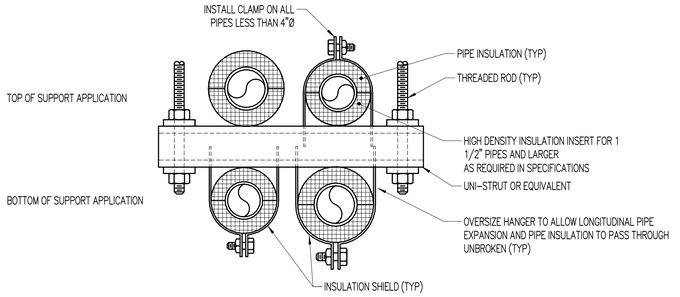
NO SCALE

NOTES:

1. TO ATTACH FLEX DUCT TO THE HARD DUCT, TAPE THE INNER LINER TO THE HARD DUCT THEN ATTACH WITH TWO NYLON TIE WRAPS; ONE FOR THE INNER LINER AND ONE FOR THE OUTER SHELL. FOLD THE OUTER SHELL INSIDE ITSELF SO IT HAS NEAT EDGES PRIOR TO TIE WRAPPING.
2. DURABLE ELBOW SUPPORT ACCEPTABLE MANUFACTURER AND MODEL: HART AND COOLEY – SMARTFLOW, THERMAFLEX – FLEXFLOW, TITUS – FLEXRIGHT, OR APPROVED EQUAL.



INSULATED COLD PIPE HANGER



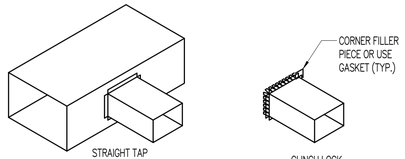
TRAPEZE HANGER

PIPE – HANGERS AND SUPPORTS

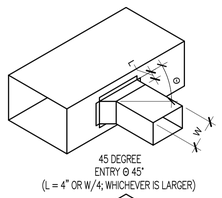
NO SCALE

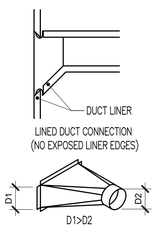
NOTES:

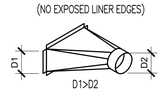
1. REFER TO SPECIFICATION SECTIONS 23 05 29 & 23 07 19.

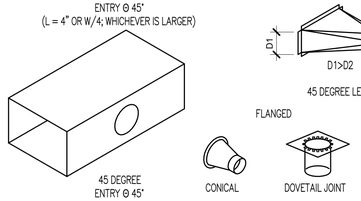


NOTE: STRAIGHT TAP WITH BUTT FLANGE FOR BRANCH AND TEE CONNECTION IN RECTANGULAR DUCTS UNDER 1" PRESSURE CLASS ONLY.







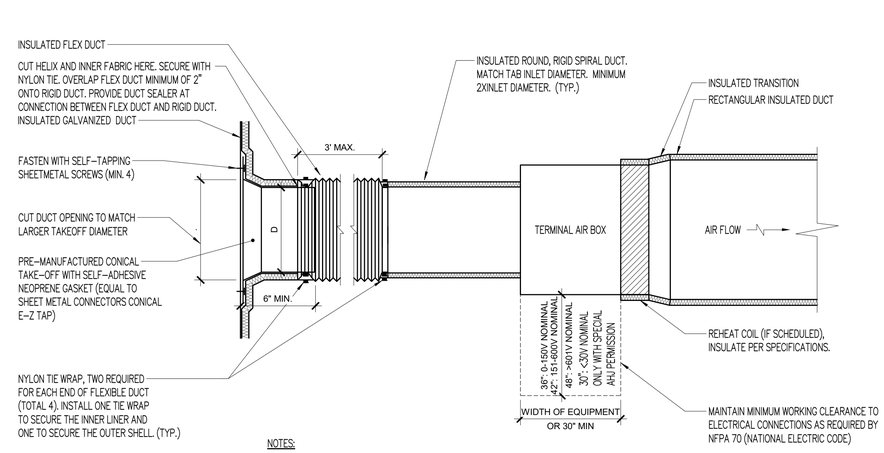


DUCT – BRANCH CONNECTIONS

NO SCALE

NOTES:

1. DO NOT USE CONNECTIONS WITH SCOOPS.
2. FIT ALL CONNECTIONS TO AVOID VISIBLE OPENINGS AND SECURE THEM SUITABLY FOR THE PRESSURE CLASS.
3. ADDITIONAL MECHANICAL FASTENERS ARE REQUIRED FOR 4"W.G. AND OVER.
4. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



NOTES:

1. THIS DETAIL APPLIES ONLY TO TAPS OFF WRAPPED DUCTS.
2. THIS DETAIL APPLIES TO TERMINAL AIR BOXES WITH ROUND INLETS AND RECTANGULAR OUTLETS.
3. DUCT LEADING TO TAB INLET MUST BE STRAIGHT FOR 1.5 DIAMETER UPSTREAM.
4. MAINTAIN VAPOR BARRIER FROM MAIN TO BRANCH DUCT.

TERMINAL AIR BOX – SINGLE DUCT – WRAPPED

NO SCALE

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					Des MRM	12/27/2023
					App	
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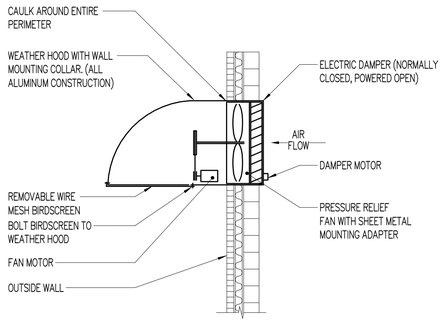
IMEG Project #23004331.00
Plot Scale

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

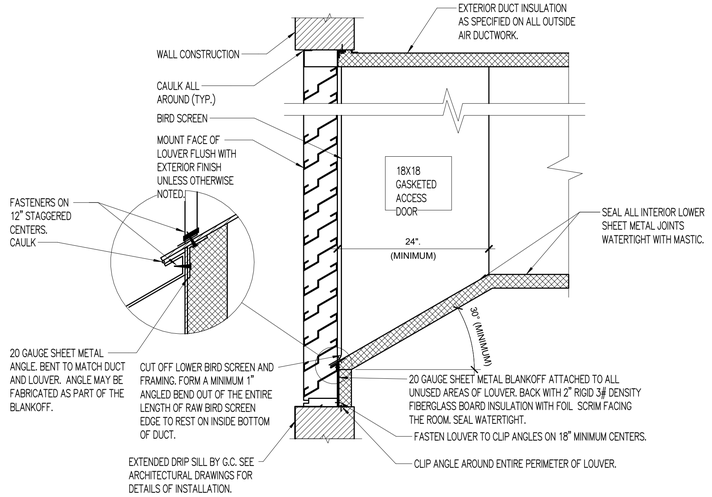
Sheet Title
HVAC DETAILS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M400
Rev A



FAN – PRESSURE RELIEF FAN MOUNTING W/ HOOD

NO SCALE

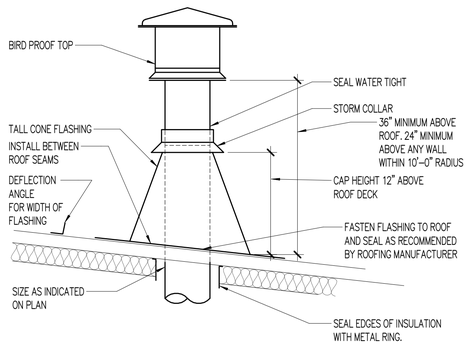


NOTES:

1. SEAL ALL JOING ON BOTTOM INTERIOR SURFACE OF DUCT WITHIN 6'–0" OF THE LOUVER WATER TIGHT.
2. MOUNT BOTTOM OF INTAKE LOUVERS AT LEAST 40" ABOVE GRADE OR ROOF ELEVATION TO MINIMIZE CHANCES OF SNOW DRIFTING INTO THE LOUVER.
3. CAULK SHEETMETAL SCREWS WHERE THE PENETRATE METAL.

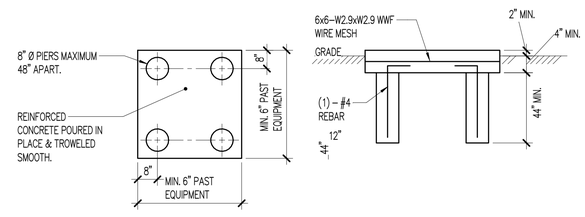
LOUVER INSTALLATION

NO SCALE



FLUE – THROUGH ROOF

NO SCALE



EQUIPMENT SUPPORT – EXTERIOR PAD WITH FOOTING

NO SCALE

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		A	04/30/2024	ISSUE FOR BID – FINAL		

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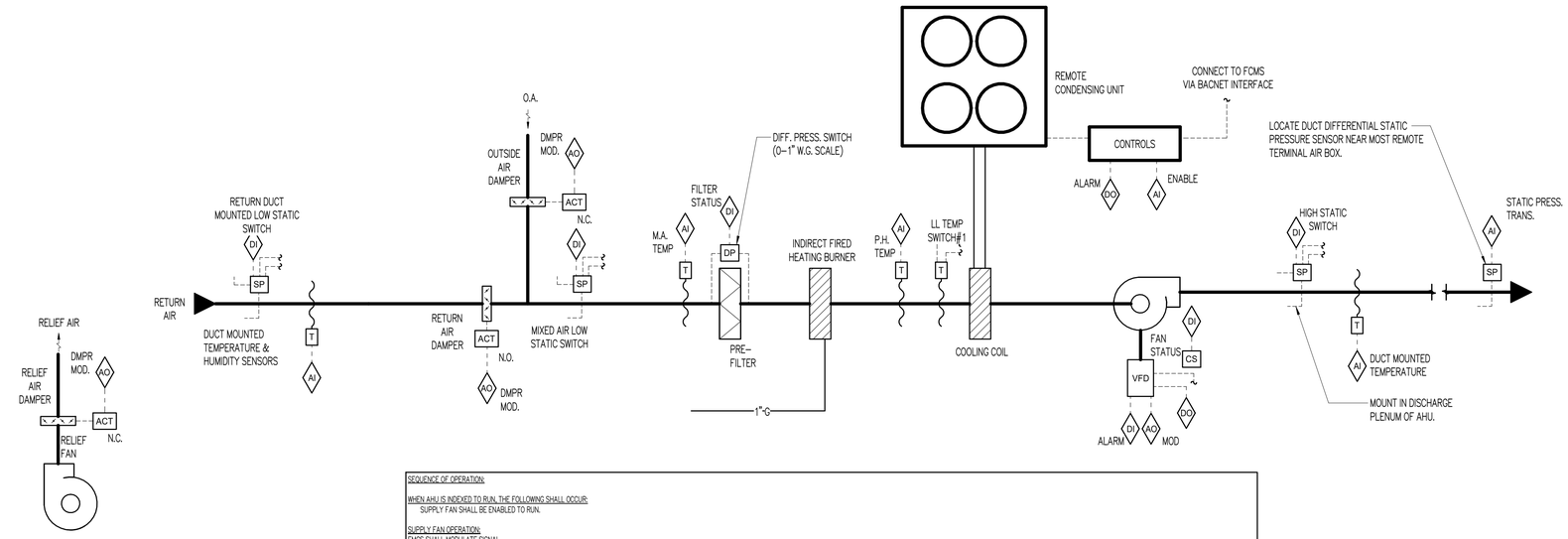
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
HVAC DETAILS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M401
Rev A



AHU REPORT GENERATION:
DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 100–DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP [°F]
- GLOBAL OUTSIDE AIR DEWPOINT [°F]
- SUPPLY AIRFLOW [CFM]
- SUPPLY AIR TEMP (SAT) [°F]
- SUPPLY AIR TEMP SETPOINT [°F]
- SUPPLY AIR DEWPOINT [°F]
- SUPPLY AIR DEWPOINT SETPOINT [°F]
- RETURN AIRFLOW [CFM]
- RETURN AIR TEMP (RAT) [°F]
- OUTSIDE AIRFLOW [CFM]
- MIXED AIR TEMP [°F]
- PREHEAT COIL DISCHARGE AIR TEMP [°F]
- PRE–FILTER ALARM [STATUS] [* PRE–FILTER LOADING [STATUS]]
- SUPPLY DUCT STATIC PRESSURE SETPOINT [INCHES W.G.]
- SUPPLY DUCT STATIC PRESSURE [INCHES W.G.]
- SUPPLY FAN VFD OUTPUT [% FULL SPEED]
- OUTSIDE AIR DAMPER POSITION [% OPEN]
- RETURN AIR DAMPER POSITION [% OPEN]
- RELIEF AIR DAMPER POSITION [% OPEN]

THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

ONCE PER MONTH, THE DDC FMCS SHALL RECORD THE LARGEST AHU AIRFLOW WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMP (AND ALL OTHER VALUES LISTED ABOVE) THAT COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE FMCS OPERATOR WORKSTATION THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

AIR HANDLER REPORT GENERATION

TYPICAL FOR AHU–1

AIR HANDLING UNIT – VAV GAS BURNER AND DX COOLING

NO SCALE

SEQUENCE OF OPERATION:

WHEN AHU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
SUPPLY FAN SHALL BE ENABLED TO RUN.

SUPPLY FAN OPERATION:
FMCS SHALL MODULATE SIGNAL

STATIC PRESSURE RESET:
FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

DISCHARGE AIR TEMPERATURE SET POINT:
DISCHARGE AIR SET POINT SHALL BE 55ºF (ADJ.).

DISCHARGE AIR TEMPERATURE RESET:
RESET DISCHARGE AIR TEMPERATURE BASED ON THE ZONE WITH THE GREATEST CALL FOR COOLING. RESET THE TEMPERATURE AS FOLLOWS:
WHEN WORST CASE TAB IS LESS THAN 90% (ADJ.) CAPACITY FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL INCREASE BY 1ºF (ADJ.). THIS SHALL CONTINUE UNTIL AHU MAXIMUM DISCHARGE AIR TEMPERATURE OF 60ºF (ADJ.) IS ACHIEVED.
WHEN WORST CASE TAB IS MORE THAN 90% CAPACITY FOR TEN MINUTES (ADJ.) THEN THE DISCHARGE AIR TEMPERATURE SHALL DROP BY 1ºF (ADJ.). THIS SHALL CONTINUE UNTIL AHU MINIMUM DISCHARGE AIR TEMPERATURE OF 55ºF (ADJ.) IS ACHIEVED.

VENTILATION AIR CONTROL:
WHENEVER THE AIR HANDLING UNIT IS IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE OPEN. THE RETURN AIR AND RELIEF AIR DAMPER SHALL MODULATE IN OPPOSITION TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW RATE, OR TO SATISFY THE ECONOMIZER DISCHARGE AIR SEQUENCE.

COOLING COIL OPERATION:
WHEN IN MINIMUM OUTSIDE AIR MODE, FMCS SHALL MODULATE REMOTE CONDENSOR AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

WHEN IN ECONOMIZER MODE, FMCS SHALL NOT MODULATE REMOTE CONDENSOR UNLESS RETURN AIR DAMPER IS 5% (ADJ.) OPEN AND RELIEF AIR DAMPER IS 95% (ADJ.) OPEN.

HEATING BURNER OPERATION:
HEATING BURNER SHALL BE ENABLED WHEN THERMOSTATS SENSE NEED FOR HEAT.

FMCS SHALL MODULATE HEATING BURNER GAS CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT.

ECONOMIZER OPERATION:
WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY BULB TEMPERATURE THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN OUTSIDE AIR DRY BULB TEMPERATURE IS GREATER THAN THE RETURN AIR DRY BULB TEMPERATURE FOR 10 MINUTES THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MINIMUM OUTSIDE AIR MODE. ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MINIMUM OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCH BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

BUILDING PRESSURE CONTROL FAN OPERATION
SUPPLY FAN AND RELIEF FAN SHALL OPPERATE WHEN AHU IS OPERATING AND SHALL MODULATE TO MAINTAIN A BUILDING PRESSURE OF 0.02" W.C.

ALARMS, INTERLOCKS, AND SAFETIES:
WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

THE FOLOWING CONDITIONS SHALL SHUT DOWN THE AHU AND INDICATE AN ALARM CONDITION AT THE FMCS:
LOW STATIC PRESSURE SWITCH INDICATES RETURN DUCT PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS.
LOW STATIC PRESSURE SWITCH INDICATES MIXED AIR DUCT PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS.
HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY DUCT PRESSURE MORE THAN THE SPECIFIED DUCT PRESSURE CLASS.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:
AN ALARM IS INDICATED AT ANY SUPPLY FAN VFD.
AN ALARM IS INDICATED AT RELIEF FAN VFD.
DIFFERENTIAL PRESSURE SWITCH ACROSS PRE–FILTER BANK EXCEEDS 0.6 INCHES W.G. (ADJ.)

SHOULD ANY ONE FOOT SECTION OF THE AUTO RESET LOW LIMIT TEMPERATURE SWITCH #1 SENSE AIR TEMPERATURE <38ºF (ADJ.) THE FOLLOWING SHALL OCCUR:
THE RETURN AIR DAMPER SHALL FULLY OPEN.
THE OUTSIDE AIR AND RELIEF DAMPERS SHALL FULLY CLOSE.
THIS ACTION SHALL OCCUR INDEPENDENT OF THE FMCS AHU CONTROLLER. ONCE THE LOW LIMIT TEMPERATURE SWITCH #1 AIR TEMPERATURE RISES ABOVE SET POINT, OPERATION OF THE OUTSIDE AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL BE RESTORED. HOWEVER, THE ALARM SHALL CONTINUE UNTIL ACKNOWLEDGED AND MANUALLY RESET BY THE FMCS OPERATOR.
SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5'F (ADJ.) ABOVE OR BELOW SETPOINT.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL FULLY CLOSE.
RETURN AIR DAMPER SHALL FULLY OPEN.
HEATING BURNER GAS VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
SUPPLY FAN VFDS SHALL BE DE–ENERGIZED.
INTERLOCKED EXHAUST FANS SHALL BE DE–ENERGIZED.

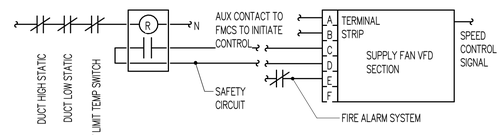
UNOCCUPIED MODE:
PROVIDE TIME OF DAY SCHEDULE TO ALLOW AHU TO ENTER UNOCCUPIED MODE PER SCHEDULE. COORDINATE SCHEDULE WITH OWNER.

THE SUPPLY FAN SHALL CONTINUE RUNNING.
THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN. ECONOMIZER CYCLE SHALL TAKE PRECEDENCE OVER DAMPER POSITION.
ALL SPACE TEMPERATURES SHALL BE ALLOWED TO VARY +/– 10ºF (ADJ.) FROM OCCUPIED SETPOINT.

HEATING OPTIMUM START–UP:
THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO WARM THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 85ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES EXCEED A SETPOINT OF 68ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

COOLING OPTIMUM START–UP:
THIS CYCLE SHALL OVERRIDE THE UNOCCUPIED CYCLE. IF THE SYSTEM WAS OPERATING AS A RESULT OF THE UNOCCUPIED CYCLE, THE SYSTEM SHALL CONTINUE TO OPERATE. THE DDC SYSTEM SHALL DETERMINE THE MINIMUM RUNTIME TO COOL THE SPACES TO THEIR SETPOINT WHEN THE COMPUTED START TIME IS REACHED. THE AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT A SETPOINT OF 55ºF (ADJ.). THE SYSTEM SHALL CONTINUE TO OPERATE IN THIS MODE UNTIL ALL TEMPERATURES ARE LESS THAN A SETPOINT OF 75ºF (ADJ.). AT THAT TIME, THE DDC SYSTEM SHALL SWITCH TO OCCUPIED CONTROL.

GRAPHICAL DISPLAY:
DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE ON AHU GRAPHIC PAGE.



SUPPLY FAN VFD CONTROL

CONNECT FIRE ALARM TO AHU START/STOP CIRCUIT SO FIRE ALARM CAN SHUT DOWN AND SO AHU CAN AUTOMATICALLY RESTART AFTER A FIRE ALARM TEST

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Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
HVAC DIAGRAMS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M500
Rev A

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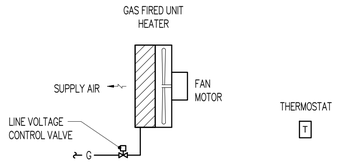
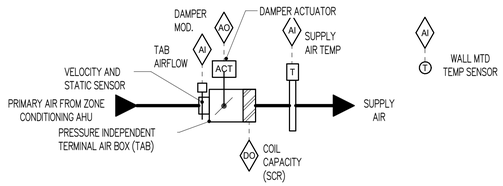


SEQUENCE OF OPERATION:
THE THERMOSTAT SHALL MODULATE THE GAS CONTROL VALVE, BURNER, AND CYCLE THE UNIT FAN TOGETHER TO MAINTAIN A SPACE TEMPERATURE OF 70°F (ADJ.).

UNIT HEATER CONTROL

NO SCALE



SEQUENCE OF OPERATION:

FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB ELECTRIC REHEAT COIL TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/– 1°F (ADJ.) OFFSET FROM THE DDC SETPOINT.

AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL SHALL BE DE–ENERGIZED.

UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL SHALL REMAIN DE–ENERGIZED.

UPON A FURTHER FALL IN SPACE TEMPERATURE, THE ELECTRIC REHEAT COIL AND TAB SHALL MODULATE OPEN IN UNISON TO MAINTAIN SPACE SETPOINT UNTIL TAB AIR FLOW REACHES ITS MAXIMUM HEATING SETTING.

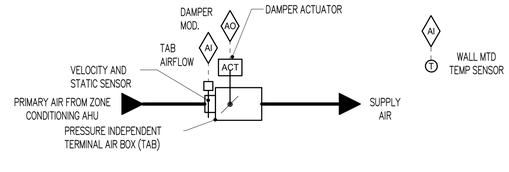
THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
IF THE HIGH TEMPERATURE SAFETY DEVICE EXCEEDS MANUFACTURER'S SETPOINT, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.

TAB CONTROL W/ ELECTRIC REHEAT – TAB–A

NO SCALE



SEQUENCE OF OPERATION:

FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/– 1°F (ADJ.) OFFSET FROM THE DDC SETPOINT.

AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION.

UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE.

THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

TAB CONTROL W/ COOLING ONLY – TAB–B

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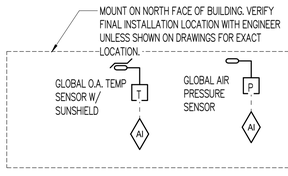


GLOBAL REFERENCE POINTS.

SEQUENCE OF OPERATION:
* PROVIDE GLOBAL O.A. DRY–BULB TEMPERATURE, AND OUTSIDE AIR REFERENCE PRESSURE.

* GLOBAL SENSORS SHALL CONTINUOUSLY UPDATE FMCS FOR USE IN CONTROLLING MECHANICAL EQUIPMENT AS REQUIRED IN SEQUENCES OF OPERATION

OUTSIDE AIR REFERENCE DRY BULB TEMPERATURE
• LOCATE ON THE EXTERIOR NORTH SIDE OF THE BUILDING LOCATION MUST BE SHADED AWAY FROM ANY HEAT SOURCE. LOCATION TO BE DETERMINED PER MANUFACTURER'S RECOMMENDATIONS AND ARCHITECT/ENGINEER'S APPROVAL CONTRACTOR SHALL PRIME AND PAINT THE DEVICE ENCLOSURE COLOR SELECTION BY ARCHITECT/ENGINEER.

BUILDING DIFFERENTIAL PRESSURE WITH SINGLE ROOF SENSOR
• INPUTS TO THE DIFFERENTIAL PRESSURE SENSOR SHALL BE THE AVERAGE OUTSIDE AIR PRESSURE AND THE AVERAGE INTERIOR AIR PRESSURE PIPING BY TCC FINAL LOCATIONS TO BE DETERMINED PER MANUFACTURER'S RECOMMENDATIONS AND ARCHITECT/ENGINEER'S APPROVAL CONTRACTOR SHALL PRIME AND PAINT THE DEVICE ENCLOSURES COLOR SELECTION BY ARCHITECT

GLOBAL REFERENCE POINTS

NO SCALE

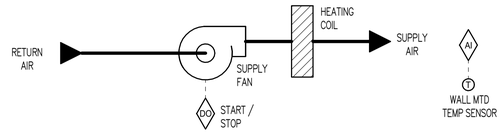
M.C. TO PROVIDE A NEW DDC CONTROL SYSTEM BASED ON CARRIER I–VU SYSTEM. M.C. IS RESPONSIBLE FOR PROVIDING ALL COMPONENTS TO MONITOR AND ALARM THE FOLLOWING:

SYSTEMS MONITORED:
AHU–1
UNIT HEATERS
SS–1
OUTSIDE AIR TEMPERATURE
VAV BOXES
BUILDING PRESSURE
CU–1

ALARM POINTS:
AHU INTERNAL ALARMS
UNDER TEMERATURE ALARM
CONDENSING UNIT GENERAL ALARM

CARRIER I–VU SYSTEM MONITORED AND ALARM POINTS

NO SCALE



SEQUENCE OF OPERATION:

THE CABINET HEATER SHALL BE FURNISHED WITH A UNIT MOUNTED FAN SPEED SELECTOR SWITCH (OFF–HIGH–MED–LOW). THE UNIT SHALL MAINTAIN A SPACE TEMPERATURE OF NO MORE THAN 60°F.

WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 45°F, HEATING SHALL BE DISABLED.

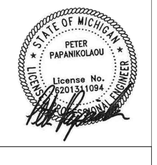
WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 45°F, HEATING SHALL BE ENABLED AND THE FAN SHALL RUN CONTINUOUSLY.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF SPACE TEMPERATURE FALLS 10°F (ADJ.) BELOW SETPOINT.

CABINET HEATER CONTROL – ELECTRIC

NO SCALE



						Dr PHM	Date 12/27/2023	
						Des MRM	12/27/2023	
						App		
		A	04/30/2024	ISSUE FOR BID – FINAL		App		
Drawing No	Reference Drawings	Rev	Date	Description	By	App	Revit 2022 IMEG Project #2300433.00	Plot Scale

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
HVAC DIAGRAMS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet M501
Rev A

AIR HANDLING SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION ---23 05 13.

		SUPPLY FAN (NOTE 1)								ELECTRICAL										ELECTRICAL	HEATING - GAS			
													DISCONNECT(S)		CONTROLLER STARTER(S)									
TAG NAME	AREA SERVED	NO. OF FANS	CFM	EXT. S.P.	TYPE	RPM (NOTE D)	BHP EACH (NOTE E)	MHP EACH (NOTE E)	MINIMUM OUTSIDE AIR CFM	NO. OF POWER CONNECTIONS	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	MINIMUM CIRCUIT AMPACITY	FULL LOAD AMPS	MAXIMUM OVERCURRENT PROTECTION	SCCR	MINIMUM EFFICIENCY AFUE	MINIMUM OUTPUT MBH	TURN DOWN/STEPS	GAS PRESSURE IN. W.C.
AHU–1	CREW ROOM	1	1350	1.0	PLENUM	1150	0.6	1	800	1	480	3	MFR	NF	MFR	FV	6 A	4.8 A	15 A	5000	80	81	4	7

AIR HANDLING SCHEDULE - CONT.

	COOLING COIL								FILTER			MAX. DIMENSIONS			WEIGHT			
									FINAL-FILTER									
										PRESSURE DROP								
TAG NAME	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	TOTAL MBH	MAX. A.P.D. IN. W.C.	REFRIGERANT	CIRCUITING	TYPE	DIRTY	CLEAN	LENGTH	WIDTH	HEIGHT	OPERATING	MANUFACTURER	MODEL	NOTES
AHU–1	86.9	71.6	57.3	55.0	74	4.4	R–410a	SINGLE	MERV–11	0.5	0.24	8' 3"	4' 4"	5' 1"	1572	VALENT	VX–112–SDX–C–J1	

AIR COOLED CONDENSER SCHEDULE

						ELECTRICAL										MAX. DIMENSIONS (INCHES)					
												DISCONNECT		CONTROLLER/ STARTER							
TAG NAME	AREA SERVED	REFRIGERANT TYPE	DESIGN TONS	# OF CIRCUITS	MIN. OPER. AMBIENT TEMP °F	NO. OF POWER CONNECTIONS	VOLTAGE	PHASES	FLA	MCA	MOCP	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	LENGTH	WIDTH	HEIGHT	MANUFACTURER	MODEL	NOTES
CU–1	AHU–1	PURON	7.5	1	–20	1	480 V	3	12.6 A	17 A	25 A	MFR	NF	MFR	5000	59"	45	45	CARRIER	38AUZ	

FAN SCHEDULE

								ELECTRICAL (NOTE 1)											
												DISCONNECT		CONTROLLER/ STARTER					
TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN RPM (NOTE F)	DRIVE TYPE	MAX. AMCA SONES	BACKDRAFT DAMPER TYPE	BHP (NOTE E)	MHP (NOTE E)	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	WEIGHT	MANUFACTURER	MODEL	NOTES
EF–1	TOILET ROOM	120	0.63	940	DIRECT	3	GRAVITY	0	0.006	120	1	E.C.	NF	MFR	5000	12	GREENHECK	SP–110	
EF–2	TOILET ROOM	120	0.63	940	DIRECT	3	GRAVITY	0	0.006	120	1	E.C.	NF	MFR	5000	12	GREENHECK	SP–110	
EF–3	BUILDING PRESSURE	1200	0.27	1750	DIRECT	13.7	MOTORIZED	0.14	0.5	120	1	E.C.	NF	MFR	5000	64	GREENHECK	AER–20–VG	PROVIDE WITH WEATHER HOOD AND BIRD SCREEN
EF–4	IT ROOM	105	0.25	1050	DIRECT	3.9	GRAVITY	0.016	0.16	120	1	E.C.	NF	MFR	5000	59	GREENHECK	SQ–80–VG6X–QD	FAN TO BE CONTROLLED WITH A WALL SWITCH IN IT ROOM WHEN HVAC EQUIPMENT IS INOPERABLE

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Dr PHM 12/27/2023
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HVAC SCHEDULES

Scale: AS NOTED
Work Order # 41198794
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Sheet M600
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UNIT HEATER SCHEDULE - GAS FIRED

TAG NAME	AREA SERVED	CFM	HEATING (MBH)		ELECTRICAL								GAS PRESSURE	MAX. DIMENSIONS			WEIGHT	MANUFACTURER	MODEL	NOTES
									DISCONNECT		CONTROLLER/ STARTER									
			INPUT	OUTPUT	HP	RPM	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR		LENGTH	WIDTH	HEIGHT				
UH–1	MEZZANINE	455	30	25	0.06	1550	120	1	EC	NF	MFR	5000	0.5	27	25	13	57	REZNOR	UDAS	
UH–2	STORAGE	455	30	25	0.06	1550	120	1	EC	NF	MFR	5000	0.5	27	25	13	57	REZNOR	UDAS	

AIR TERMINAL SCHEDULE

NOTES:
1.CONTRACTOR SHALL DETERMINE PROPER BORDER TYPE TO MATCH CEILING CONSTRUCTION.
2.REFER TO DRAWINGS FOR NECK SIZE. ALL BRANCH DUCTWORK TO AIR TERMINALS SHALL BE NECK SIZE UNLESS NOTED OTHERWISE.

TAG NAME	FACE SIZE (IN.) (NOTE 2)	TYPE	BORDER (NOTE 1)	MATERIAL	FINISH	VOLUME DAMPER REQUIRED	MANUFACTURER	MODEL	NOTES
RG–1	INLET +2	LOUVER FACE	1 1/4"	STEEL	WHITE	NO	TITUS	350R	PROVIDE WITH PRICE RETURN AIR CANOPY
RG–2	INLET +2	LOUVER FACE	1 1/4"	STEEL	WHITE	NO	TITUS	350R	DUCTED RETURN
RG–3	SEE DWG	35 DEGREE DEFLECTION	SURFACE MOUNT	STEEL	WHITE	NO	TITUS	350	LONG BLADES
RG–4	SEE DWG	35 DEGREE DEFLECTION	SURFACE MOUNT	STEEL	WHITE	NO	TITUS	350RLF2	INSTALL WITH 2" FILTER
SD–1	24x24	LOUVER FACE	LAY–IN	STEEL	WHITE	NO	TITUS	TMS	STAMPED LOUVER DROP FACE. MINIMUM OF TWO STEPDOWN DIFFUSION CONES
SD–2	18	LOUVER FACE	1 1/4"	STEEL	WHITE	NO	TITUS	TMRA	MINIMUM OF THREE STEPDOWN DIFFUSION CONES
SG–1	SEE DWG	35 DEGREE DEFLECTION	SURFACE MOUNT	STEEL	WHITE	NO	TITUS	350	LONG BLADES

TERMINAL AIR BOX SCHEDULE - SINGLE DUCT ELECTRIC REHEAT

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.TOTAL AIR PRESSURE DROP OF TAB AND REHEAT COIL SHALL NOT EXCEED 0.50" WC.
3.REFER TO CONTROL DRAWINGS FOR DESCRIPTION OF CONTROL TYPE.
4.SENSOR TYPES: 1 - SENSOR ONLY, 2 - SENSOR WITH ADJUSTMENT, 3 - SENSOR WITH OVERRIDE, 4 - SENSOR WITH ADJUSTMENT AND OVERRIDE.

TAG NAME	AREA SERVED	CFM			EAT °F	LAT °F	HEATING COIL (SCR)		ELECTRICAL				MINIMUM CIRCUIT AMPACITY	MAXIMUM OVERCURRENT PROTECTION	ELECTRICAL	MINIMUM INLET SIZE (IN.) DIA.	CONTROL TYPE (NOTE 3)	SENSOR TYPE (NOTE 4)	WEIGHT	MANUFACTURER	MODEL (NOTES 1, 2)	NOTES
							TOTAL KW (QTY * KW)				DISCONNECT											
		COOLING MAX.	HEATING MAX.	MIN.			QTY	KW	VOLTAGE	PHASE	BY (NOTE A)	TYPE (NOTE B)			SCCR							
TAB–1	HOTELS	80	80	50	56.8	96.3	1	1	120	1	MFR	NF	10.4 A	15 A	5000	4"	TAB–A	2	45	TITUS	DESV	NOTES 1, 2
TAB–2	FIELD LEADER 1	80	80	50	56.8	96.3	1	1	120	1	MFR	NF	10.4 A	15 A	5000	4"	TAB–A	2	45	TITUS	DESV	NOTES 1, 2
TAB–3	FIELD LEADER 2	80	80	50	56.8	96.3	1	1	120	1	MFR	NF	10.4 A	15 A	5000	4"	TAB–A	2	45	TITUS	DESV	NOTES 1, 2
TAB–4	FIELD LEADER 3	80	80	50	56.8	96.3	1	1	120	1	MFR	NF	10.4 A	15 A	5000	4"	TAB–A	2	45	TITUS	DESV	NOTES 1, 2
TAB–5	CREW ROOM	830	830	145	56.8	91.1	1	9	240	1	MFR	NF	46.9 A	50 A	5000	8"	TAB–A	2	55	TITUS	DESV	NOTES 1, 2
TAB–6	PRIVACY ROOM	50	50	50	56.8	88.6	1	0.5	120	1	MFR	NF	5.2 A	15 A	5000	4"	TAB–A	2	45	TITUS	DESV	NOTES 1, 2

TERMINAL AIR BOX SCHEDULE - SINGLE DUCT

NOTES:
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TAG NAME	AREA SERVED	CFM			MIN. INLET SIZE (IN.) DIA.	CONTROL TYPE (NOTE 3)	SENSOR TYPE (NOTE 4)	WEIGHT	MANUFACTURER	MODEL (NOTES 1, 2)	NOTES
		COOLING MAX.	HEATING MAX.	MIN.							
TAB–7	IT ROOM	100	0	0	4"	TAB–B	2	20	TITUS	DESV	NOTES 1, 2

CABINET HEATER SCHEDULE - ELECTRIC

NOTES:
1.COORDINATE COLOR SELECTION WITH ARCHITECT.

TAG NAME	AREA SERVED	CONFIGURATION	NOMINAL CFM	CABINET (NOTE 1)		HEATING ELEMENT			ELECTRICAL						WEIGHT	MANUFACTURER	MODEL	NOTES
							TOTAL KW (QTY * KW)				DISCONNECT		CONTROLLER/ STARTER					
				HEIGHT	WIDTH	NUMBER OF STAGES	QTY	KW	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	OPERATING			
CAB–1	VESTIBULE	RECESSED	65.0	12"	9"	1	1	1	240	1	EC	NF	MFR	5000	10	BERKO	QCH	NOTE 1

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Scale: AS NOTED
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Sheet M601
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VIEW KEY

NAME — LEVEL NAME
10'–0" — HEIGHT ABOVE PROJECT 0'–0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
- NEW
- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
- NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
- EXISTING
- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
- EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'–E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG–1 UNDERLINED TAG INDICATES OBJECT IS IN–SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

PLUMBING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CA	COMPRESSED AIR
CW	COLD WATER – POTABLE
D	DRAIN
DT	DRAIN TILE
G	NATURAL GAS
GRV	GAS REGULATOR VENT
GV	GREASE VENT
HW	HOT WATER – POTABLE
HWC	HOT WATER CIRCULATING – POTABLE
PD	PUMPED DISCHARGE
SAN	SANITARY DRAINAGE
ST(1,000)	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
STS	STORM DRAINAGE (SECONDARY)
V	VENT
	PIPE CONTINUATION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
FD	PIPE SERVING FIXTURE ON FLOOR ABOVE (EXAMPLE: FD = FLOOR DRAIN)
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
RD–1 6"(1000	ROOF DRAIN PROPERTIES — SYMBOL / SIZE (ROOF SQ. FT.)
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
GPM	BALANCING VALVE (NUMBER INDICATES GPM)
	CHECK VALVE
	BACKFLOW PREVENTER
	SOLENOID VALVE
	SAFETY/RELIEF VALVE
	VACUUM BREAKER
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
	REDUCER – REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PUMP
M	METER
	ALIGNMENT GUIDE
	PIPE ANCHOR
	AIR ADMITTANCE VALVE

PLUMBING ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CO	CLEANOUT
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DN	DOWN
E	EXISTING
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FM	FLOW METER
FS	FLOOR SINK
GD	GARBAGE DISPOSER
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
LAV	LAVATORY
MB	MOP BASIN
MH	MANHOLE
MV	MIXING VALVE
NIC	NOT IN CONTRACT
RD	ROOF DRAIN
SCCR	SHORT CIRCUIT CURRENT RATING
SH	SHOWER
SK	SINK
SS	SERVICE SINK
TD	TRENCH DRAIN
TP	TRAP PRIMER
TYP	TYPICAL
UR	URINAL
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WASH FOUNTAIN
WH	WATER HEATER
WMF	WASHING MACHINE FIXTURE
WM	WATER METER
WS	WATER SOFTENER
UB	UTILITY BOX
UON	UNLESS OTHERWISE NOTED

PLUMBING SHEET INDEX

P000	PLUMBING COVERSHEET
P101	UNDERFLOOR PLANS – PLUMBING
P111	LEVEL 01 PLANS – PLUMBING
P112	MEZZANINE PLANS – PLUMBING
P400	PLUMBING DETAILS
P600	PLUMBING SCHEDULES
GRAND TOTAL: 6	

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
4. THE GENERAL CONTRACTORIS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
5. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
7. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED. REFER TO CE OUTAGE REQUIREMENTS FOR PRE–NOTIFICATION TIMEFRAME AND PLANNING MEETINGS.
8. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
9. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
10. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ). ALSO PROVIDE DOCUMENTATION TO THE OWNER FOR THEIR RECORDS INCLUDING APPLIANCE EQUIPMENT INFORMATION WITH AMOUNT OF REFRIGERANT ON APPLIANCE DISPOSAL REPORT, SERVICE TECHNICHIAN'S LICENSE/CERTIFICATION ON CONTRACTOR INPUT FORM, AND RECOVERY EQUIPMENT USED ON RECOVERY/RECYCLING EQUIPMENT INPUT FORM. DOCUMENTATION TO BE PLACED ON OWNER'S ONSITE REFRIGERANT COMPLIANCE MANUAL.

PLUMBING GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
3. CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.
4. ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874
5. INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
6. VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING ANY WORK.
7. REFER TO THE PLUMBING ROUGH–IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO PLUMBING FIXTURES.
8. EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL DEMOLITION INFORMATION.
9. P.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON–INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL WALL AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON–FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK COIL AND FAN PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'–6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'–0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'–0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'–0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

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					Des MRM 12/27/2023	
					App	
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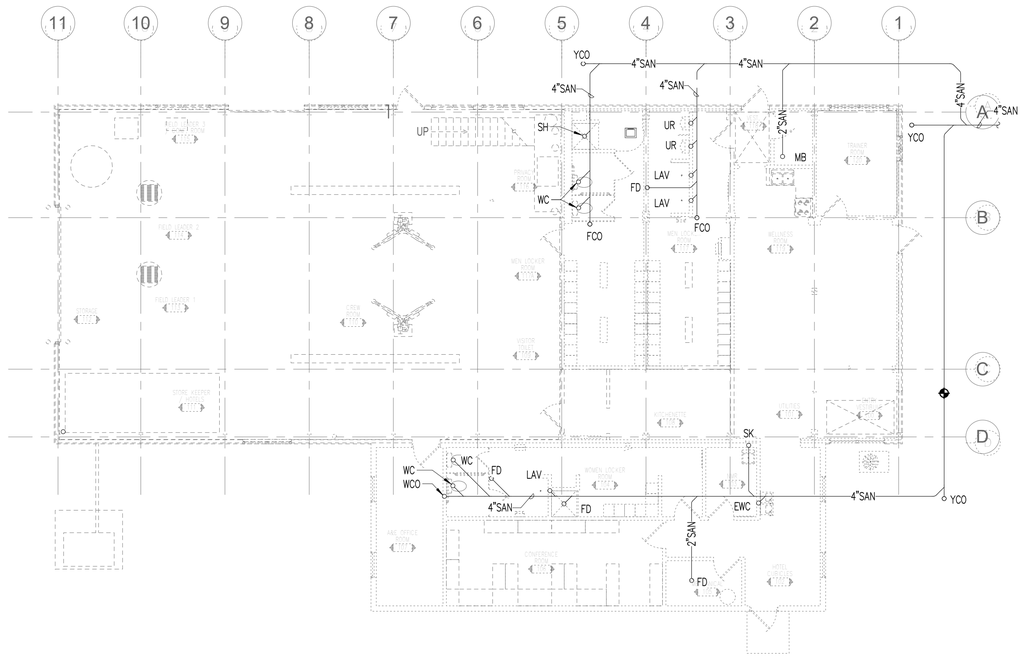
Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

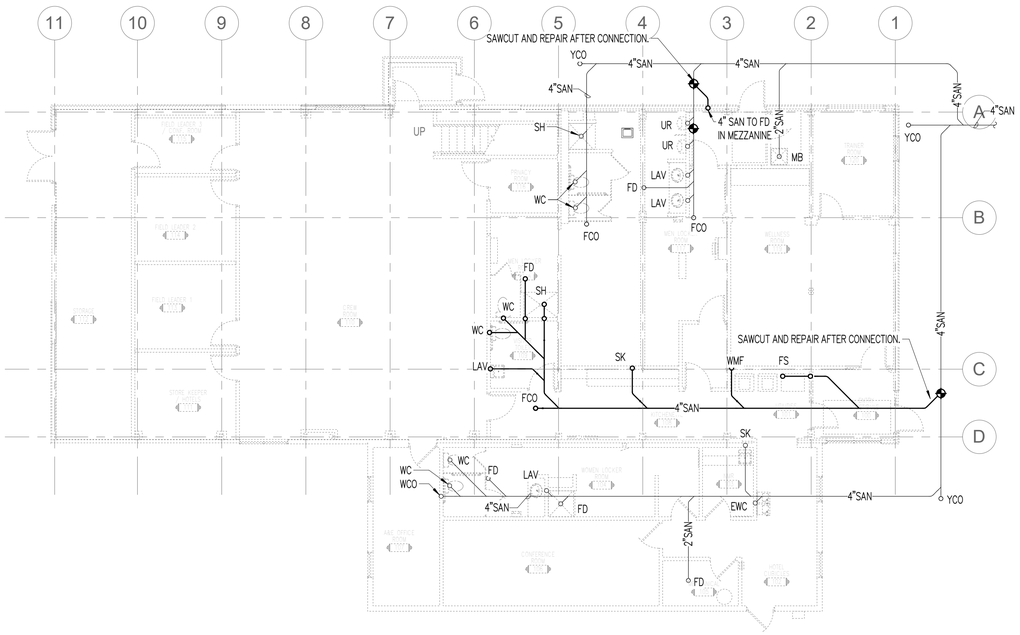
Sheet Title
PLUMBING COVERSHEET

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P000
Rev A



UNDERFLOOR DEMOLITION PLAN – PLUMBING

1/8" = 1'-0"



UNDERFLOOR PLAN – PLUMBING

1/8" = 1'-0"

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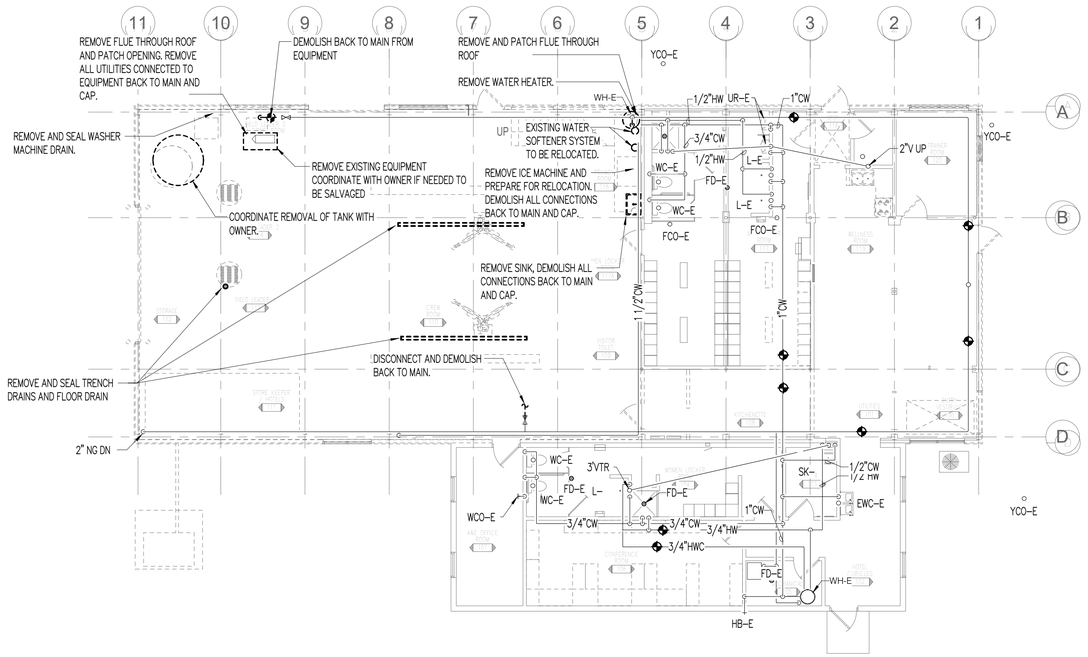
MARION BUILDING "1" CREW ROOM EXPANSION

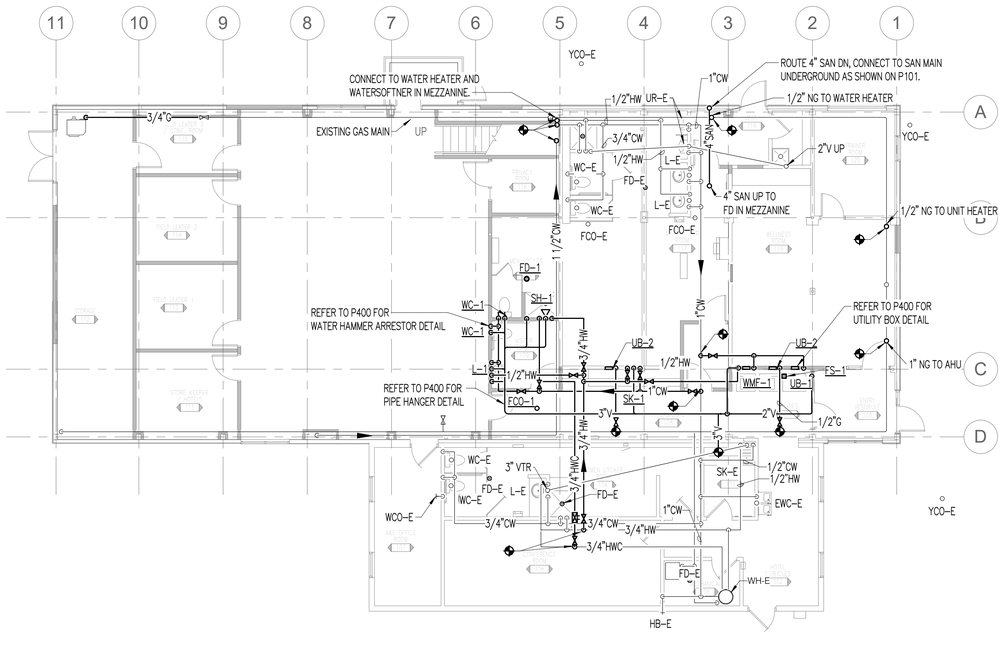
Sheet Title
UNDERFLOOR PLANS – PLUMBING

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P101
Rev A



LEVEL 01 DEMOLITION PLAN – PLUMBING

1/8" = 1'-0"



LEVEL 01 PLAN – PLUMBING

1/8" = 1'-0"

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MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
LEVEL 01 PLANS – PLUMBING

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P111
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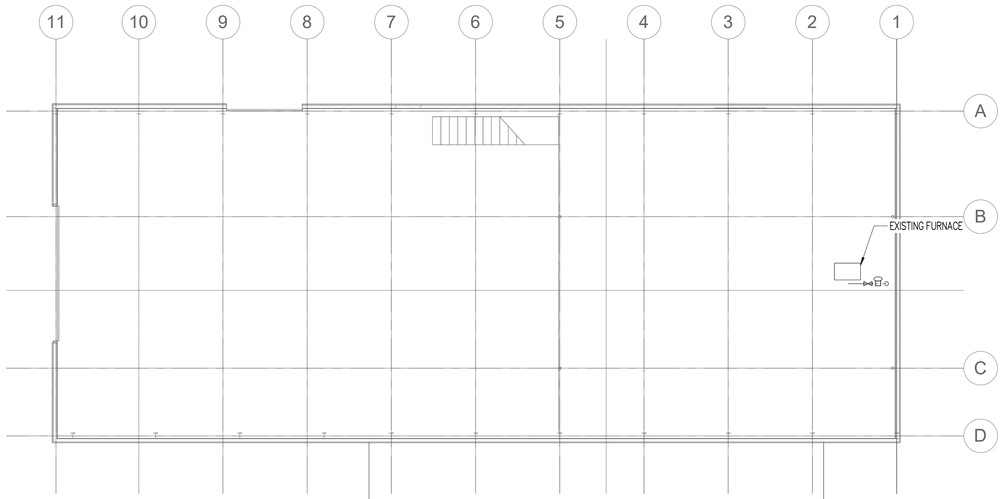
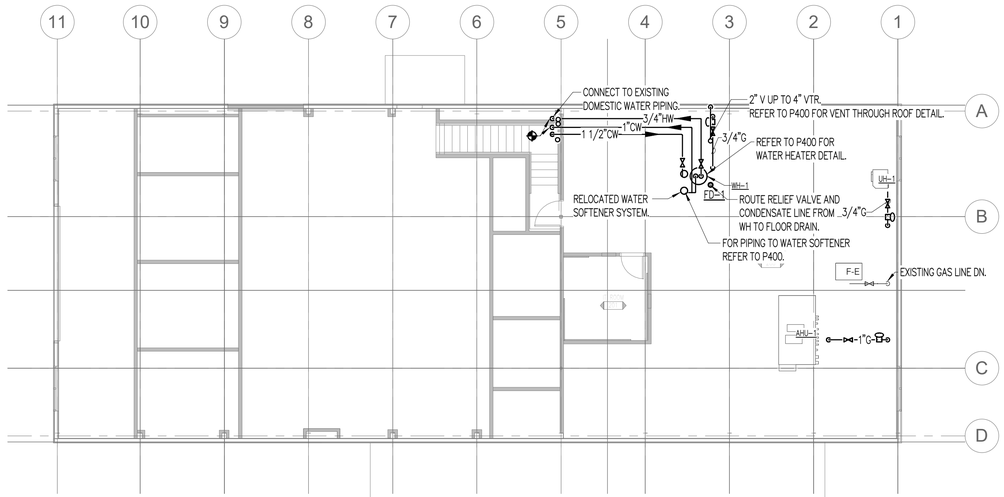


MEZZANINE DEMOLITION PLAN – PLUMBING

1/8" = 1'-0"



MEZZANINE PLAN – PLUMBING

1/8" = 1'-0"

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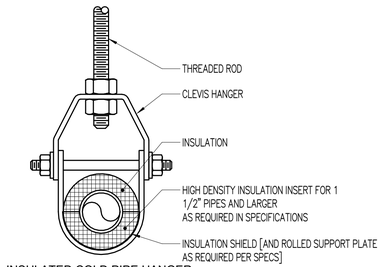
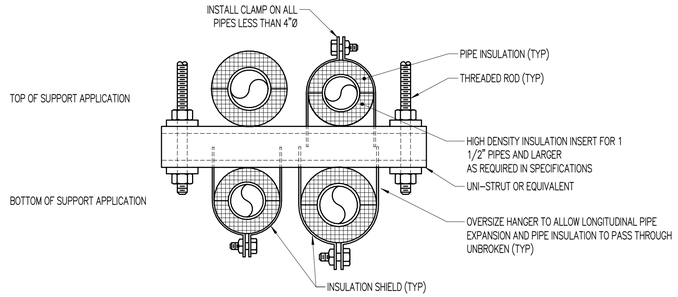
Sheet Title
MEZZANINE PLANS – PLUMBING

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P112
Rev A



INSULATED COLD PIPE HANGER



TRAPEZE HANGER

PIPE – HANGERS AND SUPPORTS

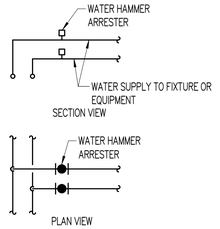
NO SCALE

NOTES:

1. REFER TO SPECIFICATION SECTIONS 22 05 29 & 22 07 19.

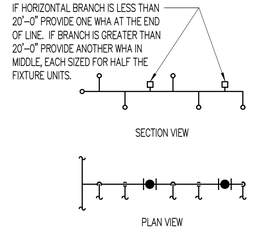
PROVIDE WATER HAMMER ARRESTER (WHA–#) AT PLUMBING FIXTURES AND QUICK CLOSING VALVES AS INDICATED ON DRAWINGS AND AS RECOMMENDED BY STANDARD PDI–WH201. REFER TO PLUMBING MATERIAL LIST FOR WATER HAMMER ARRESTER DESCRIPTION.

SINGLE / DOUBLE FIXTURE



PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1–11
B	3/4"	12–32
C	1"	33–60

MULTIPLE FIXTURES

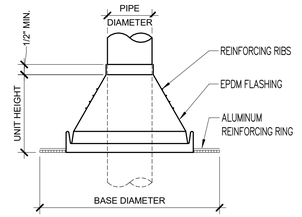


FIXTURE UNIT CALCULATION		
FIXTURE	COLD	HOT
WATER CLOSET (TANK)	5	---
URINAL	5	---
LAVATORY	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	3
KITCHEN SINK	2	2
ICE MAKER / BEVERAGE	1	–

INSTALL WHA'S PER PDI STANDARDS AND MANUFACTURER'S INSTRUCTIONS. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE WHA AS SHOWN PER THE TABLES ABOVE. PROVIDE ACCESSIBILITY TO WHA WITH ACCESS PANEL OR INSTALL ABOVE ACCESSIBLE CEILING.

WATER HAMMER LOCATION AND SCHEDULE

NO SCALE

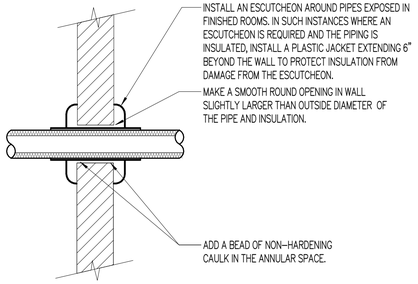


NOTES:

1. UNIT TO BE COMPATIBLE WITH BUILDING ROOF.

VENT PIPE FLASHING THROUGH METAL ROOF

NO SCALE

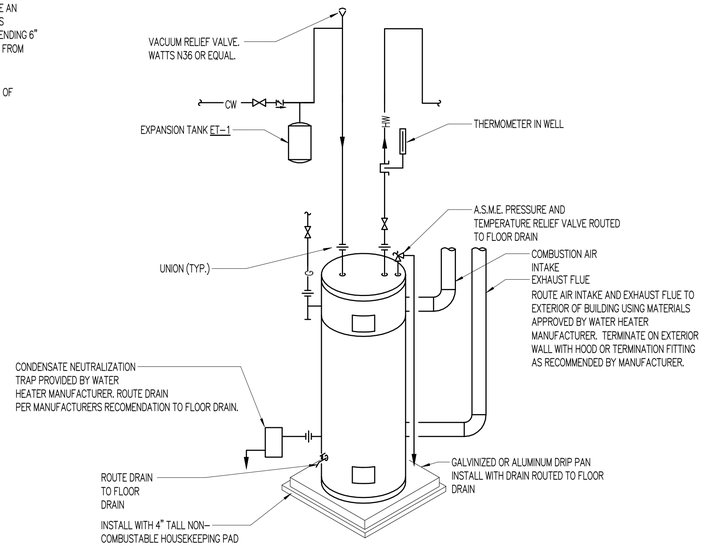


NOTES:

1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION WITHOUT DAMAGING INSULATION, AND TO SEAL AIRTIGHT AROUND INSULATED AND UNINSULATED PIPES FOR NOISE TRANSMISSION CONTROL.
2. SEE SPECIFICATION SECTIONS (SECTION 22 05 29 – PLUMBING) FOR ADDITIONAL INFORMATION.
3. FLOOR OPENINGS ARE SIMILAR, SEE SPECIFICATION SECTION (SECTION 22 05 29 – PLUMBING) FOR DIFFERENCES BETWEEN FLOOR AND WALL PENETRATIONS.

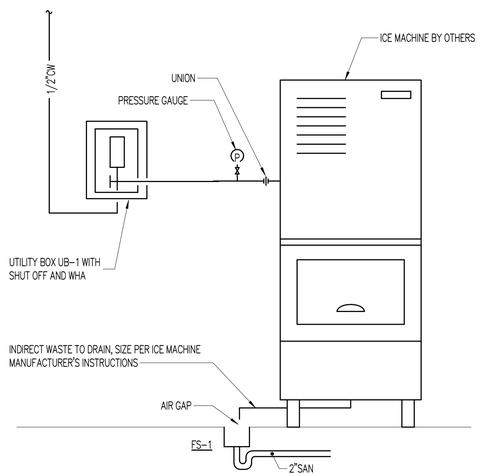
WALL PENETRATION – NON–FIRE RATED

NO SCALE



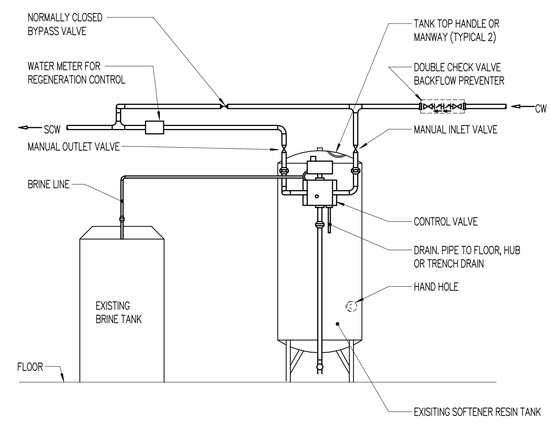
WATER HEATER – GAS TANK

NO SCALE



UTILITY BOX – ICE MACHINE

NO SCALE



WATER SOFTENER

NO SCALE

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Proj. Building/Location
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MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PLUMBING DETAILS

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P400
Rev A

PLUMBING MATERIAL LIST

TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
ET–1	EXPANSION TANK – WELDED STEEL CONSTRUCTION, GUARANTEED AIRTIGHT AND LEAKPROOF, STAINLESS STEEL SYSTEM CONNECTION, HEAVY DUTY BUTYL DIAPHRAGM AND RIGID POLYPROPYLENE LINER MECHANICALLY BONDED TO TANK TO PROVIDE A 100% NON–CORROSIVE WATER RESERVOIR, DIAPHRAGM AND LINER SHALL BE APPROVED FOR USE IN POTABLE WATER SYSTEMS, ALL WETTED COMPONENTS OF FDA APPROVED MATERIALS. PROVIDE STANDARD SCHRADER AIR VALVE FOR FIELD CHARGING. TANK SHALL COMPLY WITH FEDERAL ACT S.3874. MINIMUM TANK VOLUME TO BE 2 GALLONS MINIMUM ACCEPTING VOLUME TO BE 2 GALLONS TANK SHALL HAVE A WORKING TEMPERATURE OF 200°F AND A WORKING PRESSURE OF 150 PSIG. FACTORY PRE–CHARGED FOR SHIPPING. FIELD CHARGE TANK TO 55 PSIG.	EXPANSION TANK – AMTROL (THERM–X–TROL ST–5), B&G (PT), FLEXTRON (FTT), WATTS (PLT), WESSELS (T)
FCO–1	FLOOR CLEANOUT – ADJUSTABLE, CAST IRON HOUSING, ANCHOR FLANGE, TAPERED THREAD PLUG, SECURED NICKEL BRONZE TOP. TOP STYLE SHALL MATCH FLOOR FINISH AS FOLLOWS: UNFINISHED FLOOR – ROUND SOLID SCORIATED TOP TILE OR TERRAZZO – ROUND RECESSED TOP CARPET – ROUND TOP WITH CARPET MARKER.	ZURN (Z1400), JOSAM (55000), MIFAB (C1100), SMITH (4000), WADE (6000), WATTS (CO–200)
FD–1	FLOOR DRAIN – CAST IRON BODY, NICKEL BRONZE ADJUSTABLE TOP, 6" ROUND, 4" BOTTOM OUTLET, FLASHING COLLAR. TRAP SEAL – 4", PLASTIC HOUSING WITH FLEXIBLE DIAPHRAGM, SEALING GASKETS, RECLOSES AND SEALS WHEN DISCHARGE IS COMPLETED, ASSE 1072.	FLOOR DRAIN – ZURN (Z–415), SMITH (2005), WADE (1100), JOSAM (30000), WATTS (FD–100), MIFAB (F1100), SUN (FD1000) TRAP SEAL – SURE SEAL (SS), PROVENT (TRAP GUARD), SMITH (QUAD CLOSE), GREEN DRAIN, MIFAB (MI–GARD), ZURN (Z1072)
FS–1	FLOOR SINK – CAST IRON BODY, NICKEL BRONZE RIM AND GRATE, 8" ROUND, 2" BOTTOM OUTLET, MEDIUM RECEPTOR WITH STAINLESS STEEL MESH SEDIMENT BUCKET, 1/2 GRATE, ACID RESISTANT COATED INTERIOR, SEEPAGE FLANGE WITH CLAMP.	ZURN (Z1960), SIOUX CHIEF (860–29 SERIES), SMITH (3041), WADE (9010), JOSAM (49520A), WATTS (FS–720), SUN (FS2500), MIFAB (FS1750)
L–1	LAVATORY – ACCESSIBLE, WALL MOUNTED, WHITE VITREOUS CHINA, 20"x18", 4" HIGH CONTOURED BACKSPLASH, 4" ON CENTER DRILLED HOLES, DRILLED FOR CONCEALED ARM CARRIER. LAVATORY TRIM – SINGLE HANDLE MIXING FAUCET, BRASS CONSTRUCTION, CHROME–PLATED FINISH, CONVENTIONAL SPOUT WITH AERATOR, WASHERLESS PUSH–PULL LEVER HANDLE WITH SUPPLIES AT 4" CENTERS, CERAMIC DISC CARTRIDGE, PERFORATED GRID STRAINER WITH 1–1/4" 17 GAUGE TAILPIECE. MAXIMUM FLOW TO BE 0.5 GPM IN COMPLIANCE WITH ENERGY POLICY ACT OF 2005 AND ASME/ANSI STANDARD A112.18.1M. FAUCET SHALL COMPLY WITH FEDERAL ACT S.3874. PROVIDE RESTRICTIVE DEVICE AS REQUIRED. INSULATION KIT – PRE–MANUFACTURED FOR P–TRAP, STOP VALVES AND SUPPLY LINES. ACCESSORIES – QUARTER–TURN 3/8" CHROME PLATED HEAVY BRASS ANGLE SUPPLY STOPS, CHROME PLATED SOFT COPPER SUPPLY LINES, DRAIN AND OFFSET TAILPIECE, 1–1/4" 17 GAUGE CAST BRASS P–TRAP, SUPPORT CARRIER. MOUNT LAVATORY WITH SUPPORT CARRIER BOLTED SECURELY TO FLOOR. TOP OF RIM SHALL BE AT 34" ABOVE FLOOR IN COMPLIANCE WITH LATEST ADA STANDARD. PROVIDE 29" MINIMUM CLEARANCE FROM FLOOR TO BOTTOM OF APRON IN COMPLIANCE WITH LATEST ANSI A117.1 AND ADA STANDARDS. ARMAFLEX WITH TAPE IS NOT ACCEPTABLE IN LIEU OF INSULATION KIT.	LAVATORY – AMERICAN STANDARD (0355.012), KOHLER (K–2005), SLOAN (SS–3003), TOTO (LT307), ZURN (Z5364) LAVATORY TRIM – DELTA (22C131), AMERICAN STANDARD (7385), CHICAGO FAUCET (420), KOHLER (K–15597), MOEN (8413), SPEAKMAN (S–3561), SYMMONS (S–20), ZURN (Z7440–XL) INSULATION KIT – TRUEBRO (LAV–GUARD), BROCAR PRODUCTS (TRAP WRAP), MCGUIRE (PROWRAP), PLUMBEREX (PRO–EXTREME)
SH–1	SHOWER VALVE – SINGLE HANDLE THERMOSTATIC/PRESSURE BALANCED MIXING FAUCET, BRASS OR BRONZE CONSTRUCTION, WASHERLESS DESIGN, OFF–COLD–HOT TEMPERATURE RANGE INDICATOR DIAL, POLISHED CHROME CAST METAL LEVER HANDLE, INTEGRAL CHECK–STOPS, ADJUSTABLE SAFETY LIMIT STOP, ASSE 1016–T/P LISTED. ACCESSORIES – CHROME–PLATED BRASS SHOWERHEAD WITH SWIVEL BALL JOINT, ADJUSTABLE SPRAY, CHROME–PLATED BRASS ARM AND FLANGE. INSTALL BOTTOM OF SHOWERHEAD AT 72" ABOVE FINISHED FLOOR. MAXIMUM FLOW TO BE 2.5 GPM IN COMPLIANCE WITH ENERGY POLICY ACT OF 2005 AND ASME/ANSI STANDARD A112.18.1M. SET SAFETY LIMIT STOP TO 110 DEGREE F DISCHARGE.	SHOWER VALVE – POWERS (E710–K1), CHICAGO FAUCET (2502–600CP), LAWLER (7800), ACORN CONTROLS (SV16–LVR SERIES)

PLUMBING MATERIAL LIST

TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
SK–1	SINK – SELF–RIMMING DOUBLE COMPARTMENT WITH FAUCET DECK, 18 GAUGE TYPE 304 STAINLESS STEEL, SOUND DEADENING ON BOTTOM OF BASIN, 36" (SIDE–TO–SIDE) x 20" (FRONT–TO–BACK) OVERALL SIZE, EACH COMPARTMENT 15" x 13" x 9" DEEP, 3–1/2" DIAMETER DRAIN OUTLET LOCATION CENTERED IN EACH BOWL,REMOVABLE TYPE 304 STAINLESS STEEL BASKET STRAINERS WITH NEOPRENE STOPPERS. SINK TRIM – SINGLE HANDLE MIXING FAUCET, BRASS CONSTRUCTION, CHROME–PLATED FINISH, CONVENTIONAL SWING SPOUT, NOMINAL 10" REACH, AERATOR, LEVER HANDLE, SINGLE HOLE SUPPLIES. MAXIMUM FLOW TO BE 2.2 GPM IN COMPLIANCE WITH ENERGY POLICY ACT OF 2005 AND ASME/ANSI STANDARD A112.18.1M. FAUCET SHALL COMPLY WITH FEDERAL ACT S.3874. PROVIDE RESTRICTIVE DEVICE AND ESCUTCHEON PLATE AS REQUIRED. ACCESSORIES – OFFSET 1–1/2" 17 GAUGE CHROME–PLATED BRASS TAILPIECE AND P–TRAP, QUARTER–TURN BALL VALVE TYPE 3/8" CHROME–PLATED BRASS ANGLE SUPPLIES WITH STOPS, CHROME–PLATED SOFT COPPER SUPPLY LINES.	SINK – ELKAY (LR/LK18B), JUST (DL/J–35–SSF), FRANKE (LBD) SINK TRIM – DELTA (400LF–HDF), AMERICAN STANDARD (4175.501), CHICAGO FAUCET (432–ABCP), ELKAY (LK1001CR), KOHLER (K–15172), MOEN (67430), SPEAKMAN (S–3762), SYMMONS (S–23)
UB–1	UTILITY BOX – UNPAINTED GALVANIZED STEEL OR WHITE PAINTED STEEL ENCLOSURE, MATCHING FACEPLATE, ANGLE VALVE WITH 1/4" COMPRESSION OUTLET, INTREGAL WATER HAMMER ARRESTOR. PROVIDE A 6 FOOT STAINLESS STEEL FLEXIBLE HOSE FOR CONNECTION TO EQUIPMENT.	GUY GRAY (BIM875AB), OATEY (39140 WITH 38686 FACEPLATE)
UB–2	UTILITY BOX (NATURAL GAS) – WHITE POWDER COATED STEEL CONSTRUCTION, 5"W BY 5"H BY 3–1/8"D BOX DIMENSIONS, 1/2" PIPE SIZE, BRASS ANGLE SHUT OFF VALVE 1/4 TURN SHUT OFF VALVE, 6 FOOT STAINLESS STEEL FLEXIBLE HOSE FOR CONNECTION TO EQUIPMENT.	TRACPIPE (FGP–WBTM–500)
WC–1	WATER CLOSET – ACCESSIBLE, FLOOR MOUNTED, TANK TYPE, SIPHON JET, WHITE VITREOUS CHINA, CLOSE COUPLED, ELONGATED BOWL, BOLT CAPS, 12" ROUGH–IN, CHROME PLATED TRIP LEVER, LOCKING TANK COVER, 1.6 GALLONS PER FLUSH (MAXIMUM) IN COMPLIANCE WITH ENERGY POLICY ACT OF 1992. SEAT – WHITE, EXTRA HEAVY, OPEN FRONT, INJECTION MOLDED SOLID ANTI–MICROBIAL PLASTIC, SELF–SUSTAINING HINGE, STAINLESS STEEL OR PLATED STEEL POSTS AND NUTS. ACCESSORIES – QUARTER–TURN 3/8" CHROME–PLATED HEAVY BRASS ANGLE SUPPLY WITH STOP, CHROME–PLATED SOFT COPPER SUPPLY LINE. TOP OF SEAT SHALL BE AT 17"–19" ABOVE FINISHED FLOOR. FLUSH HANDLE SHALL BE LOCATED ON THE WIDE SIDE OF THE TOILET STALL AND OPERATE WITH NO GREATER THAN A 5 LB FORCE IN COMPLIANCE WITH LATEST ADA STANDARDS. VERIFY EQUIPMENT REQUIREMENTS AND ROUGH–IN LOCATIONS.	WATER CLOSET – AMERICAN STANDARD (2467.016), CERBER (21–318), ZURN (Z5560) SEAT – BEMIS (3155SSCT), CHURCH (3155C), BENEKE (533PC), OLSONITE (95), SAME AS WATER CLOSET MANUFACTURER
WH–1	WATER HEATER – GAS FIRED, CONDENSING, VERTICAL, MINIMUM 94% EFFICIENT, SEALED COMBUSTION, METAL CABINET, BAKED ENAMEL FINISH, ASME STAMPED GLASS–LINED STEEL OR STAINLESS STEEL TANK, 160 PSI WORKING PRESSURE, FIBERGLASS OR FOAM INSULATION, BRASS WATER CONNECTIONS AND DRAIN VALVE, ASME APPROVED T&P RELIEF VALVE, MULTIPLE MAGNESIUM ANODE RODS, VENT PIPING KIT, HIGH TEMPERATURE GAS SHUT OFF, AUTOMATIC WATER THERMOSTAT, BUILT–IN GAS REGULATING VALVE, ADJUSTABLE TEMPERATURE RANGE, 3–YEAR WARRANTY, UL LISTED, COMPLIANT TO NAECA, ASHRAE 90.1 AND ASHRAE 90A. 50 GALLON CAPACITY, 76,000 BTUH INPUT NATURAL GAS, 81 GPH RECOVERY AT 100°F RISE. ELECTRICAL REQUIREMENTS – CIRCUIT FOR BLOWER AND CONTROLS, HARD–WIRED. SET WATER TEMPERATURE AT 120°F. SET SUPPLY GAS PRESSURE AT 7" W.C. CONDENSATE DRAIN NEUTRALIZATION TANK – RATED FOR MAXIMUM 4,000 MBH WATER HEATER AND 32 GPH CONDENSATE FLOW, POLYPROPYLENE RECTANGULAR TANK, 1"FNPT INLET AND OUTLET, REMOVABLE ACCESS COVER FOR CLEANING AND PELLET REPLACEMENT, 12.5 LBS PH NEUTRALIZING PELLETS.	WATER HEATER – A.O. SMITH (CYCLONE MXI BTH), BOCK (OT SERIES), BRADFORD WHITE (EF SERIES), HTP (PHOENIX PLUS), PVI (CONQUEST), RHEEM (GHE), STATE (SUF), LOCHINVAR (SWR SERIES) NEUTRALIZATION TANK – JJM BOILER WORKS (NB–4), NUTRASAFE (CN4T)
WHA–1	WATER HAMMER ARRESTOR PISTON TYPE, PRE–CHARGED WITH 60 PSIG AIR, LEAD FREE, COPPER BODY, BRASS OR HIGH HEAT POLY–PROPYLENE PISTON WITH DUAL EPDM O–RING SEALS LUBRICATED WITH FDA APPROVED SILICONE LUBRICANT. PDI CERTIFIED, A.S.S.E. 1010 APPROVED FOR SEALED WALL INSTALLATION, RATED FOR 1–11 FIXTURE UNITS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	WATTS (LF15M2–DR), SIOUX CHIEF (650 SERIES), MIFAB (MWH), PPP (SC SERIES), ZURN WILKINS (1250XL), JR SMITH (5201–5250), WADE (WP5–100), JOSAM (75000–S)
WMF–1	WASHING MACHINE FIXTURE – WHITE POWDER COATED STAINLESS STEEL ENCLOSURE, MAT2" CENTER DRAIN, INLET STRAINER, TWO INDEXED 1/2" DOMESTIC VALVES WITH THREADED OUTLETS, INTEGRAL WATER HAMMER ARRESTORS. PROVIDE FLEXIBLE WATER AND WASTE LINES FOR FINAL CONNECTION TO EQUIPMENT.	GUY GRAY (MWB SERIES)

STATE OF MICHIGAN
PETER PAPANIKOLAOU
License No. 6201341094
LICENSED PROFESSIONAL ENGINEER

Drawing No	Reference Drawings	Rev	Date	Description	By	App
		A	04/30/2024	ISSUE FOR BID – FINAL		

Dr PHM 12/27/2023
Des MRM 12/27/2023
App
App
Revit 2022
IMEG Project #230043100
Plot Scale

Consumers Energy
JACKSON, MICHIGAN

Proj. Building/Location
MARION PRODUCTION T&S
7950 N. PARTRIDGE RD.
MARION, MI 49665
MARION BUILDING "1" CREW ROOM EXPANSION

Sheet Title
PLUMBING SCHEDULES

Scale: AS NOTED
Work Order # 41198794
Drawing Number
Sheet P600
Rev A

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	)))))	Case No. U-21981

DIRECT TESTIMONY

OF

TIMOTHY K. JOYCE

ON BEHALF OF

CONSUMERS ENERGY COMPANY

December 2025

Q. Please state your name and business address.

A. My name is Timothy K. Joyce, and my business address is 17000 Croswell Street, West Olive, Michigan 49460.

Q. By whom are you employed and in what capacity?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as Director of Regulatory Operations in the Gas Delivery Department.

Q. Please describe your educational background.

A. In 2000, I received a Bachelor of Science Degree in Mechanical Engineering from Purdue University. In 2014, I received a Master of Business Administration Degree from Grand Valley State University.

Q. Please describe your business experience.

A. My professional working career began in 2001 as a Boiler Engineer for Consumers Energy. In this position, I performed boiler inspections and contractor oversight/weld quality during maintenance outages. In 2003, I joined the Operations Department as a Production Engineer at the J.H. Campbell ("Campbell") Plant. In this position, my responsibilities included troubleshooting of equipment, filling in as a shift supervisor, and acting as backshift outage manager. In 2007, I accepted a position as Production Lead at Campbell. In this position, my responsibilities included management of day-to-day operations at Campbell Units 1 and 2. In 2008, I moved into a Gas Compression Engineer position for Consumers Energy. My responsibilities included engineering and construction of new compressor stations at White Pigeon Compressor Station ("White Pigeon") Plant 3 and Ray Natural Gas Compressor Station ("Ray") Plant 3.

In 2011, I accepted the position of Project Lead Engineering on the Air Quality Control System project for Campbell Units 1 and 2. This role involved leading the engineering, procurement, installation, and start-up of air emissions reduction equipment on each unit.

In 2016, I moved into the role of Senior Strategy Manager. In this position, my responsibilities include asset lifecycle oversight, guidance and leadership of the Natural Gas Delivery Plan ("NGDP"), implementation, recovery, and verification of results focused on the Company's investment and operation of compression and storage assets.

In 2025, I accepted the position of Director of Regulatory Operations. In this position, my responsibilities include leading the rate case development process, regulatory strategy, and oversight of the long-term financial plans for the gas business.

Q. Have you testified in other cases before the Michigan Public Service Commission ("MPSC" or the "Commission")?

A. Yes. I have recently provided testimony in Case No. U-20322, Case No. U-20650, Case No. U-21148, Case No. U-21308, Case No. U-21490, and Case No. U-21806. In these cases, I have provided testimony and exhibits concerning capital investments for the Company's Gas Compression and Gas Storage assets, operating and maintenance ("O&M") costs for the Company's Gas Compression, Lost and Unaccounted for ("LAUF") Gas, Company Use Gas expenses, Storage Field Inventories, and Cost of Gas Sold.

Q. What is the purpose of your direct testimony in this proceeding?

A. The purpose of my direct testimony is to explain the Company's request for rate relief as it relates to the Company's Gas Compression & Storage ("GCS") assets, and I have divided this portion of my direct testimony into five parts:

(i) A description of the Company's GCS assets;

(ii) A description of functions within Gas Compression and Gas Storage;

(iii) A description of O&M expenses for Cost of Gas Sold and Underground, LAUF, and Company Use Gas for the years 2024 through the projected test year (November 1, 2026 through October 31, 2027). (**NOTE:** Compression and Storage O&M is addressed by Company witness James P. Pnacek);

(iv) A description of GCS capital expenditures for the years 2024 through the projected test year (November 1, 2026 through October 31, 2027) base; and

(v) A description of certain Information Technology ("IT") Projects that support gas compression operations.

Q. Are you sponsoring any exhibits with your direct testimony?

A. Yes. I am sponsoring the following exhibits:

Exhibit A-97 (TKJ-1)		Summary of Actual & Projected Gas O&M Expenses for Lost and Unaccounted for Gas & Company Use Gas for the Test Year 12 Months Ending October 31, 2027;
Exhibit A-98 (TKJ-2)		Calculation of Gas Loss Percentage August 2020 through July 2025;
Exhibit A-99 (TKJ-3)		Calculation of Allowance for Gas Use and Losses for the Test Year 12 Months Ending October 31, 2027;
Exhibit A-12 (TKJ-4)	Schedule B-5.5	Projected Capital Expenditures Gas Compression and Gas Storage Summary of Actual & Projected Gas Capital Expenditures;
Exhibit A-100 (TKJ-5)		Storage Well Rehabilitation Program Detail; and
Exhibit A-101 (TKJ-6)		Storage Fields Month End Summary.

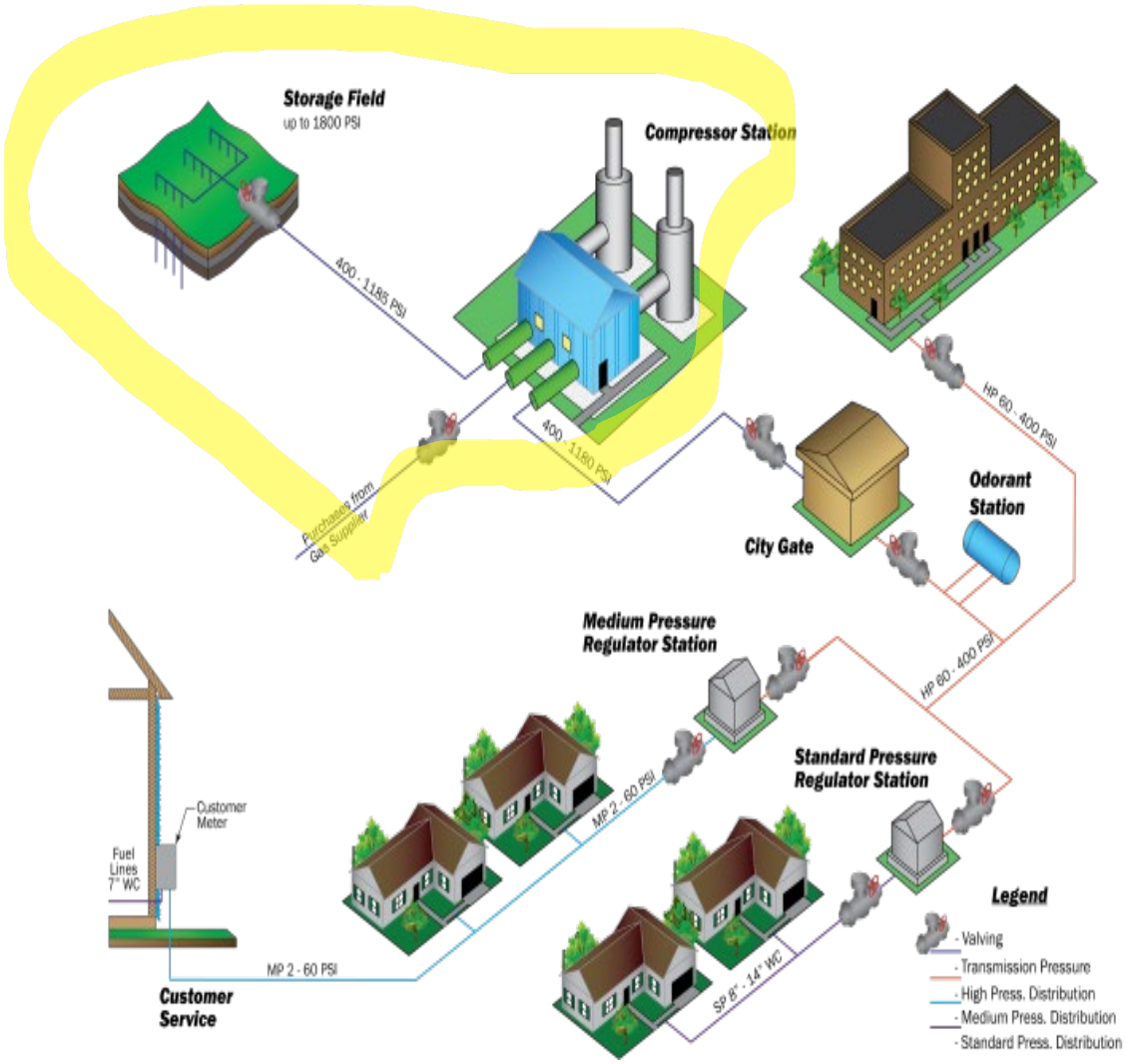
Q. Were these exhibits prepared or assembled by you or under your direction or supervision?

A. Yes. The exhibits listed above were prepared either by me or under my direction and supervision.

(i) GCS ASSETS

Q. Please provide an overview of the Company's GCS assets.

A. The Company operates and maintains 8 compressor stations, 15 storage fields, and 783 wells as of January 2025, throughout Michigan's Lower Peninsula. As of October 2025, the compression fleet is comprised of 40 natural gas-fired engines which generate 147,393 Brake Horsepower ("BHP"), providing the pressure necessary to move gas in and out of the storage fields and to receive supply from interstate pipeline sources onto the Company's transmission pipeline system. The transmission pipeline system connects the gas supplies to Consumers Energy's storage fields, gas distribution system, and other customer loads. In the diagram below, the Storage and Compression systems are inside the yellow highlighted section.



The Company's storage fields are used to balance the difference between the incoming system supplies and customer demand on a continuous, real-time basis. The storage fields are naturally occurring porous rock formations that are located deep underground. These rock formations hold natural gas, much like sponges hold water, and have a total working gas volume of 154 BCF. Consumers Energy purchases 100% of the natural gas it provides to customers. Natural gas, which is placed in storage, flows through one or more of the Company's numerous wells. The Company's GCS fleet is comprised of the following:

Compressor Stations:

Name	***Location***	***Number of Units***	***Horsepower (BHP)***
Freedom	Manchester, MI	5	18,750
Muskegon River	Marion, MI	7	27,276
Northville	Northville, MI	4	10,800
Overisel	Hamilton, MI	4	10,800
Ray	Armada, MI	5	23,675
St. Clair	Ira, MI	6	27,282
White Pigeon	White Pigeon, MI	8	27,775
Huron	Sebewaing, MI	1	1,035

Gas Storage Fields:

Type	***Storage Field Name***	***Working Gas Volume (Bcf)****	***Base Gas Volume (Bcf)****	***Total Gas Volume (Bcf)****	**Number of Wells**	**Max Field Rate (MMcfd)****
Base	**Winterfield**	**25.30**	**47.00**	**72.30**	**239**	**266**
	Overisel	**25.50**	**27.50**	**53.30**	**141**	**230**
	Salem	**11.60**	**18.90**	**30.50**	**71**	**130**
	Cranberry	**11.00**	**17.20**	**28.20**	**127**	**106**
	Riverside	**1.50**	**7.50**	**9.00**	**49**	**13**
Intermediate	**Hessen**	**13.50**	**3.48**	**16.98**	**24**	**455**
	Puttygut	**9.50**	**5.10**	**14.60**	**24**	**310**
	Four Corners	**2.39**	**1.39**	**3.78**	**6**	**68**
	Swan Creek	**0.42**	**0.23**	**0.65**	**1**	**20**
	Ray	**48.10**	**17.27**	**65.37**	**62**	**1975**
Peaker	**Ira**	**2.00**	**4.25**	**6.25**	**15**	**480**
	Lyon 29	**1.23**	**0.95**	**2.18**	**3**	**270**
	Lenox	**1.20**	**2.03**	**3.23**	**11**	**247**
	Lyon 34	**0.70**	**0.66**	**1.36**	**5**	**120**
	Northville Reef	**0.50**	**0.72**	**1.22**	**5**	**210**
***NOTE:** All gas volumes are in MMcf at 14.73 psi saturated pressure base.						
****NOTE:** Max Field Rate is the maximum capability at full inventory and pressure and would decline over the withdrawal season and depend on the final inventory level at the beginning of withdrawal.						

(ii) GAS COMPRESSION AND STORAGE

Gas Compression

Q. Please describe the primary functions of gas compression.

A. Gas compression is responsible for the safe operation, maintenance, and performance of the Company's natural gas-fired engines. These units provide the pressure necessary to move gas in and out of the storage fields, to move gas from interstate pipeline sources onto the Company's transmission pipeline system, and ultimately, to move the natural gas to the city gate facilities feeding distribution systems that transport gas to the Company's customers.

Q. Please describe the Company's objectives for gas compression assets.

A. The Company's objective for its gas compression assets is to realize the most value out of the Company's substantial storage capacity in terms of resilience and buffering summer/winter price fluctuations. Continually improving the safety of compression assets and reducing operational risks is critical. The Company's objectives for Compression of improving the system's reliability, resiliency, and optimal utilization are:

a. Accelerate implementation of preventative maintenance programs and gradually integrate predictive technologies. Consumers Energy will modernize its compression maintenance practices by shifting from reactive, break-fix cycles to proactive, analytics-driven approaches.

b. Decommission retired and mothballed compressor units to streamline operations and reduce system risk. Seven retired units at Muskegon River Compressor Station ("Muskegon River") and White Pigeon are scheduled for decommissioning. Additional units at Freedom, Ray, and St. Clair Compressor Station ("St. Clair") have successfully been decommissioned as part of system optimization efforts.

c. Optimize compressor units at Muskegon River following the retirement of the Riverside Storage Field; Muskegon River remains critical for supporting Winterfield and Cranberry Lake storage operations.

d. Evaluate contingency options to mitigate outage risks and enhance station-level resilience. The Company is conducting comprehensive assessments of compression, storage, and transmission systems to identify failure points and improve system resilience.

e. Assess feasibility of retiring additional assets to concentrate investment on critical infrastructure and improve overall fleet performance. Consumers Energy will annually evaluate compression assets for potential retirement to focus investment on high-priority units.

f. Regulatory Compliance: Ensure compressor station compliance with the proposed Michigan nitrogen oxides ("Nox") Reasonable Available Control Technology ("RACT") Rule. Overisel Station, located in an ozone non-attainment area, is undergoing modifications to meet proposed NOx emission limits. Four slow-speed engines will be equipped with combustion controls to ensure compliance. Muskegon River is executing a Closed Loop Cooling project in response to Michigan Department of Environment, Great Lakes, and Energy ("EGLE") requirements to lower river water discharge temperatures. It will eliminate the use of surface water for cooling processes.

Q. Does the NGDP discuss gas compression assets?

A. Yes, gas compression is addressed in Section IV of the Company's NGDP, Exhibit A-30 (TMB-1), sponsored by Company witness Trevor M. Blattner.

Gas Storage

Q. Please describe the primary functions of Gas Storage Engineering.

A. Gas Storage Engineering has responsibility for the integrity, maintenance, and performance of the Company's 15 storage fields and 783 wells. This includes storage well maintenance and well logging and compliance with well integrity regulations. Further details about Gas Storage Engineering O&M expenses are included in Company witness Kristine A. Pascarello's testimony.

Q. Please provide further insight into well maintenance.

A. Well maintenance is comprised of many different programs and has been the topic of media attention in recent years with the Aliso Canyon event. Well logging is one of the primary components of well maintenance. Well logging is an industry term that describes a method

used to help assess storage well integrity. Storage well integrity is a critical component to ensuring public safety.

Q. Please provide more detail on well logging.

A. Well logging includes the use of gamma ray-neutron log for identification of gas accumulation behind casings, corrosion logs for internal and external casing corrosion, and cement bond logs to assess integrity of cement between the casing, surrounding rock, or additional casings. Additionally, well rehabilitation work is performed in conjunction with well logging to mitigate the formation of skin damage. Skin damage is a term used to describe the reduction in the ability of the reservoir rock to store and deliver gas. Rehabilitation removes solids, scale build-up, and compressor oils in the well that accumulated during the normal process of injecting and withdrawing gas from storage. By removing this build-up, the gas moves more efficiently and reduces the risk of moving debris into the compressors, thereby increasing safety and extending the life of the assets.

Q. Do storage well integrity regulations currently exist?

A. Yes. On December 19, 2016, the Department of Transportation's Pipeline and Hazardous Materials Safety Administration ("PHMSA") published in the Federal Register an interim final rule ("IFR") that revises the federal pipeline safety regulations to address critical safety issues related to downhole facilities, including wells, wellbore tubing, and casing, at underground natural gas storage facilities. This IFR was in response to the June 22, 2016, enactment of the Protecting our Infrastructure of Pipelines and Enhancing Safety ("PIPES") Act of 2016 that included a requirement for PHMSA to set federal minimum safety standards for underground natural gas storage facilities. Requirements included in the IFR were amended to final rule by PHMSA on February 12, 2020.

Q. Did PHMSA set federal minimum safety standards?

A. Yes. PHMSA published the underground natural gas storage facilities rule (49 Code of Federal Regulations ("CFR") 192.12) which incorporates by reference the requirements within the American Petroleum Institute ("API") Recommended Practice ("RP") 1171.

Q. Is Consumers Energy compliant with the standards set forth in 49 CFR 192.12?

A. Yes. Consumers Energy has reviewed the requirements outlined in 49 CFR 192.12 and the applicable API RP 1171. The Company developed procedures governing operations, maintenance, integrity demonstration and verification, monitoring, threat and hazard identification, assessment, remediation, site security, emergency response and preparedness, and recordkeeping consistent with the requirements of API RP 1171 1st edition, Sections 8, 9, 10, and 11 by January 18, 2018, for all existing underground natural gas storage facilities. Integrity assessments of the underground storage wells began in 2017 to support the anticipated compliance timeframe, for completing all risk management activities as required in API RP 1171. The compliance date has now been set for March 2027.

Q. Has PHMSA performed an audit of the Company's storage system?

A. Yes. In May 2019, PHMSA performed a program overview audit, followed by field audits, on six gas storage fields and the associated site-specific programs. The audit focused on Sections 8 through 11 of API RP 1171. In 2020, there were field specific audits at the Four Corners, Swan Creek, Hessen, Ira, and Puttygut fields. In 2021, the MPSC jointly with EGLE performed field specific audits at the Riverside, Lyon 34, Lyon 29, and Northville Reef.

Q. What was the result of the 2019 audits?

A. The Company created a Detailed Action Plan based on PHMSA recommendations of best industry practice. Topics outlined in the plan include: Risk Management for Gas Storage Operations, Integrity Demonstration, Verification, Monitoring Practices, Site Security and Safety, Site Inspections, Emergency Preparedness and Response, and Procedures and Training.

Q. Were any changes made to the Well Rehabilitation Program based on the PHMSA 2019 audit recommendations?

A. Yes. PHMSA recommended the wells in the Riverside field be addressed by the program (risk priority as identified in the risk analysis) until the plan to discontinue operation of the field is executed. As a result, the Company added wells to the 2019 and future-year Well Rehabilitation Program work scopes. PHMSA also recommended the addition of annular piping to surface where casing pressures will be recorded and monitored, as per the requirement in API RP 1171. These items are now being addressed by the program as they are encountered, which has an impact on the average cost per well. The Company established a new annulus pressure monitoring program for 2022 and future years to address compliance, including the wells already rehabilitated in 2017 and 2018.

Q. Have there been any additional audits performed on the Company storage system?

A. Yes. Every year an audit of a portion of the Company's Storage Integrity Management Plan ("SIMP") program is conducted by the MPSC and EGLE. The scope of the audits include Procedures, Records, and Field Observations. At the conclusion of the 2025 audits, the Company did not receive any enforcement or non-compliances and received 10 recommendations that were primarily procedural in nature and did not impact the funding required for the current test year.

Q. Is the Company projecting O&M expenses related to well logging in this case?

A. Yes. Well logging O&M expenses are sponsored by Company witness Pascarello in the well re-assessment section.

Q. Does gas storage have additional responsibilities?

A. Yes, gas storage is also responsible for the gas storage field inventory verification process.

Q. Please describe the gas storage field inventory verification process.

A. As a prudent operating practice and following the regulatory requirements of API RP 1171 as referenced in 49 CFR 192.12, Consumers Energy performs storage field pressure surveys at the conclusion of each injection cycle (usually August through November), and each withdrawal cycle (usually March through June). Storage well pressures are collected, the average field pressure is determined, and the results are plotted against the metered volumes. Plotting storage field pressure and inventory data provides a means of monitoring and trending storage field performance over time. It is through this process that the inventory balances at the storage fields are identified for adjustment.

Q. Why is the performance of storage field inventory verification a prudent practice?

A. Verification of storage field inventory after each injection and withdrawal cycle provides important data used to monitor the current condition of the storage reservoir. In addition, storage field inventory verification provides a means of determining flow meter measurement accuracy, and whether losses between the transmission and storage systems may be occurring as a result of valve leakage. Without inventory verification, there is the potential for gas to have migrated out of the storage reservoir, which would pose potential risk to public safety. In addition, if inventory is not verified and a leakage were to occur unknowingly, customers could be at risk of paying for gas that is lost.

Q. What are the recent results from the gas storage inventory verification process?

A. The storage fields have experienced deviations from the accounting booked figures. The Company typically adjusts gas storage inventory based on a deviation occurring for three consecutive years (considered long-term). Routine changes in operating parameters during a given injection or withdrawal season may cause short-term storage field pressure variations. These short-term pressure variations may cause the natural gas to migrate deeper into the reservoir rock formation, temporarily impacting the inventory survey results. Company personnel have investigated the integrity of these fields and believe most of the inventory adjustment is attributed to metering accuracy limitations or valves not sealing properly. The storage field inventory adjustment is shown in Exhibit A-98 (TKJ-2).

Q. Why does the storage inventory deviation occur?

A. A common cause of the deviations and subsequent storage field inventory adjustments can be valves not sealing properly. As part of the pressure survey work each spring and fall, the sealing capability of the valves used to isolate the storage field are inspected. The primary cause of valve leakage, as with the field meter, is debris affecting the sealing mechanisms in the valves. In addition, the electrical or hydraulic mechanical operators used to open and close the valves can go out of alignment, not allowing the valve to fully close. When storage field isolation valves are found to be not sealing, the valves are adjusted or repaired.

Q. Please describe the Company's objectives for gas storage assets.

A. The gas storage system today includes 15 storage fields totaling approximately 154 billion cubic feet of working gas storage capacity. Storage assets play an important role in customer affordability, enabling the purchase and storage of gas when prices are lower,

and delivery of that gas in the winter. On average, storage has supplied approximately 50% of customer gas deliveries during winter (November through March) and up to approximately 80% on peak days. Storage also allows Consumers Energy to store or withdraw gas throughout the day to reconcile the difference between customer demand and the fixed pipeline supply.

As part of the NGDP (and in view of the PHMSA Storage Audit based on API RP 1171), the Company ran an initial assessment on four of the low-cyclic fields with the results showing the need to consider the retirement of at least one storage field at this time. Based on the outcome of this initial assessment, Consumers Energy has evaluated retirement and optimization of its storage fields over time based on certain factors like customer load, market price changes over time, increasing operating costs, reliability, and total cost to customers. The Company has made the decision to move forward with the sale of Riverside Storage Field; further details and projected expenses are outlined later in my testimony. With the remaining storage portfolio, Consumers Energy will remain focused on reliable operation, increasing resiliency, while optimizing deliverability.

Q. Does the NGDP discuss gas storage assets?

A. Yes. Gas storage is addressed in Section IV of the Company's NGDP, Exhibit A-30 (TMB-1), sponsored by Company witness Blattner.

Q. What value do customers receive from the Company's GCS assets?

A. GCS assets support the Company's ability to ensure adequate supplies of natural gas are available for customers when needed. They are also an important foundation to maintaining affordable prices, as they allow the Company to take advantage of favorable seasonal market conditions, while procuring adequate supplies in advance to meet

customers' needs. Finally, storage fields are critical to mitigating winter price cycles, summer outage schedules, and maintaining supply during unexpected supply interruptions.

(iii) O&M EXPENSES FOR COST OF GAS, LOST AND UNACCOUNTED FOR AND COMPANY USE

Q. Are there any Employee Incentive Compensation Program ("EICP") O&M expense dollars included in your exhibits?

A. No, there are not. The direct testimony and exhibits of Company witness Amy M. Conrad contain the Gas Transmission and Distribution EICP O&M expense dollars.

COST OF GAS AND COST OF GAS STORED UNDERGROUND

Q. Please describe Exhibit A-101 (TKJ-6).

A. Exhibit A-101 (TKJ-6) includes a forecast of the Company's September 2025 through October 2027 underground gas storage volumes and dollars.

Q. Would you briefly explain the background for Exhibit A-101 (TKJ-6)?

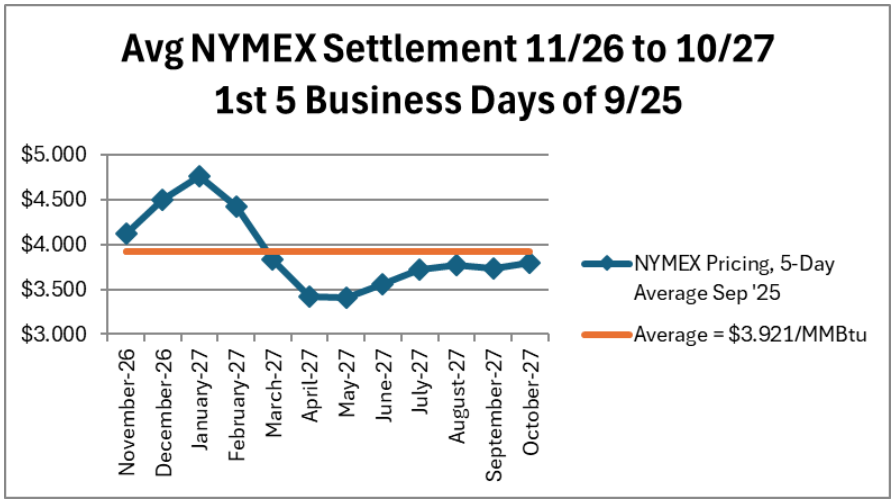
A. Yes. Exhibit A-101 (TKJ-6) reflects the end of the month underground gas storage volumes and dollars that result from the Company's natural gas purchases for its Gas Cost Recovery ("GCR") and Gas Customer Choice ("GCC") customers. The costs and volumes reflect the Company's existing supply and transportation contracts for the historical period, as well as those of the GCC suppliers. Projected supply sources and prices are used for the future periods.

Q. What is the Company's projected test year 13-month average volume and cost of gas in storage, as set forth on Exhibit A-101 (TKJ-6)?

A. Through October 2027, the Company is projecting a 13-month average cost of gas in storage of $3.385/Mcf ($436,920,528/129,064,815 Mcf).

Q. What gas prices were assumed for November 2026 through October 2027 in developing your Exhibit A-101 (TKJ-6)?

A. The average New York Mercantile Exchange ("NYMEX") settlement prices for November 2026 through October 2027, as of the first five business days of September 2025, were used. These NYMEX natural gas prices, as shown in the graph below, averaged $3.921/MMBtu for November 2026 through October 2027.



For the November 2026 through October 2027 GCR requirements (199,440,384 Mcf), 0% has been purchased at a fixed price, therefore 100% of the GCR requirements would be subject to the NYMEX average.

Q. What is the Company's projected average cost of gas sold for October 2026 through September 2027?

A. The Company is projecting an average cost of gas sold for November 2026 through October 2027 of $3.690/Mcf ($842,444,270/228,297,195 Mcf). The Company's cost of gas sold reflects locational pricing differences between NYMEX (Henry Hub) and other supply locations (basis), transportation costs, unused reservation charges, and the GCR accounting treatment of net system uses. The projected average cost of gas sold is

determined by including the costs and volumes associated with purchase requirements and net storage activity during the period, and thus reflects the same variables and assumptions relied on to calculate ending inventory values.

Q. Please provide additional detail about the average cost of gas sold and cost of gas stored underground.

A. Both the average cost of gas sold and cost of gas stored underground reflect the natural gas supply and transportation contracts in place within the historic period for GCR and GCC supply. The Company's existing supply and transportation contracts are planned to leverage storage and system investments in today's gas market to provide customers with safe, reliable, and affordable natural gas service pursuant to the Company's NGDP.

The cost of gas stored underground is used within the Company's projected test year working capital included in Company witness Heather L. Rayl's Exhibit A-12 (HLR-34), Schedule B-4. The average cost of gas sold of $3.690/Mcf is used in the calculation of the Company's revenue requirement and to price out Company Use and LAUF gas volumes supported later in my testimony.

LAUF Gas

Q. Please explain LAUF gas as shown on Exhibit A-97 (TKJ-1), line 1.

A. LAUF gas is the loss or gain of gas volumes calculated as the difference between the volumes delivered into the transmission and distribution system less the volumes delivered out of those systems. Factors such as gas leaks, customer billing issues, customer theft, meter and measurement accuracy, and gas vented for operational, maintenance, and safety purposes all contribute to the causes of LAUF gas volumes.

Q. Please describe the LAUF expenses that are projected for the test year.

A. The test year expenses related for LAUF gas are calculated based on a five-year average of actual LAUF volumes multiplied by the Company's projected commodity cost of gas. Projected LAUF expenses can be found on Exhibit A-97 (TKJ-1). As shown on that exhibit (line 1, column (c)), the test year projected LAUF expense level is $12,899,000. The 2024 historical year amount was $13,329,000 as shown in Exhibit A-97 (TKJ-1), (line 1, column (b)).

Q. Please explain Exhibit A-97 (TKJ-1).

A. This exhibit identifies the projected changes from the historical 2024 amount for LAUF expenses to the test year period. The test year LAUF amount was calculated using the methodology consistent with the July 31, 2017 Order in Case No. U-20322, updated with the most recent five-year average Gas Loss percentage and expected test year cost of gas expense, as provided earlier in my direct testimony. Additionally, this exhibit contains the Company Use Gas projected expenses for the test year. Company Use Gas will be discussed later in my direct testimony.

Q. Please explain Exhibit A-98 (TKJ-2).

A. This exhibit demonstrates the calculation of the most recent five-year average Gas Loss percentage (line 6, column (g)) of 1.63%. This percentage, when applied to test year throughput levels, determines the expected LAUF and Company Use Gas volumes during the test year.

Q. Please explain Exhibit A-99 (TKJ-3).

A. This exhibit shows the calculation of the projected test year amount of LAUF expense (line 14, column (h)) with the methodology adopted in Case No. U-20322. The test year

throughput level and the updated Gas Loss percentage previously discussed have both been used to determine LAUF volumes and the associated expense levels. In addition, as shown on line 11, the Allowance for Use and Losses percentage, also known as the Gas-in-Kind ("GIK") percentage, has been updated to reflect test year projections of 2.38%.

Q. Is the level of LAUF expense the Company is requesting reasonable?

A. Yes. The Gas Loss average is based on actual losses on the gas transmission and distribution system over the past five years. The MPSC has consistently recognized a five-year average of Gas Losses to set LAUF volumes, and the Company continues to use that same methodology, updated to reflect the most recent data.

Q. Why have you included the net storage inventory adjustments in the LAUF figures as noted on Exhibit A-98 (TKJ-2)?

A. In Case Nos. U-18124 and U-20322, the Commission approved inclusion of storage inventory adjustments in the period in which they are recognized by the Company, within the five-year line loss calculation.

Q. How does the Company determine its storage inventory adjustments?

A. The Company's storage inventory adjustments are determined through the gas storage field inventory verification process. This process is described in the Gas Storage section of my direct testimony.

Q. What specific actions does the Company take to monitor and mitigate LAUF gas?

A. The Company has ongoing actions to monitor and reduce LAUF gas. Some of these actions include:

- A gas measurement team that primarily focuses on assuring (i) measurement accuracy and (ii) that industry practices are maintained relative to LAUF related issues. Company personnel actively participate on the American Gas

Association Transmission Measurement Committees, discussing various measurement issues;

- Measurement personnel audit and witness other Company and third-party personnel performing the regularly scheduled calibration/inspection of metering and gas quality equipment around the state. This helps ensure valid measurements and relevant procedures are followed, and also allows for identification and subsequent correction of any equipment/calibrations/ inspection-related issues;

- The Company utilizes a gas measurement system called Flow Cal monitored by the gas measurement team and field personnel to validate actual measured flows captured by the Company's data acquisition system—known as Supervisory Control and Data Acquisition ("SCADA"); and

- The Company reviews compressor stations and high flow city gates for fugitive leaks through the use of infrared cameras and high flow analyzers. Identified leaks will be prioritized and repaired, reducing LAUF gas at those sites.

Q. How do you respond to the direction from the Commission's September 30, 2025 Order in Case No. U-21806 that the Company make efforts to assess and quantify the impacts of the Company's anticipated emission reductions, including what portion of those anticipated reductions compromise LAUF gas volumes?

A. For 2030 methane reduction efforts, the Company is concentrating on known sources of methane emissions, such as vintage material replacement and repairing leaks. If these methods reduce emissions by 150 MMcf in a calendar year (August to July), disregarding the other factors included in the LAUF calculation, the five-year average gas loss percentage shown on Exhibit A-98 (TKJ-2) would reduce from 1.63% to 1.62%. This would reduce the calculated LAUF volume by 31 MMcf (from 5,067 MMcf to 5,036 MMcf).

While these initiatives could reduce LAUF volumes, there is no guarantee this outcome will reduce the LAUF expense request. There are other factors that impact the total gas loss percentage such as weather, equipment issues, venting during system damage,

gas theft, and storage field inventory adjustments. These other factors in the total gas loss percentage could have a more negative impact and offset the positive impact of the methane reduction efforts. Thus, the Company recommends the continued use of the current methodology for calculating the projected LAUF expense, which incorporates all of these factors through the use of a five-year average Gas Loss percentage.

Company Use Gas

Q. Please describe the Company Use Gas expenses shown on Exhibit A-97 (TKJ-1), line 2.

A. These expenses are for the natural gas fuel used to run the compression and other equipment used on the transmission and storage system. The largest single use is for fueling the engines at the compressor stations and the gas heaters at the city gate stations. The total cost of fuel gas used is reduced by credits received from transportation suppliers. These suppliers provide GIK to Consumers Energy based on a percentage of their deliveries into the system. Company Use Gas also includes volumes of gas vented or otherwise released for which the Company has knowledge and which the Company has written off.

Q. What level of expense for Company Use Gas are you proposing in this case?

A. As set forth on Exhibit A-97 (TKJ-1), line 2, column (c), the Company Use Gas expense for the test year is projected to be $7,052,000. The calculation supporting this value can be found on Exhibit A-99 (TKJ-3).

Q. Why is there variability in the test year amounts for LAUF and Company Use Gas from the 2024 actual amounts?

A. In Case No. U-18124, the Commission ordered the Company to apply GIK transportation volume offsets to LAUF and Company Use Gas volumes on a percentage basis based upon

the program volumes. The Company has historically offset only Company Use Gas volumes with GIK volumes, and its accounting system is currently configured to record GIK volumes against Company Use Gas volumes. Thus, the 2024 amounts are shown as recorded in the Company's internal accounting records. The test year amounts are reflective of the methodology directed in Case No. U-18124.

(iv) GCS CAPITAL EXPENDITURES

Q. What are the major drivers in determining capital expenditures for GCS?

A. The Company has made significant investments in upgrades for improved system reliability, deliverability, system integrity, safety, and customer service. These investments allow the Company to fully use its compression and storage facilities to provide continuous reliable service to customers.

Q. Please describe Exhibit A-12 (TKJ-4), Schedule B-5.5.

A. This exhibit presents the capital expenditures for GCS from the year 2024 through the projected test year. The expenditures are grouped on page 2 by: Freedom upgrade, Compression Sites, Storage Fields, Storage New Wells (line 15), Well Rehabilitation (line 16), Storage Pipeline Replacement (line 17), Well Data Acquisition (line 18), Riverside Field Retirement (line 19), and Safety Valve Installation (line 20).

Q. What is the Company's projected level of capital spending?

A. The Company's rate relief request in this case reflects capital spending on projects for its gas compression and storage sites of $167.8 million for 2024 (Actual), $196.6 million for the 12 months ending December 31, 2025 (Projected), $153.8 million for the 10 months ending October 31, 2026 (Projected), $350.4 million for the 22 months ending October 31, 2026 (Projected), and $187.2 million for the 12 months ending October 31, 2027 (Projected

Test Year). The table below, from page 1 of Exhibit A-12 (TKJ-4), Schedule B-5.5, shows the Compression and Storage capital expenditures I am sponsoring in this docket.

Table 4: Compression and Storage Capital Expenditures ($000's)

	(a)	(b)	(c)	(d)	(e)	(f)
		Historical Year	Projected Bridge Period			Projected Test Year
Line No	Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
1	Freedom Upgrade Project	983	9	0	9	0
2	Compression	58,272	54,662	59,115	113,777	73,350
3	Storage	25,805	30,405	46,427	76,832	19,288
4	New Well	15,025	24,125	31,951	56,077	31,046
5	Well Rehabilitation	26,981	24,086	3,833	27,919	712
6	Storage Pipeline Replacement	13,835	37,486	8,606	46,092	57,639
7	Well Data Acquisition	62	1,650	2,018	3,667	5,133
8	Riverside Field Retirement	24,256	22,348	0	22,348	0
9	Safety Valve Installation	2,557	1,824	1,807	3,631	0
10	Total Capital Expenditures	167,776	196,595	153,756	350,351	187,169

Q. Please identify the capital expenditure projected for the Freedom Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, lines 1 and 2, identify the total capital expenditures for the Freedom Compression Station. The expenditures identified on line 1 are for the Freedom upgrade project. The Freedom upgrade project is complete, with close out and site restoration completed in 2024. The expenditure on line 2 is for projects that are separate from the upgrade project. In 2024, costs were incurred for the upgrade project. In 2025 through 2027, costs will be incurred for compression building heat tracing installation and Uninterruptible Power Supply (UPS) batteries, which improve site safety and reliability.

Q. Please identify the capital expenditure projected for the Muskegon River Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 3, identifies the total capital expenditures for Muskegon River. In 2024, costs were incurred for the closed-loop cooling water project and installation of new plant air compressors. In 2025 through 2027, examples of projected costs include: an H-10 unit overhaul to address engine/compressor condition and performance, and the closed-loop cooling project that will eliminate the need to use Muskegon River water for equipment cooling and to further comply with 2026 EGLE discharge water temperature specifications.

Q. Please identify the capital expenditure projected for the Northville Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 4, identifies the total capital expenditures for the Northville Compression Station. In 2024, costs were incurred for the completion of an electrical system upgrade and engine controls upgrades. In 2025 through 2027, examples of projected costs include: engine controls upgrades, replacement of engine jacket water coolers and air compressor replacement which support the safe, reliable, and compliant operation of the station.

Q. Please identify the capital expenditure projected for the Overisel Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 5, identifies the total capital expenditures for the Overisel Compression Station. In 2024, the Company incurred costs for station control upgrades, engine exhaust emissions controls, and the unitized cooling project. In 2025 through 2027, examples of projected costs include: unitized cooling installation, station control upgrades, lube oil extractor installation and engine exhaust

emissions controls, projects that allow for complete and timely withdrawal of gas from the storage fields and allow the engines to meet new Michigan NOx RACT Rules emission requirements.

Q. Please identify the capital expenditure projected for the Ray Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 6, identifies the total capital expenditures for the Ray facility. In 2024, the Company incurred costs for air compressor system upgrades and flow control valve replacement. In 2025 through 2027, examples of projected costs include: valve replacements, air compressor system upgrades, and meter run replacement. These projects will ensure the complete and timely withdrawal of gas from the storage fields.

Q. Please identify the capital expenditure projected for the St. Clair Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 7, identifies the total capital expenditures for the St. Clair Compression Station. In 2024, the Company incurred costs for engine controller replacements, thermal oxidizer upgrades, and turbine gas cooler replacement. In 2025 through 2027, examples of projected costs include turbine gas cooler replacement, dehydration system thermal oxidizer replacement, and gas blowdown vent stack replacement. These projects will ensure the complete and timely withdrawal of gas from the storage fields and safe gas blowdown when required.

Q. Please identify the capital expenditure projected for the White Pigeon Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 8, identifies the total capital expenditures for White Pigeon. In 2024, the Company incurred costs for solar battery installation. In 2025 through 2027, examples of projected costs include turbine installation

and a solar battery installation that is a green project that will reduce cost of electricity for the site.

Q. Please identify the capital expenditure projected for the Huron Compressor Station.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 9, identifies the total capital expenditures for Huron. In 2024, the Company incurred cost for engine starter replacement. In 2025 through 2027, examples of projected costs include PLC backup power supply installation and backup generator installation which support the safe, reliable, and compliant operation of the station.

Q. Please identify the capital expenditures projected for the Marion storage fields (Winterfield, Cranberry Lake, and Riverside).

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 10, identifies the total capital expenditures for the Marion storage fields. In 2025 through 2027, the projected costs include liquid processing equipment upgrades, enhanced wellhead protection, and the retirement of the Marion City Gate, which is fed from the Winterfield storage field. Retirement is made possible by the completion of the Riverside distribution piping project, which will be tied into to re-feeding customers in Marion, MI. This project will reduce operational cost, gas conditioning difficulties, and operational limitations of an operating city gate fed from a storage field. An itemized list of project costs used to create Exhibit A-12 (TKJ-4), Schedule B-5.5 is included in WP-TKJ-5. A breakdown of well rehabilitation work scope is included in Exhibit A-100 (TKJ-5).

Q. Please provide more details about liquid processing upgrade at the Winterfield and Cranberry storage fields.

A. These facilities are the first pass at cleaning the gas stream from the storage wells prior to entering the processing systems at the compressor stations. The primary function of these facilities is to perform bulk separation of liquids from gas, where the gas continues to the compressor station and the liquids flow into settling tanks for further separation of brine and hydrocarbons. The liquid is then pumped to the designated disposal well. The current tanks and equipment are undersized and require manual operation, which increases risk of liquid entering the compression site and causing damage to the gas compressors.

Q. Please provide more details about the enhanced wellhead protection project.

A. An enhanced wellhead protection project was initiated in 2025 following a third-party damage incident. Post-incident analysis of the 2024 well blowout event identified cases across all fields where existing wellhead protection measures were insufficient in mitigating third-party damage risk based on the specific well surroundings, type of potential strike, and observable risk associated with the third-party activities surrounding the well. These upgrades are proposed to be completed by the end of 2026.

Q. Please provide more details about future operation of the Riverside storage field.

A. The Riverside storage field has low working gas capacity, the largest well count compared to other Company gas storage fields with similar working gas volumes, and native hydrogen sulfide, which is flammable and lethal at high concentrations, that has caused it to be identified as high-risk within gas storage. The Riverside gas storage field is connected directly to three city gates which limits the withdrawal volume from the field and the ability to take outages for maintenance or capital projects and the ability to increase capacity at

the McBain City Gate. The integrity of the mainline and laterals that support the field are degrading, in some cases causing pressure derates. For these reasons, the Company has decided to end operation of the entire storage field.

Q. What type of engineering analysis and alternative analysis was performed to develop the Riverside retirement plan?

A. The engineering and gas supply team performed several models that included full field retirement, plugging and abandoning portions of the field, and optimizing the field with new horizontal wells. The evaluation also included determining gas withdrawal from the gas storage field. As a result of the original analysis low gas price projections, along with the equipment necessary and timing of withdrawal, Consumers Energy determined that it would not be economical for the Company to spend capital to withdraw gas from the Riverside field. The Company modeled and evaluated several alternatives until a solution was determined. The selected solution must mitigate the current storage and transmission risk associated with the field, improve resiliency and reliability to customers connected to McBain, Forward, and Falmouth City Gates (customers that are currently being supplied through the storage field), continue to provide affordable gas in the Riverside area, and reduce methane emissions with the plugging of the storage wells.

In Case No. U-21308, the Company's gas rate case filed in 2022, MPSC Staff ("Staff") submitted testimony acknowledging the unfavorable economics of withdrawing the recoverable gas from the field but recommended that the Company continue to evaluate the potential sale of Riverside to a third party, who might be in a different economic position to produce the 8.6 Bcf of recoverable gas in the reservoir. The Company agreed

to continue reviewing the sale of Riverside as an alternative to retiring and decommissioning the plant.

After gas prices increased in 2022, the Company revisited options for the withdrawal of gas from the field, including the option of selling the field to a third party. The Company identified a buyer and the parties reached a purchase agreement in October 2024. During the two-month due diligence period after the agreement, the buyer chose to terminate the agreement. By early 2025, the Company moved forward with the next best evaluated buyer and the parties have reached a purchase agreement. A closing date is planned for December 2025 to allow for the project work to remove customers from being fed by the storage field to be completed.

Q. What is the estimated timeline and projected cost for the Riverside projects and sale through the year 2026?

A. A breakdown of the projected spending for the Riverside project is included in Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 19. The projected project spending does not include Cost of Removal. Distribution and Transmission asset modifications to disconnect customers from the storage field and re-supply from the system were completed in October 2025. Final closing on the sale of the field is planned to occur in December 2025. All projects will be closed out by 2026.

Q. Why is the sale of Riverside beneficial to customers?

A. The Company's estimated cost to retire and decommission Riverside is more than $24 million. This estimate includes the plugging of the remaining field wells and retirement of the mainline and laterals. These expenses will be avoided when the field is sold.

Although the sale of the plant is expected to result in a loss, the sale allows Consumers Energy to avoid the decommissioning costs, which creates a net benefit to customers. In Case No. U-21656, the Company sought Commission approval to record the expected loss from the Riverside sale as a regulatory asset for recovery in a future rate case. The Commission approved the Company's accounting request in Case No. U-21656 on July 23, 2024. Company witness Rayl discusses the treatment of the regulatory asset in this case in her direct testimony.

Q. Please identify the capital expenditures projected for the Northville storage fields (Lyon 29, Lyon 34, and Northville Reef).

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 11, identifies the total capital expenditures for the Northville storage fields. In 2024, the Company incurred costs for its project to install a liquid handling system at the Lyon 29/34 storage fields. In 2025 through 2027, the projected costs include investment to complete the liquid handling system at the Lyon 29/34 storage fields and begin engineering/procurement on the Northville Reef Field liquid handling system. An itemized list of project costs used to create Exhibit A-12 (TKJ-4), Schedule B-5.5 is included in WP-TKJ-5. A breakdown of well rehabilitation work scope is included in Exhibit A-100 (TKJ-5).

Q. Please describe the Lyon 29/34 project.

A. The Lyon 29/34 storage gas gathering and metering site has been in operation for more than 22 years. The facility feeds gas to transmission Line 1020 and to the Northville Compressor Station. The primary focus of the Lyon 29/34 facility is to deliver transmission quality gas to the pipeline system and act as a metering station. On peak days, this site is an important additional source of natural gas supply to the metro Detroit area. During

2018, 2019, and 2020 there were multiple occasions of gas purity issues occurring during the gas withdrawal season. During gas withdrawal, the gas water content exceeded the regulatory threshold of 7 LB/MMCF, which affected the storage field, and required pre-mature shut-in of withdrawal operations. The Lyon 29/34 facility upgrade project will help improve gas purity, measurement accuracy, and pipeline reliability by reducing corrosive components from the gas stream and improve site performance by installing gas purification equipment. In 2022, the expenditures were for project engineering and design. The 2023 expenditures were for concluding engineering, design and securing long lead time materials. The 2024 and 2025 expenditures are for securing remaining materials, securing site permitting and beginning construction. 2026 expenditures are for completing construction, start up and project close out for the project. This project will help address the Company's objective of a reliable system, which will reduce unplanned outages during normal site operations.

Q. Was gas blending considered as an alternative to this project?

A. Yes. The Company does not consider blending a competent means of ensuring gas quality. Various conditions can affect how and whether gases are mixed in a pipe. Due to the integrated nature of Consumer Energy's gas system, its variable operating conditions, and the fact that the system is not designed to assure mixing of gas from different sources, it would be inaccurate to assume mixing occurs.

Q. Please identify the capital expenditures that are planned for the Overisel storage fields (Overisel and Salem).

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 12, identifies the total capital expenditures for the Overisel storage fields. In 2024, the Company incurred costs for

disposal well tank replacements. In 2025 through 2027, projected costs include scrubber replacement at the Salem Storage Field. An itemized list of project costs used to create Exhibit A-12 (TKJ-4), Schedule B-5.5 is included in WP-TKJ-5. A breakdown of well rehabilitation work scope is included in Exhibit A-100 (TKJ-5).

Q. Please identify the capital expenditures projected for the Ray Storage Field.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 13, identifies the total capital expenditures for the Ray storage fields. In 2024 through 2027, the projected costs include a launcher receiver replacement. An itemized list of project costs used to create Exhibit A-12 (TKJ-4), Schedule B-5.5 is included in WP-TKJ-5. A breakdown of well rehabilitation work scope is included in Exhibit A-100 (TKJ-5).

Q. Please identify the capital expenditures projected for the St. Clair storage fields (Hessen, Puttygut, Four Corners, Swan Creek, Ira, and Lenox).

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 14, identifies the total capital expenditures for the St. Clair storage fields. In 2024, the Company incurred costs to complete an upgrade of a disposal well facility and replace a launcher/receiver at Four Corners and Swan Creek. In 2025 through 2027, the projected costs include investment in facility upgrades at Four Corners and Swan Creek. The project for each facility will include a two-phase separator, one tank, new ultrasonic metering, gas chromatograph, and gas analyzer. These projects will improve the gas measurement accuracy and gas quality. An itemized list of project costs used to create Exhibit A-12 (TKJ-4), Schedule B-5.5 is included in WP-TKJ-5. A breakdown of well rehabilitation work scope is included in Exhibit A-100 (TKJ-5).

Q. Please identify the capital expenditure that is planned for Storage New Wells.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 15, identifies the total capital projected expenditures to complete the Company's new storage well drilling plan. In 2024, the Company incurred costs for the completion of drilling the two wells C-994 in the Cranberry field, O-305 in the Overisel field, and engineering and preparation for future well drilling and close out/flow testing after drilling. In 2025 through 2027, the projected capital expenditures include funding for the engineering, site preparation, and drilling of new wells. The table below outlines the timing and location of the Company's plan for drilling new wells.

Table 7: Proposed New Well Drilling Plan

Drill Year	Location	Field	New Well ID	Projected Cost
2024	Overisel	Overisel	O-305	$10,083,691
	Marion	Cranberry	C-994	$6,438,192
2025	Marion	Winterfield	W-1004, W-1005, W-1006	$19,232,931
	Marion	Cranberry	C-1103	$7,384,944
2026	St. Clair	Puttygut	P-301, P-302	$13,250,462
	St. Clair	Four Corners	FC-201 (re-entry)	$4,796,996
	Ray	Ray	R-510, R-511	$13,875,964
2027	Marion	Winterfield	W-1007, W-1008, W-1009	$17,682,671
	Marion	Winterfield	W-996, W-998 (re-entries)	$7,744,697
	Overisel	Overisel	O-306	$6,528,734

Q. Please provide a description of the project at W-994 (2023) in the Winterfield Storage Field and FC-201 (2026) in the Four Corners Storage Field.

A. The projects are well re-entries focused on re-entering existing horizontal or deviated wells and drilling new horizontal drain hole sections. Re-entering an existing well further helps to improve field and well deliverability, especially for wells that were drilled off structure or too deep on the structure. The re-entry work is also expected to be significantly less

expensive than a full new well as the casing, wellhead equipment, and pipeline are already installed. There are eight wells in Winterfield, and one well in Lyon 34, that are potential future candidates pending the results of the W-994 and FC-201 projects.

Q. Identify the eight wells in Winterfield, and the one well in Lyon 34, that are potential future candidates for re-entry and explain why these wells are potential future candidates for reentry.

A. The well in Lyon 34 and eight wells in Winterfield that are potential future candidates for re-entry include: Lyon 3-34, W-978, W-979, W-981, W-982, W-983, W-984, W-996, W-998. There is a recently acquired 3D seismic over the Lyon 34 field. The information from the seismic indicates that instead of a full new well, re-entering an existing well and adding a new drain hole would provide the same benefit at a lower cost. The Lyon 3-34 well selected as the wellbore does not penetrate the center of the reef based on the seismic and an additional drain hole is necessary to access the best part of the storage reservoir and increase the well flow rate to further support peak demand. The Winterfield wells were originally drilled with one drain hole and often in a manner which the well penetrated too deep into the storage reservoir. The depth often correlates to increased water production and decreased gas production. These wells are found to significantly decline in gas flow or stop producing gas partway through the withdrawal season. Re-entering the wells allows for additional drain holes to be installed at a shallower depth to minimize water production and maximize gas production.

Q. Please identify the capital expenditures that are planned for Well Rehabilitation.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 16, identifies the total capital projected expenditures for the Storage Well Rehabilitation Capital Program plus the wellhead

protection and annular monitoring programs. Exhibit A-100 (TKJ-5), provides detail specific to the Storage Well Rehabilitation Capital Program, a multi-year program that is in response to the federal minimum safety standards that are described previously in my testimony.

Storage Well Rehabilitation Capital Project spending for 2025 through the end of the program was determined using estimates created based on work scopes developed by Storage Engineering. The work scopes are broken down into activities and costs and are developed using the projected duration of the activity using a vendor rate or on a cost-per-well basis, again based on a vendor quote. A description of the different work scopes and associated costs is shown on the Scope Averages tab of Exhibit A-100 (TKJ-5). The scope specific estimates were added together with the wells of similar scope types and averaged. This average was used to build the annual project expenses based on the number of each well scope performed each year. These costs are displayed on the Annual Estimate tabs of Exhibit A-100 (TKJ-5).

Q. Please provide more detail on the Well Rehabilitation Program.

A. The primary goal of the Well Rehabilitation Program is to identify and reduce well risk by ensuring the integrity of the wells across the Company's gas storage system, preventing a large-scale methane emission event like Aliso Canyon. The secondary goal is to enhance well deliverability while working on the well. This program will initially provide a baseline of well integrity conditions, which has been incorporated into the SIMP. SIMP is associated with the Risk Assessment Model which is being used to identify well prioritization for the program. The completion of the logging portion will help complete a portion of the baseline assessment required from the PHSMA final rule.

This program will use mechanical methods, solvents, and other chemicals to remove obstructions, restoring the original flow properties of the wells. This thorough Well Rehabilitation Program will remove the debris and slow the rate of corrosion potential in the wells, thus increasing the useful life of the facilities.

Depending on the condition of the well, additional replacement of well components may be necessary. Components include, but are not limited to, piping, valves, or packers. To verify success of the Well Rehabilitation Program, flow statistics are taken both before and after the rehabilitation on select wells. Absolute Open Flow ("AOF") values are measured and compared to historical AOFs taken on the wells when originally put into service. Wells will be "logged" or inspected before treatment to assess the condition of the well casing and the success of the restoration. The program will bring the Company up to a seven-year reassessment cycle, into compliance with the API RP 1171, as part of the Storage system objectives as outlined in the NGDP.

Completing the rehabilitation and well logging work simultaneously is prudent, efficient, and directly benefits customers and public safety. If done separately, services such as well service rigs, well hardware, and other ancillary services would be duplicated, which is not cost effective for the customer. This program is designed to restore, and in most cases, increase well deliverability while baselining well integrity to an industry average of approximately 10 years. Once baseline well integrity information is determined, a risk-based, site specific approach to future well integrity well logging will be implemented as detailed in the API RP 1171: Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs. At the completion of the well rehabilitation capital project, well logging O&M will be required to maintain the

approximately seven-year cycle. The Company will be 98% complete in its baseline risk assessment as of December 2025 with 867 wells completed. The Company plans to complete the baseline assessment in 2026.

Q. Why is the Well Rehabilitation Program a capital program?

A. Federal Energy Regulatory Commission ("FERC") Docket Nos. AC09-27-000 and AI05-1-000 illustrate FERC's allowance of testing costs incurred to extend the useful life of the system in the context of a one-time rehabilitation program to be capitalized. Under the requirement of FERC's Uniform System of Accounts, costs incurred to inspect, test, and report on the condition of an existing plant to determine the need for repairs or replacements, and testing the adequacy of repairs made, are recognized as maintenance expense. However, FERC has permitted natural gas and electric companies to capitalize assessment costs when the work was done in connection with major rehabilitation projects involving significant replacements and modifications of facilities.

FERC has established the following requirements that a project must meet to be able to capitalize assessment type costs. The project must: (i) be completed in connection with a one-time program that involves significant replacements and modifications of facilities; (ii) extend the overall system's useful life and serviceability; and (iii) have in place internal controls to distinguish between costs incurred related to ongoing assessment activities and those that are part of the rehabilitation project. The Well Rehabilitation Program meets these requirements.

Q. Please provide more detail on the Annular Pressure Monitoring Program.

A. The Annular Pressure Monitoring Program allows for the well casing pressures to be measured, recorded, and monitored as per the requirement in API RP 1171. The Company

installed monitoring on 43 wells in 2023, 44 wells in 2024, and is projected to install 35 wells in 2025. All wells requiring annular pressure piping will be installed by the end of 2025. Annular Pressure Monitoring Program average cost per well is approximately $15,000. The cost can reach $25,000-30,000 per well if a well plug is needed during the modification. Factors that impact this cost include but are not limited to soil type/condition, installation depth, welding requirements and pipe thickness/material.

Q. Please identify the capital expenditure that is planned for Storage Pipeline Replacement.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 17, identifies the total 2024 through 2027 capital projected expenditures for storage pipeline replacements. The projected pipeline replacement schedule is shown in Table 8 and includes the total projected cost of each project including both pipeline replacement and retirements. Retirement projects are provided for information only, they are entirely Cost of Removal/Retirement ("COR") expense and are not part of the request in this proceeding.

Q. Please provide more detail on the Storage Pipeline Replacement Program.

A. The Storage Pipeline Replacement Program is a program that performs replacement and retirement of storage pipelines to reduce the probability of major failure. All storage pipelines replacements and retirements will be tracked under the Transmission Integrity Management Program ("TIMP"), following 49 CFR 192 Subpart O, for risks and consequences of failures. Projects have been prioritized based on factors such as risk, future new well drilling, and planned well plugging. Replacement and retirement of these storage pipelines contribute to the safety of Company employees and the public, deliverability, resilience, and integrity of the Company's system.

Table 8: Projected Pipeline Replacement Schedule

Year	Location	Project Name	Project Type*	Projected Cost	Length (ft)	Act 9 Required	Anticipated File Date
2024	Overisel	Overisel Lateral 2	Replacement	$8,830,480	5,095	No	N/A
	Marion	Cranberry Lateral 61W	Replacement	$2,997,888	1,785	No	N/A
2025	Overisel	Overisel Lateral 3	Replacement	$10,238,727	5,227	No	N/A
	Marion	Winterfield Lateral 52SB	Replacement	$3,513,707	1,056	No	N/A
	St. Clair	Hessen Full field	Replacement	$22,159,738	33,898	Yes	November 2024
2026	Overisel	Salem ML 2	Replacement	$3,769,984	4,013	No	N/A
	Overisel	Salem ML 3	Replacement	$2,945,881	2,800	No	N/A
2027	Overisel	Overisel ML -16”	Replacement	$18,825,938	13,707	Yes	June 2026
	Overisel	Salem ML 1 -16”	Replacement	$6,638,506	2,840	No	N/A
	Overisel	Salem Lateral 2N	Replacement	$9,290,370	12,004	Yes	June 2026
	Overisel	Salem Lateral 2W	Replacement	$2,511,276	4,411	No	N/A
	Overisel	Salem Lateral 2	Replacement	$14,746,597	19,141	No	N/A
	Overisel	Overisel ML – 12”	Replacement	$8,116,226	10,450	Yes	June 2026
2024	Overisel	Overisel ML - 10", ML – 12”, Lateral 9, 8, 7E/W	Retirement	$5,594,252	42,451	No	N/A
	Marion	Cranberry Lateral 63W	Retirement	$420,000	1,486	No	N/A
2025	Overisel	Salem North Lobe Retirement	Retirement	$4,142,000	16,685	No	N/A
	Marion	Winterfield ML 22”	Retirement	$1,366,000	6,706	No	N/A
2026	Marion	Winterfield Lateral 56N	Retirement	$1,359,874	5,069	No	N/A
	Marion	Cranberry Lateral 64W	Retirement	$1,170,000	4,832	No	N/A
	Marion	Cranberry Lateral 66E	Retirement	$4,722,767	50,910	No	N/A
	Marion	Cranberry Laterals 67N/S	Retirement	$1,053,000	5,046	No	N/A
2027	Overisel	Salem Lateral 1E	Retirement	$1,134,919	3,392	No	N/A
	Overisel	Salem Lateral 1W	Retirement	$475,344	3,004	No	N/A
	Marion	Winterfield 58N	Retirement	$634,074	3,190	No	N/A
	Marion	Winterfield 58S	Retirement	$1,025,841	7,059	No	N/A

***** Retirement projects are provided for information only; they are entirely COR expense and are not part of the request in this proceeding.

In previous years, the Company’s Enhanced Infrastructure Replacement Program (“EIRP”) has provided funding for the storage field lateral and mainline replacements,

specifically for known higher-risk pipe within the storage fields. This includes pre-1970 Low Frequency Electric Resistance Welded ("LFERW") pipe. This pipe has been deemed higher relative risk pipe industry wide.

Starting in 2018, the Company ended the Transmission EIRP program and began this program to address the storage pipelines that do not qualify for EIRP funding. The well lines in the Overisel, Salem, Winterfield, Cranberry, and Riverside fields are original piping from initial field construction (Late 1940s and Early 1950s). Leaks have periodically developed on the well lines – average two to five per year across all of the fields. The condition of the well lines cannot be assessed with Inline Inspection tools since they are not piggable.

Q. When the Company plans for the replacement of well lines in its underground natural gas storage fields, are the replacement well lines designed to accommodate In-Line Inspection ("ILI") tools?

A. Design considerations for ILI are made for all well line replacements. Often the diameter of a line is a limiting factor due to limitations of available ILI tools and is not the only factor that needs to be considered during design. Most of the lines are small diameter and short segments which are not feasible to inspect with ILI tools and results in the majority of well lines not being designed to accommodate ILI tools.

Q. Please identify the capital expenditure that is planned for Well Data Acquisition.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 18, identifies the total capital projected expenditures for well data acquisition. In 2024, the Company incurred costs for well data acquisition equipment installation and close out at the Ray Storage Field. In 2025 through 2027, project costs include funding for engineering, procurement, and installation of well

data acquisition equipment on 24 wells in the Puttygut Storage Field and 24 wells in the Hessen Storage Field.

Q. Please provide more detail on the Well Data Acquisition.

A. PHMSA's adoption of API RP 1171 recommends increased monitoring of gas storage wells. In order to monitor flow, temperature, pressure, and other variables in real time, Remote Terminal Units and SCADA systems need to be installed and equipped with sensing equipment at the well head. Along with complying with federal regulations, the ability to monitor issues on a well-by-well basis in real time during injection and withdrawal will provide valuable data to storage engineers that can be used to optimize the injection cycle and ensure deliverability from the field. The program plans to implement the technology in the peaker and intermediate fields, along with top performing and/or horizontal wells in the baseload fields. The benefits of a well SCADA system that can log the real time flow, temperature, and pressure will be well performance tracking, consistent annular pressure data, and will allow the Company to utilize the data for future workover and maintenance activities.

Q. Please identify the capital expenditure that is planned for Safety Valve Installation.

A. Exhibit A-12 (TKJ-4), Schedule B-5.5, page 2, line 20, identifies the total capital projected expenditures for safety valve installation. Funding for safety valve installation projects began in 2024 with four wells at the Puttygut and Four Corners storage fields. The projected work scope in 2025 installs 18 safety valves at various well sites within the Puttygut, Hessen and Swan Creek fields. Projected work scope in 2026 includes 10 safety valves installed in the Ira and Northville storage fields.

Q. Please provide more details on the Safety Valve Installation.

A. A SIMP integrity assessment (based on the regulatory requirements of API RP 1171 as referenced in 49 CFR 192.12) of surface equipment identified the need to standardize safety equipment on certain wells within higher deliverability fields. These safety valves will protect against a gas excursion from the individual well bore during any potential safety incidents.

Q. Are there contingency costs included in these capital expenditures?

A. No. Although it is a common and prudent practice to include project contingency costs for these types of projects, and is recognized as an accepted Project Management practice, especially when contingency covers the expansion of work approved, contingency costs have not been included in these projections. While contingency costs are a real item in a project estimate, like any other cost, and should be included in estimates of major projects, due to past Commission orders concerning the inclusion of project contingency, the Company has not included those costs in this filing.

Q. Are the Company's capital expenditures in GCS reasonable?

A. Yes. The capital expenditures in GCS will improve system reliability, deliverability, integrity, safety, and customer service. These capital expenditures will allow the Company to take advantage of market conditions and procure adequate supplies of natural gas to meet the needs of customers. Furthermore, many of these capital expenditures are related to compliance with environmental, federal, and/or state regulations, and thus not discretionary.

(v) IT PROJECTS

Q. Is the Company planning technology projects that support the engineering, asset planning, design, construction, and maintenance of safe, reliable, and affordable distribution, transmission, compression, and storage systems for its customers?

A. Yes. Company witness Stacy H. Baker includes in her direct testimony and exhibits, technology projects that are critically important to supporting these gas functions within the Company. The expenditures for these projects are contained within her exhibits. The project which will provide benefits for the area which I am sponsoring is described below:

The **Compression Air Permit And Compliance Digitalization** project requires $311,945 in capital and $61,121 in O&M in the test year.

Description: This project modernizes and expands the use of software and digitized forms in support of station air permits and code compliance at Gas Compression facilities.

Problem Statement: The current process around air permits and compliance for Gas Compression is cumbersome, largely paper based, and is made up of multiple disconnected systems. This leads to poor visibility, process inefficiency and waste, re-work, regulatory risk, and human error.

Value Statement: This project provides value to the Company through: (1) increased productivity by direct data entry in the field; (2) improved quality through increased accuracy of updates completed at the time and place of the work; (3) elimination of the need to enter data into multiple disconnected systems; and (4) improved safety through access to real-time information used at work sites rather than printed procedures and forms.

Scope: The scope of the project includes: (1) Merging the existing air permit and compliance tools into a single solution; (2) purchasing additional licenses to add Gas Compression users to the Company's existing mobile work management software; and (3) configuring changes in SAP and the mobile work management software to replace the paper-dependent process with the ability to access and update maintenance, operations, and safety information for Gas Compression. The scope of the project includes: (1) purchasing additional software licenses to add Gas Compression users to the Company's existing software solution and (2) configuring changes in SAP and the mobile work management software to replace the paper-dependent forms and process with the ability to access and update

maintenance, operations, and safety information at Gas Compression locations digitally.

Alternatives Considered: Alternatives considered include: (1) Utilize an SAP work management mobile solution. An SAP work management solution was not selected since it is an unproven solution at the Company and would require additional project and support costs. (2) Continue with the manual paper-based processes and forms. Continuing with the manual paper-based processes and forms was not selected because it would not eliminate the identified process waste, re-work, and human error. (3) Customize the existing electronic Shift Operations Management System (eSOMS) mobile application to add work management functions. A customized mobile application was not chosen because it would require additional project cost and an ongoing support budget for a custom solution that the product was not intended to support. (4) Adopt a cloud based SAAS solution. This option was not selected as it was a high-cost option. (5) Utilize the existing Service Suite solution currently deployed for Gas and Electric Distribution. The Service Suite solution was selected because it is both an industry standard and a proven solution at the Company and provides the required mobility and digital benefits at a lower cost than other options.

Q. Does this complete your direct testimony?

A. Yes.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	)))))	Case No. U-21981

EXHIBITS

OF

TIMOTHY K. JOYCE

ON BEHALF OF

CONSUMERS ENERGY COMPANY

December 2025

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Summary of Actual & Projected Gas O&M Expenses for Lost and Unaccounted for Gas & Company Use Gas

For the Test Year 12 Months Ending October 31, 2027

($000)

Case No.: U-21981
Exhibit No.: A-97 (TKJ-1)
Page: 1 of 1
Witness: TKJoyce
Date: December 2025

Line No.	(a) Description	(b) 2024 Actual	(c) 12 Months Ending October 31, 2027 Projected	(d) Difference	(e) Source
1	**Lost & Unaccounted for Gas Costs (LAUF)**	**13,329**	**12,899**	**$ (430)**	WP-HLR-7 line 17 column (c) and Exhibit A-99 (TKJ-3) line 14, column (h)
	Labor	0	0	0	
	Materials	0	0	0	
	Contractor	0	0	0	
	Non-Labor Overhead	0	0	0	
	Non-Labor Other	0	0	0	
	Other: Cost of Goods Sold	13,329	12,899	(430)	
2	**Company Use Gas**	**(930)**	**7,052**	**7,982**	WP-TKJ-2 and Exhibit A-99 (TKJ-3) line 21, column (h)
	Labor	0	0	0	
	Materials	0	0	0	
	Contractor	0	0	0	
	Non-Labor Overhead	0	0	0	
	Non-Labor Other	(930)	7,052	7,982	
3	**Total Expense**	**$ 12,399**	**$ 19,951**	**$ 7,552**	

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Calculation of Gas Loss Percentage

August 2020 through July 2025

Case No.: U-21981
Exhibit No.: A-98 (TKJ-2)
Page: 1 of 1
Witness: TKJoyce
Date: December 2025

Line No.	(a) Sendout Period	(b) Sendout [1] MMcf	(c) Billed Throughput [2] MMcf	(d) Gas Loss Before Inventory Adjustment MMcf	(e) Inventory Adjustment MMcf	(f) Total Gas Loss MMcf	(g) Gas Loss [3] Percentage
1	August 2020 - July 2021	290,731	285,525	5,206	-	5,206	1.79%
2	August 2021 - July 2022	308,734	304,936	3,798	-	3,798	1.23%
3	August 2022 - July 2023	296,564	291,618	4,946	109	5,055 [4]	1.70%
4	August 2023 - July 2024	277,138	270,847	6,291	-	6,291	2.27%
5	August 2024 - July 2025	299,714	296,115	3,600	69	3,669 [5]	1.22%
6	Total - August 2020 - July 2025	1,472,881	1,449,041	23,841	178	24,019	1.63%

[1] Sendout for column (b) obtained from Gas Control Operations Summary report.
[2] Billed Throughput volumes (Sales plus End - User transportation) for column (c) obtained from the Accounting Department.
[3] Gas Loss Percentage=Total Gas Loss [Column (f)] / Sendout[Column (b)].
[4] Includes an inventory adjustment of 80 MMcf for losses at Ira field and 29 MMcf for losses at Northville Reef recognized between August 2022 and July 2023.
[5] Includes an inventory adjustment of 69 MMcf for losses at Lenox recognized between August 2024 and July 2025.

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Calculation of Allowance for Gas Use and Losses
For the Test Year 12 Months Ending October 31, 2027

Case No.: U-21981
Exhibit No.: A-99 (TKJ-3)
Page: 1 of 1
Witness: TKJoyce
Date: December 2025

Line No.	(a) Description	(b) Transportation Gas-In-Kind Mcf	(c) Company Use Net Of Gas-In-Kind Mcf	(d) LAUF and Company Use Adjustment Mcf	(e) Transportation Offset Mcf	(f) Net LAUF and Company Use Mcf	(g) Gas Rates	(h) Total LAUF and Company Use Gas Expenses	(i) Source
1	**Calculation of Allowance for Use & Losses**								
2	Total Sendout/Throughput			310,743,000					Exhibit A-15 (MAS-6), Schedule E-2, line 13, column (g)
3	Five-Year Average LAUF Percentage			1.63%					Exhibit A-98 (TKJ-2), line 6, column (g)
4	Lost and Unaccounted for Gas Volume			5,067,402					Line 2 x line 3
5	Lost and Unaccounted for Gas Volume			5,067,402					From line 4
6	Fuel Gas Volume			2,338,000					WP-TKJ-9, line 25, column "n"
7	Total LAUF & Fuel Gas Volume			7,405,402					Line 5 + line 6
8									
9	Total Sendout/Throughput			310,743,000					Line 2
10									
11	Allowance for Use and Losses %			2.38%					Line 7 divided by line 9
12									
13	**Calculation of Consumers Energy LAUF & Co. Use**								
14	Lost and Unaccounted for Gas Volume			5,067,402	-1,571,707	3,495,695	$ 3.690 *	**$ 12,899,465**	WP-TKJ-12, line 35, column "n" for gas rate
15	Company Use Gas Volume		2,636,132						WP-TKJ-9, line 25, column "n"
16									
17	Transportation Volume	84,973,000							Exhibit A-15 (MAS-7), Schedule E-3, line 39, sum of columns (h), (i), (j) , and (k).
18	Allowance for Use and Losses Percentage	2.38%							From line 11
19	Transportation Gas-in-Kind Volume	**2,025,015**							Line 17 x line 18
20	Other Gas-in-Kind Volume	271,847							WP-TKJ-15, line 15, column "v"
21	Net Company Use Gas Volume		**2,636,132**	2,636,132	-725,155	1,910,977	$ 3.690 *	**$ 7,051,697**	WP-TKJ-12, line 35, column "n" for gas rate
22									
23	Total LAUF and Company Use Gas Adj			7,703,534				**$ 19,951,161**	Line 14 + line 21

* 12 month Average of Cost of Gas Sold

Schedule: B-5.5

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual and Projected Capital Expenditures
Gas Compression and Gas Storage
($000)

Case No.: U-21981
Exhibit No.: A-12 (TKJ-4)
Schedule: B-5.5
Page: 1 of 6
Witness: TKJoyce
Date: December 2025

	(a)	(b)	(c)	(d)	(e)	(f)
		Historical Year	Projected Bridge Period			Projected Test Year
Line No	Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
1	Freedom Upgrade Project	983	9	0	9	0
2	Compression	58,272	54,662	59,115	113,777	73,350
3	Storage	25,805	30,405	46,427	76,832	19,288
4	New Well	15,025	24,125	31,951	56,077	31,046
5	Well Rehabilitation	26,981	24,086	3,833	27,919	712
6	Storage Pipeline Replacement	13,835	37,486	8,606	46,092	57,639
7	Well Data Acquisition	62	1,650	2,018	3,667	5,133
8	Riverside Field Retirement	24,256	22,348	0	22,348	0
9	Safety Valve Installation	2,557	1,824	1,807	3,631	0
10	Total Capital Expenditures	167,776	196,595	153,756	350,351	187,169

		Projected			
		10 Mos Ending 10/31/2025	12 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027	34 Mos Ending 10/31/2027
11	Freedom Upgrade Project	9	0	0	9
12	Compression	44,020	69,756	73,350	187,127
13	Storage	20,075	56,756	19,288	96,120
14	New Well	21,027	35,050	31,046	87,123
15	Well Rehabilitation	22,440	5,479	712	28,631
16	Storage Pipeline Replacement	34,310	11,783	57,639	103,731
17	Well Data Acquisition	1,519	2,149	5,133	8,801
18	Riverside Field Retirement	20,562	1,786	0	22,348
19	Safety Valve Installation	1,711	1,920	0	3,631
20	Total Capital Expenditures	165,673	184,678	187,169	537,520

Schedule: B-5.5

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Actual and Projected Capital Expenditures
Gas Compression and Gas Storage
($000)

Case No.: U-21981
Exhibit No.: A-12 (TKJ-4)
Schedule: B-5.5
Page: 2 of 6
Witness: TKJoyce
Date: December 2025

Line No	(a) Description	(b) Historical Year 12 Mos Ended 12/31/2024	(c) Projected Bridge Year 12 Mos Ending 12/31/2025	(d) Projected Bridge Year 10 Mos Ending 10/31/2026	(e) Projected Bridge Year 22 Mos Ending 10/31/2026	(f) Projected Test Year 12 Mos Ending 10/31/2027
1	Freedom Upgrade Project	983	9	0	9	0
2	Freedom Compression	504	97	350	447	52
3	Muskegon River Compression	19,711	16,779	6,275	23,054	15,823
4	Northville Compression	2,154	4,890	8,333	13,222	9,371
5	Overisel Compression	23,331	16,169	21,725	37,894	14,522
6	Ray Compression	7,691	6,259	9,244	15,502	7,386
7	St Clair Compression	4,160	8,705	9,403	18,108	6,481
8	White Pigeon Compression	698	1,763	3,455	5,218	19,109
9	Huron Compression	23	0	330	330	605
10	Marion Storage Fields	2,715	881	12,426	13,307	15,080
11	Northville Storage Field	6,547	17,031	18,647	35,678	495
12	Overisel Storage Fields	4,588	1,353	4,503	5,857	885
13	Ray Storage Fields	3,984	6,674	2,794	9,468	2,300
14	St Clair Storage Fields	7,972	4,465	8,056	12,521	528
15	Storage New Wells	15,025	24,125	31,951	56,077	31,046
16	Well Rehabilitation	26,981	24,086	3,833	27,919	712
17	Storage Pipeline Replacement	13,835	37,486	8,606	46,092	57,639
18	Well Data Acquisition	62	1,650	2,018	3,667	5,133
19	Riverside Field Retirement	24,256	22,348	0	22,348	0
20	Safety Valve Installation	2,557	1,824	1,807	3,631	0
21	Total Capital Expenditures	167,776	196,595	153,756	350,351	187,169

Unless noted otherwise, capital “other” costs include expenses such as AFUDC, fleet transportation, pension, administrative/general expenses, indirect non-labor expenses, rent/utility costs, employee benefits, and business expenses (e.g., travel, meals, etc.).
This exhibit demonstrates the projected break down for each program into the cost components shown above. The 2024 amounts are the actual amounts. The cost component projections for 2025 and beyond are based upon the 2024-2025 18 month (Jan 2024 - Jun 2025) average actual percentage of the breakdown of these components in these programs. The Company projects the program expenditures at a total dollar level based upon historical spending and known projects or other changes. Cost confidence levels were not used to develop

Schedule: B-5.5

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual and Projected Capital Expenditures
Gas Compression and Gas Storage
($000)

Case No.: U-21981
Exhibit No.: A-12 (TKJ-4)
Schedule: B-5.5
Page: 3 of 6
Witness: TKJoyce
Date: December 2025

	(a)	(b)	(c)	(d)	(e)	(f)
		Historical Year	Projected Bridge Year			Projected Test Year
Line No	Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
1	**Freedom Upgrade Project**	**983**	**9**	**0**	**9**	**0**
7%	Labor	64	1	0	1	0
11%	Capitalized E&S	108	1	0	1	0
0%	Materials	1	0	0	0	0
76%	Contractor	752	7	0	7	0
0%	Non-Labor Overhead	0	0	0	0	0
6%	Non-Labor Other	56	1	0	1	0
	Contingency		0	0	0	0
2	**Freedom Compression**	**504**	**97**	**350**	**447**	**52**
8%	Labor	33	8	30	38	4
10%	Capitalized E&S	51	9	34	43	5
13%	Materials	66	13	46	59	7
62%	Contractor	321	60	216	276	32
0%	Non-Labor Overhead	0	0	0	0	0
7%	Non-Labor Other	33	7	24	31	4
	Contingency		0	0	0	0
3	**Muskegon River Compression**	**19,711**	**16,779**	**6,275**	**23,054**	**15,823**
4%	Labor	585	720	269	989	679
10%	Capitalized E&S	2,166	1,669	624	2,293	1,574
1%	Materials	238	158	59	217	149
77%	Contractor	15,480	12,898	4,824	17,722	12,164
0%	Non-Labor Overhead	2	3	1	5	3
8%	Non-Labor Other	1,240	1,331	498	1,828	1,255
	Contingency		0	0	0	0
4	**Northville Compression**	**2,154**	**4,890**	**8,333**	**13,222**	**9,371**
8%	Labor	191	386	659	1,045	741
9%	Capitalized E&S	221	460	784	1,245	882
6%	Materials	202	294	502	796	564
69%	Contractor	1,371	3,375	5,751	9,126	6,468
0%	Non-Labor Overhead	1	2	3	5	3
8%	Non-Labor Other	168	372	634	1,006	713
	Contingency		0	0	0	0
5	**Overisel Compression**	**23,331**	**16,169**	**21,725**	**37,894**	**14,522**
6%	Labor	1,206	908	1,220	2,128	815
10%	Capitalized E&S	2,323	1,538	2,066	3,603	1,381
11%	Materials	2,128	1,706	2,292	3,998	1,532
65%	Contractor	15,375	10,444	14,033	24,477	9,380
0%	Non-Labor Overhead	20	17	22	39	15
10%	Non-Labor Other	2,278	1,557	2,092	3,649	1,399
	Contingency		0	0	0	0

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Schedule: B-5.5

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual and Projected Capital Expenditures
Gas Compression and Gas Storage
($000)

Case No.: U-21981
Exhibit No.: A-12 (TKJ-4)
Schedule: B-5.5
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Witness: TKJoyce
Date: December 2025

	(a)	(b)	(c)	(d)	(e)	(f)
		Historical Year	Projected Bridge Year			Projected Test Year
Line No	Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
6	**Ray Compression**	**7,691**	**6,259**	**9,244**	**15,502**	**7,386**
8%	Labor	638	511	755	1,265	603
9%	Capitalized E&S	760	578	854	1,432	682
8%	Materials	740	522	772	1,294	617
64%	Contractor	4,818	4,000	5,908	9,908	4,721
1%	Non-Labor Overhead	35	33	49	83	39
10%	Non-Labor Other	700	614	907	1,521	724
	Contingency		0	0	0	0
7	**St Clair Compression**	**4,160**	**8,705**	**9,403**	**18,108**	**6,481**
6%	Labor	250	534	577	1,111	398
9%	Capitalized E&S	445	804	868	1,672	599
17%	Materials	1,326	1,517	1,639	3,156	1,130
60%	Contractor	1,825	5,220	5,639	10,859	3,887
1%	Non-Labor Overhead	8	48	52	100	36
7%	Non-Labor Other	306	582	628	1,210	433
	Contingency		0	0	0	0
8	**White Pigeon Compression**	**698**	**1,763**	**3,455**	**5,218**	**19,109**
18%	Labor	97	326	639	965	3,533
9%	Capitalized E&S	66	151	296	447	1,638
41%	Materials	324	717	1,404	2,121	7,767
13%	Contractor	108	237	465	702	2,569
0%	Non-Labor Overhead	0	1	2	3	11
19%	Non-Labor Other	102	331	649	981	3,591
	Contingency		0	0	0	0
9	**Huron Compression**	**23**	**0**	**330**	**330**	**605**
16%	Labor	4	0	53	53	97
25%	Capitalized E&S	6	0	82	82	150
43%	Materials	10	0	141	141	258
0%	Contractor	0	0	0	0	0
0%	Non-Labor Overhead	0	0	0	0	0
16%	Non-Labor Other	4	0	54	54	99
	Contingency		0	0	0	0
10	**Marion Storage Fields**	**2,715**	**881**	**12,426**	**13,307**	**15,080**
10%	Labor	269	90	1,273	1,363	1,545
10%	Capitalized E&S	268	87	1,233	1,320	1,496
7%	Materials	173	63	893	956	1,083
64%	Contractor	1,780	567	7,997	8,564	9,704
0%	Non-Labor Overhead	4	1	20	22	25
8%	Non-Labor Other	219	72	1,011	1,082	1,227
	Contingency		0	0	0	0

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Consumers Energy Company
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Gas Compression and Gas Storage
($000)

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(a)	(b)	(c)	(d)	(e)	(f)
	Historical Year	Projected Bridge Year			Projected Test Year
Line No Description	12 Mos Ended 12/31/2024	12 Mos Ending 12/31/2025	10 Mos Ending 10/31/2026	22 Mos Ending 10/31/2026	12 Mos Ending 10/31/2027
11 Northville Storage Field	**6,547**	**17,031**	**18,647**	**35,678**	**495**
3% Labor	140	460	504	964	13
9% Capitalized E&S	656	1,588	1,739	3,327	46
27% Materials	1,071	4,674	5,118	9,792	136
47% Contractor	3,790	7,932	8,685	16,617	231
0% Non-Labor Overhead	0	0	0	0	0
14% Non-Labor Other	890	2,376	2,602	4,978	69
Contingency		0	0	0	0
12 Overisel Storage Fields	**4,588**	**1,353**	**4,503**	**5,857**	**885**
4% Labor	135	50	166	216	33
9% Capitalized E&S	419	121	403	524	79
7% Materials	355	100	333	433	66
70% Contractor	3,280	943	3,137	4,080	617
0% Non-Labor Overhead	4	1	4	5	1
10% Non-Labor Other	395	138	461	599	91
Contingency		0	0	0	0
13 Ray Storage Fields	**3,984**	**6,674**	**2,794**	**9,468**	**2,300**
4% Labor	165	279	117	396	96
9% Capitalized E&S	396	604	253	856	208
39% Materials	2,143	2,630	1,101	3,731	906
40% Contractor	951	2,661	1,114	3,775	917
0% Non-Labor Overhead	8	10	4	14	3
7% Non-Labor Other	320	490	205	695	169
Contingency		0	0	0	0
14 St Clair Storage Fields	**7,972**	**4,465**	**8,056**	**12,521**	**528**
3% Labor	259	137	247	384	16
10% Capitalized E&S	783	437	788	1,225	52
13% Materials	896	562	1,013	1,574	66
70% Contractor	5,689	3,139	5,663	8,801	371
0% Non-Labor Overhead	14	8	14	21	1
4% Non-Labor Other	332	183	331	514	22
Contingency		0	0	0	0
15 Storage New Wells	**15,025**	**24,125**	**31,951**	**56,077**	**31,046**
3% Labor	429	820	1,085	1,905	1,055
9% Capitalized E&S	1,452	2,220	2,940	5,160	2,857
5% Materials	756	1,173	1,553	2,725	1,509
71% Contractor	10,608	17,072	22,610	39,682	21,969
0% Non-Labor Overhead	1	7	9	16	9
12% Non-Labor Other	1,780	2,835	3,754	6,589	3,648
Contingency		0	0	0	0

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Schedule: B-5.5

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Summary of Actual and Projected Capital Expenditures
Gas Compression and Gas Storage
($000)

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Line No	Description	Historical Year 12 Mos Ended 12/31/2024 (b)	Projected Bridge Year 12 Mos Ending 12/31/2025 (c)	Projected Bridge Year 10 Mos Ending 10/31/2026 (d)	Projected Bridge Year 22 Mos Ending 10/31/2026 (e)	Projected Test Year 12 Mos Ending 10/31/2027 (f)
16	**Well Rehabilitation**	**26,981**	**24,086**	**3,833**	**27,919**	**712**
5%	Labor	1,140	1,157	184	1,342	34
10%	Capitalized E&S	2,725	2,313	368	2,681	68
1%	Materials	381	354	56	410	10
77%	Contractor	20,557	18,517	2,947	21,464	547
0%	Non-Labor Overhead	11	19	3	22	1
7%	Non-Labor Other	2,167	1,726	275	2,001	51
	Contingency		0	0	0	0
17	**Storage Pipeline Replacement**	**13,835**	**37,486**	**8,606**	**46,092**	**57,639**
4%	Labor	651	1,639	376	2,016	2,521
9%	Capitalized E&S	1,375	3,445	791	4,236	5,297
19%	Materials	2,294	7,041	1,616	8,657	10,826
57%	Contractor	8,131	21,277	4,885	26,162	32,716
0%	Non-Labor Overhead	26	49	11	61	76
11%	Non-Labor Other	1,357	4,034	926	4,961	6,203
	Contingency		0	0	0	0
18	**Well Data Acquisition**	**62**	**1,650**	**2,018**	**3,667**	**5,133**
28%	Labor	20	469	573	1,042	1,458
5%	Capitalized E&S	3	90	111	201	281
5%	Materials	0	84	103	186	261
19%	Contractor	6	307	375	682	955
0%	Non-Labor Overhead	0	0	0	0	0
42%	Non-Labor Other	32	700	856	1,556	2,178
	Contingency		0	0	0	0
19	**Riverside Field Retirement**	**24,256**	**22,348**	**0**	**22,348**	**0**
8%	Labor	1,935	1,800	0	1,800	0
23%	Capitalized E&S	5,692	5,106	0	5,106	0
8%	Materials	1,679	1,788	0	1,788	0
41%	Contractor	9,955	9,168	0	9,168	0
1%	Non-Labor Overhead	106	119	0	119	0
20%	Non-Labor Other	4,889	4,366	0	4,366	0
	Contingency		0	0	0	0
20	**Safety Valve Installation**	**2,557**	**1,824**	**1,807**	**3,631**	**0**
6%	Labor	117	106	105	211	0
11%	Capitalized E&S	292	204	202	406	0
7%	Materials	187	125	124	249	0
69%	Contractor	1,785	1,256	1,245	2,501	0
0%	Non-Labor Overhead	6	4	4	8	0
7%	Non-Labor Other	170	128	127	256	0
	Contingency		0	0	0	0
21	**Total Capital**	**167,776**	**196,595**	**153,756**	**350,351**	**187,169**
	Labor	8,327	10,402	8,831	19,233	13,640
	Capitalized E&S	20,209	21,425	14,435	35,859	17,295
	Materials	14,972	23,521	18,765	42,286	26,888
	Contractor	106,583	119,082	95,492	214,574	107,248
	Non-Labor Overhead	247	323	199	522	222
	Non-Labor Other	17,437	21,843	16,034	37,877	21,875
	Contingency	0	0	0	0	0

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MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Storage Well Rehabilitation Program Detail

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Line No.	Year	Historical 2017 (Actuals)	2018 (Actuals)	2019 (Actuals)	2020 (Actuals)	2021 (Actuals)	2022 (Actuals)	2023 (Actuals)	2024 (Actuals)	Projected 2025	2026	2027	Totals
1													
2	Number of wells rehabbed	123	109	83	66	71	68	73	62	58	11	0	724
3		$ 120,963	$ 200,833	$ 249,847	$ 301,024	$ 420,311	$ 541,108	$ 422,244	$ 422,741	$ 414,300	$ 388,591		
4													
5													
6													
7	**PROGRAM LEVEL - Spend Allocation**												
8													
9													
10	*CE Labor*	2,595,361	4,526,085	5,033,060	3,176,888	3,106,553	3,723,063	4,743,083	4,856,142	3,796,055	675,267	-	36,231,557
11	*Outside Services - Admin*	701,828	631,406	702,272	1,858,605	2,156,299	2,273,660	1,781,586	1,628,536	1,402,497	249,485	274,032	13,660,207
12	**Total Labor**	3,297,189	5,157,491	5,735,332	5,035,493	5,262,852	5,996,723	6,524,670	6,484,678	5,198,552	924,752	274,032	49,891,764
13													
14	*Wellheads*	1,573,977	738,934	226,592	105,000	143,000	610,620	727,301	222,638	519,690	92,446	-	4,960,197
15	*Packers*	62,015	54,450	61,780	64,000	94,255	78,611	88,846	54,700	66,772	11,878	-	637,308
16	*Tubing*	201,013	70,000	40,894	136,000	420,763	1,376,319	480,495	259,419	356,762	63,463	-	3,405,129
17	*Equipment Mats*	317,584	342,589	160,831	758,858	156,070	312,107	438,342	482,807	354,884	63,129	-	3,387,201
18	*Other Misc*	109,696	1,152,266	492,581	90,940	393,889	1,222,257	740,893	654,976	580,579	103,277	-	5,541,354
19	**Total Materials**	2,264,285	2,358,239	982,677	1,154,798	1,207,977	3,599,914	2,475,878	1,674,540	1,878,687	334,193	-	17,931,188
20													
21	*Civil/Site Prep*	2,022,147	3,174,621	2,313,387	2,353,615	2,995,182	3,719,058	3,548,418	4,649,281	2,961,248	526,766	-	28,263,725
22	*Well Consultants*	977,358	2,201,074	1,191,708	1,057,500	1,904,952	1,725,433	1,938,813	788,291	1,408,585	250,568	-	13,444,283
23	*Logging*	2,542,905	2,649,112	2,020,394	1,875,583	2,176,537	2,080,244	2,856,365	2,126,293	2,190,536	389,667	-	20,907,635
24	*Wellhead Technician / Welding*	417,012	476,722	538,578	588,202	1,386,443	1,039,968	951,836	1,030,867	768,483	136,703	-	7,334,814
25	*Painting*	149,340	231,940	544,968	305,040	782,247	1,430,818	737,242	112,000	513,180	91,288	-	4,898,063
26	*Wellhead Assessment*	272,044	-	-	-	-	-	58,229	0	39,475	7,022	-	376,770
27	*Cathodic*	-	27,708	63,170	14,170	-	40,673	31,191	23,135	23,910	4,253	-	228,211
28	*Downhole work*	3,260,928	6,052,907	7,885,993	7,483,163	14,069,796	14,589,169	11,417,508	9,587,809	8,886,153	1,580,727	-	84,814,152
	Misc	-	-	-	-	729,394	3,256,292	853,111	376,691	623,367	110,889	-	5,949,743
29	**Total Construction**	9,641,734	14,814,084	14,558,199	13,677,273	24,044,551	27,881,655	22,392,714	18,694,367	17,414,937	3,097,882	-	166,217,396
30													
31	*Cost Of Removal*	(324,699)	(438,981)	(538,889)	-	(673,314)	(682,924)	(569,443)	(643,633)	(462,776)	(82,322)	(3,472)	(4,420,453)
32													
33	**CURRENT PROGRAM LEVEL TOTAL (2017-24actuals, 2025-2027 estimates)**	**$ 14,878,509**	**$ 21,890,833**	**$ 20,737,319**	**$ 19,867,564**	**$ 29,842,066**	**$ 36,795,368**	**$ 30,823,818**	**$ 26,209,952**	**$ 24,029,400**	**$ 4,274,506**	**$ 270,560**	**$ 229,619,895**
34													
35													
36	**PROGRAM LEVEL - Cost Element Breakdown**												
37													
38	Labor	2,595,361	4,526,085	5,033,060	3,176,888	3,106,553	3,723,063	4,743,083	4,856,142	3,796,055	675,267	-	36,231,557
39	Material	2,264,285	2,358,239	982,677	1,154,798	1,207,977	3,599,914	2,475,878	1,674,540	1,878,687	334,193	-	17,931,188
40	Business Expenses	-	-	-	-	-	-	-	-	-	-	-	-
41	Contractors	10,343,562	15,445,490	15,260,470	15,535,878	26,200,850	30,155,315	24,174,300	20,322,903	18,817,434	3,347,368	274,032	179,877,602
42	Contingency	-	-	-	-	-	-	-	-	-	-	-	-
43	Cost of Removal	(324,699)	(438,981)	(538,889)	-	(673,314)	(682,924)	(569,443)	(643,633)	(462,776)	(82,322)	(3,472)	(4,420,453)
44	**CURRENT PROGRAM LEVEL TOTAL (2017-24 actuals, 2025-2027 estimates)**	**$ 14,878,509**	**$ 21,890,833**	**$ 20,737,319**	**$ 19,867,564**	**$ 29,842,066**	**$ 36,795,368**	**$ 30,823,818**	**$ 26,209,952**	**$ 24,029,400**	**$ 4,274,506**	**$ 270,560**	**$ 229,619,895**

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Consumers Energy Company
2026 Storage Well Rehabilitation Projected Expediture

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Program	Well	Scope Code	Scope	Logging	Outlier Y/N	Cost Estimate (Based on 2023 Cost Loading)	Labor For Loadings Calc	OSS For Loadings Calc
WRH	W-374	MISC	Log, SL Cleanout, AM			102,612	3,968	98,644
WRH	W-929	MISC	Log, SL Cleanout, AM			74,537	3,968	70,569
WRH	W-297	LUT	LU, AM			137,888	4,120	133,768
WRH	W-388	LUT	LU, AM			200,463	17,587	169,468
WRH	W-235	LUT	LUT, spot acid, perf, possible acidizing, AM			169,413	4,120	165,293
WRH	W-207	LUT	LUT, AM (wellfile shows tubing)			169,413	4,120	165,293
WRH	W-457	RPLS	Remediated 2017. RPLS - Log HRVT.			174,004	3,158	170,846
WRH	C-367	MISC	Remediated in 2019. Remove tubing, log and install tubing. Log HRVT. AM			101,262	3,968	97,294
WRH	W-657	RPLS	RPLS, disconnect flow line and remove well line (convert to observation well), AM			174,004	3,158	170,846
WRH	O-209	LAT	LAT, solvent, wellhead			231,388	3,738	227,650
WRH	O-268	LAT	LAT, solvent, WH			231,388	3,738	227,650
					WRH	1,766,372	55,642	1,697,322

Row Labels	Average of Total	Average of Internal	Average of External
LUT	**149,188**	**4,120**	**145,068**
MISC	**81,037**	**3,968**	**77,069**
RPLS	**153,779**	**3,158**	**150,621**
RPLUS	**264,786**	**482**	**264,304**
PA	**165,019**	**4,394**	**160,625**
LAT	**211,163**	**3,738**	**207,425**

Rehab	Labor	N.Labor	Total
Cost Per Well	55,642	1,697,322	1,752,964
Internal Labor	145,026	412,000	557,026
External Allocations		305,401	305,401
Carryover		500,000	500,000
Flow Testing		238,000	238,000
Misc Materials		13,000	13,000
NDT		12,000	12,000
Pre-Fab Riser	28,710	23,864	52,574
	229,377	**3,201,587**	**3,430,965**
5% Inflation			171,548
			3,602,513
E&S			443,109
Labor			228,884
			4,274,506

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MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

2027 Storage Well Rehabilitation projected expediture

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	2026 Wells	
WRH Carryover	**11**	
Restoration	**20,000**	220,000
		220,000
E&S		27,500
Labor		23,060
		270,560

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Storage Well Rehabilitation average cost based on scope

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Row Labels	Average of Total	Average of Internal	Average of External	Sum of WO
LUT	**149,188**	**4,120**	**145,068**	**201,228,603**
C-930	222,247	5,554	216,694	42,083,766
W-302	75,164	1,657	73,507	37,935,234
W-338	45,155	2,470	42,686	36,926,856
W-675	247,130	5,920	241,210	42,086,428
W-900	156,244	5,000	151,244	42,196,319
MISC	**81,037**	**3,968**	**77,510**	**378,517,193**
C-255	22,974		22,974	42,193,129
C-448	91,842	7,427	84,415	42,193,134
I-101	82,269	2,151	80,118	42,193,566
Kuhlman 1-36	50,083	3,309	46,774	42,195,059
Przedwojewski #1	50,189	2,034	48,155	42,195,364
R-113	91,131	1,855	89,277	41,577,398
R-128	147,065	4,451	142,614	41,577,393
R-401	70,753	2,485	68,268	42,195,668
W-948	123,029	8,030	114,999	42,196,482
RPLS	**153,779**	**3,158**	**150,621**	**75,729,659**
S-309	287,316	5,471	281,845	42,195,670
W-544	20,242	845	19,397	33,533,989
RPLUS	**264,786**	**482**	**264,304**	**42,083,769**
W-272	264,786	482	264,304	42,083,769
Grand Total	**120,448**	**3,696**	**116,969**	**697,559,224**

Scope

LUT - Log, underream and install tubing
RPLUS - Remove packer, log, underream and set T/P
LU - Log and Underream
STPIW - Set Tubing and Packer and Install New Wellhead
PA - Moved to Plug & Abandonment
NWI - New Wellhead Installation
ITP - Install Tubing and Packer
RPLS - Remove packer, log and set T/P
LUW - Log, underream, install new wellhead
LUWT - log, underream, install new wellhead and tubing
LCW- Log, cleanout and Install New Wellhead
LWT - Log, install new wellhead and tubing
CT:CLAF- Coil Tubing - Clean out, log, acidize, flowback/welltest
LPUT - Log, plug back, underream, install tubing
LPUTP- Log, plug back, underream, install T/P
LAT- Log, acidize, install tubing
LPAT - Log, plug back, acidize, install tubing
LPU - Log, plug back, underream
LPP- Log, plug back, perf
LA - Log, acidize
LPA- log, plugback, acidize

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Storage Fields Month End Summary
October 2024 - August 2025 Historical / September 2025 - October 2027 Forecast

Case No.: U-21981
Exhibit No.: A-101 (TKJ-6)
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Witness: TKJoyce
Date: December 2025

VOLUMES @ 14.65 PSIA DRY

Line No.	(a) MONTH	(b)	(c) GCR VOL - MMCF	(d) GCR $000	(e) GCR $ / MCF	(f) GCC VOL - MMCF	(g) GCC $000	(h) GCC $ / MCF	(i) COMBINED VOL - MMCF	(j) COMBINED $000	(k) COMBINED $ / MCF
1	Oct-24	Booked	168,802	460,265	2.727	11,371	63,209	5.559	180,174	523,474	2.905
2	Nov-24	Booked	157,424	428,957	2.725	12,621	70,196	5.562	170,046	499,153	2.935
3	Dec-24	Booked	132,967	362,317	2.725	12,163	67,648	5.562	145,130	429,965	2.963
4	Jan-25	Booked	104,255	284,078	2.725	9,375	52,141	5.562	113,630	336,219	2.959
5	Feb-25	Booked	86,439	235,516	2.725	5,125	28,502	5.562	91,563	264,018	2.883
6	Mar-25	Booked	83,151	229,789	2.764	2,091	11,632	5.562	85,242	241,421	2.832
7	Apr-25	Booked	92,018	264,327	2.873	-237	-1,318	5.562	91,781	263,010	2.866
8	May-25	Booked	106,999	309,825	2.896	550	3,440	6.258	107,549	313,265	2.913
9	Jun-25	Booked	124,721	363,244	2.912	2,169	13,279	6.122	126,890	376,523	2.967
10	Jul-25	Booked	140,661	409,365	2.910	4,355	26,863	6.169	145,016	436,228	3.008
11	Aug-25	Booked	156,613	456,904	2.917	6,627	40,892	6.170	163,240	497,796	3.049
12	Sep-25	Forecast	167,076	486,045	2.909	8,722	53,545	6.139	175,798	539,590	3.069
13	Oct-25	Forecast	169,015	491,584	2.909	10,585	64,795	6.122	179,600	556,379	3.098
14	13 Month Avg		130,011	367,863	2.829	6,578	38,063	5.786	136,589.234	405,926.168	2.972
15	Oct-25	Forecast	169,015	491,584	2.909	10,585	64,795	6.122	179,600	556,379	3.098
16	Nov-25	Forecast	152,466	443,450	2.909	11,207	68,556	6.117	163,673	512,005	3.128
17	Dec-25	Forecast	126,041	366,593	2.909	10,229	62,571	6.117	136,270	429,164	3.149
18	Jan-26	Forecast	101,696	295,784	2.909	7,977	48,797	6.117	109,673	344,582	3.142
19	Feb-26	Forecast	80,559	234,306	2.909	5,256	32,151	6.117	85,814	266,456	3.105
20	Mar-26	Forecast	67,827	197,277	2.909	3,011	18,421	6.117	70,839	215,698	3.045
21	Apr-26	Forecast	77,664	231,298	2.978	-343	-1,381	4.028	77,321	229,917	2.974
22	May-26	Forecast	94,278	287,967	3.054	458	1,846	4.028	94,736	289,814	3.059
23	Jun-26	Forecast	112,810	353,538	3.134	2,175	8,761	4.028	114,985	362,299	3.151
24	Jul-26	Forecast	131,366	422,247	3.214	4,305	17,341	4.028	135,671	439,589	3.240
25	Aug-26	Forecast	149,852	491,536	3.280	6,484	26,119	4.028	156,336	517,655	3.311
26	Sep-26	Forecast	164,889	545,879	3.311	8,534	34,377	4.028	173,423	580,256	3.346
27	Oct-26	Forecast	169,196	561,492	3.319	10,404	41,908	4.028	179,600	603,400	3.360
28	13 Month Avg		122,897	378,688	3.081	6,176	32,636	5.285	129,072.424	411,324.179	3.187
29	Oct-26	Forecast	169,196	561,492	3.319	10,404	41,908	4.028	179,600	603,400	3.360
30	Nov-26	Forecast	152,003	504,436	3.319	11,026	44,417	4.028	163,030	548,853	3.367
31	Dec-26	Forecast	126,516	419,855	3.319	10,065	40,545	4.028	136,582	460,400	3.371
32	Jan-27	Forecast	101,895	338,147	3.319	7,859	31,658	4.028	109,754	369,805	3.369
33	Feb-27	Forecast	80,213	266,194	3.319	4,958	19,971	4.028	85,171	286,165	3.360
34	Mar-27	Forecast	68,079	225,926	3.319	2,760	11,117	4.028	70,839	237,043	3.346
35	Apr-27	Forecast	77,891	259,056	3.326	-337	-1,356	4.020	77,553	257,699	3.323
36	May-27	Forecast	94,490	314,178	3.325	446	1,792	4.020	94,936	315,970	3.328
37	Jun-27	Forecast	113,021	377,016	3.336	2,123	8,536	4.020	115,144	385,552	3.348
38	Jul-27	Forecast	131,581	443,616	3.371	4,202	16,893	4.020	135,783	460,509	3.392
39	Aug-27	Forecast	150,072	510,998	3.405	6,332	25,455	4.020	156,404	536,453	3.430
40	Sep-27	Forecast	165,112	564,124	3.417	8,335	33,508	4.020	173,447	597,632	3.446
41	Oct-27	Forecast	169,440	579,643	3.421	10,160	40,842	4.020	179,600	620,485	3.455
42	13 Month Avg		123,039	412,668	3.354	6,026	24,253	4.025	129,064.815	436,920.528	3.385