



The City of Canton

Invitation to Bid

City of Canton, Ohio
Purchasing Department
218 Cleveland Ave. SW, 4th floor
Canton, Ohio 44702

2022 Service Center Upgrade and Reconfiguration Project - GP 1331

Item/Project

Engineering

Responsible Department

2:00 PM, 2/22/2023

Bids Due

Bid Proposal Submitted By:

Company Name

Street Address

City

State

Zip

Contact Person

Phone No.

Email Address



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Bidder's Checklist: The completed Bid Form shall be accompanied by the following completed documents:

- _____ [Pre-Bid Substitution](#), if any proposed substitutes have been pre-approved.
- _____ [Bid Guaranty and, if applicable Contract Bond](#)
- _____ [Contractor's Qualification Statement](#)
- _____ [Contractor's List of Subcontracted Work Categories](#)
- _____ [A list identifying its DBE subcontractors and participation rates as a percentage of the Contract Price](#), and if the DBE participation goal has not been met, certification of good faith efforts to meet the DBE participation goal.
- _____ The Project Labor Agreement (PLA) Letter of Assent (See Appendix A).
- _____ If this project is funded in whole or part by the [Ohio Public Works Commission](#), then certification of agreement and compliance with certain statements and covenants regarding Bidder's subscription to the State's Equal Employment Opportunity Requirements for State-assisted Construction Contracts.



Legal Notice

Sealed bids will be received by the City of Canton (the "City"), as provided in this notice for the 2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project (the "Project"), Ordinance 88/2022. Contract documents, which include additional details of the Project, are on file and available from the City of Canton's web site (<https://cantonohio.gov/448/Purchasing-Procurement>).

Bids shall be enclosed in a sealed envelope addressed to the City of Canton, 218 Cleveland Ave. SW, Purchasing Dept/Fourth Floor, Canton, Ohio 44702 and plainly marked on the outside "2022 Service Center Upgrade and Reconfiguration Project - GP 1331 PROJECT BID." Bids will be received on or before 2:00 PM, local time, 2/22/2023 and opened shortly thereafter.

Questions regarding plans and specifications should be addressed in writing to Purchasing Department, at purchasing@cantonohio.gov.

All bids must include a Bid Guaranty, as described in the Instructions to Bidders. Prevailing wage rates apply. All bidders will be required to comply with the City Contract Compliance Program regarding equal employment opportunity. After submission and opening, no bidder may withdraw its bid within 60 days after the opening; the City reserves the right to waive irregularities, reject any or all bids, and conduct necessary investigations to determine bidder responsibility.

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INSTRUCTIONS TO BIDDERS

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A. BIDDER'S PLEDGE AND AGREEMENT

1. Each Bidder acknowledges that this is a public project involving public funds and that the Owner expects and requires that each successful Bidder adhere to the highest ethical and performance standards. Each Bidder by submitting a bid pledges and agrees that (a) it will act at all times with absolute integrity and truthfulness in its dealings with the Owner and the Engineer, (b) it will use its best efforts to cooperate with the Owner and the Engineer and all other Contractors on the Project and at all times will act with professionalism and dignity in its dealings with the Owner, Engineer, and other Contractors, (c) it will assign only competent supervisors and workers to the Project, each of whom is fully qualified to perform the tasks that are assigned to him/her, and (d) it has read, understands and will comply with the terms of the Contract Documents.

B. EXAMINATION OF CONTRACT DOCUMENTS AND SITE CONDITIONS AND RELIANCE UPON TECHNICAL DATA

1. Each Bidder shall have a competent person carefully and diligently review each part of the Contract Documents, including the Divisions of the Specifications and parts of the Drawings that are not directly applicable to the Work on which the Bidder is submitting its bid. By submitting its bid, each Bidder represents and agrees, based upon its careful and diligent review of the Contract Documents, that it is not aware of any conflicts, inconsistencies, errors, or omissions in the Contract Documents for which it has not notified the Owner in writing at least ten (10) days prior to the bid opening. If there are any such conflicts, inconsistencies, errors, or omissions in the Contract Documents, the Bidder (i) will provide the labor, equipment, or materials of the better quality or greater quantity of Work and/or (ii) will comply with the more stringent requirements. The Bidder will not be entitled to any Change Order, additional compensation, or additional time on account of such conditions for any conflicts, inconsistencies, errors, or omissions that would have been discovered by such careful and diligent review, unless it has given prior written notice to the Owner.
2. Each Bidder shall have a competent person carefully and diligently inspect and examine the entire site and the surrounding area, including all parts of the site applicable to the Work for which it is submitting its bid, including location, condition, and layout of the site and the location of utilities, and carefully correlate the results of the inspection with the requirements of the Contract Documents. The Bidder's bid shall include all costs attributable to site and surrounding area conditions that would have been discovered by such careful and diligent inspection and examination of the site and the surrounding area, and the Bidder shall not be entitled to any Change Order, additional compensation, or additional time on account of such conditions.
3. The Bidder may rely upon the general accuracy of any technical data identified in the Owner-Contractor Agreement (e.g., any soils exploration reports, soil boring logs, site survey, or abatement reports) in preparing its bid, but such technical data are not part of the Contract Documents. Except for the limited reliance described in the preceding sentence, Bidder may not, if awarded a contract for the Work, rely upon or make any Claim against the Owner or Engineer, or any of their agents or employees, with respect to any of the following:
 - a. the completeness of such reports and drawings for Bidder's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the successful Bidder and safety precautions and programs incident thereto; or



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- b. any interpretation by the successful Bidder of or conclusion drawn from any technical data or any such other data, interpretations, opinions, or information. For example, all interpolations and extrapolations of data performed by the Bidder to estimate locations or quantities of subsurface strata are independent factual assumptions, which Owner does not warrant.
4. Each Bidder will be deemed to have actual knowledge of all information provided or discussed at the pre-bid meeting.

C. OWNER & ENGINEER

1. The Owner is:

The City of Canton
218 Cleveland Avenue SW
Canton, OH 44702
Telephone: 330.489.3245
Fax: 330.489.3499

The Owner's Representative is:

Jim Benekos

2. The Design Engineer for the Project is:

GPD Group
520 South Main St. Suite 2531, Akron, OH 44311
Akron, Ohio 44311

D. PROJECT

1. The Project and Work for the Project consists of all labor, materials, equipment, and services necessary for construction of the project identified as **2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project** ("the Project"), all in accordance with the Drawings and Specifications prepared by the Engineer and/or Owner. The Project must be substantially complete by the Date for Substantial Completion set forth in Section Q below.
2. The Mayor **has** determined that a Project Labor Agreement ("PLA") will advance the City's procurement interest in cost, efficiency, and quality while promoting labor-management stability as well as compliance with applicable legal requirements governing safety and health, equal employment opportunity, labor and employment standards, and other related matters. Any such PLA shall be negotiated by the Mayor of the Owner with the East Central Ohio Building and Construction Trades Council and its affiliated local unions, or said Council's successor. The successful Bidder shall comply with and adhere to all of the provisions of any PLA for the Project.
3. A pre-bid conference will be held at **11:00 AM on February 06, 2023 at 2436 30th St NE, Canton, OH 44705.**

E. WORK

1. This Project includes **Earthwork, grading, asphalt paving, new storage building, fencing, concrete sidewalk**, and the like as set forth in the Contract Documents.
2. Alternate No. 1 for this Project is **Additional Impound Lot Parking Area - South.**



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3. Alternate No. 2 for this Project is **Additional Parking Area - Storage Building**.
4. Alternate No. 3 for this Project is **Additional Visitor Parking Area**.
5. Alternate No. 4 for this Project is **Additional Sidewalk**.
6. Only one contract will be issued by the Owner for constructing the Project, the General Contract, which will cover all scopes of work necessary to construct the Project.
7. The Contractor awarded the General Contract (General Contractor) will be responsible for the performance and coordination of any and all subcontractors and suppliers either directly or indirectly contracted with the General Contractor.
8. Owner will provide Bidders access to the Project site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up, and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable laws, regulations and Owner's policies relative to excavation and utility locates. Bidders may contact **Jim Benekos**, The City of Canton, at **james.benekos@cantonohio.gov** or **330-438-6903** if they have any interest in accessing the Project site, independent of any pre-bid meeting.

F. ESTIMATE OF COST

1. The total estimated construction cost for the Base Bid Work for the Project for which bids are being solicited at this time is **\$1,450,000.00**.

The estimated cost for Alternate 1 - **Additional Impound Lot Parking Area - South** is: **\$120,000.00**.

The estimated cost for Alternate 2 - **Additional Parking Area - Storage Building** is: **\$38,000.00**.

The estimated cost for Alternate 3 - **Additional Visitor Parking Area** is: **\$150,000.00**.

The estimated cost for Alternate 4 - **Additional Sidewalk** is: **\$17,000.00**.

G. CONTRACT DOCUMENTS

The Contract Documents consist of the documents listed in Section 1 of the Owner-Contractor Agreement.

Bidders may view and download copies of the Contract Documents from The City of Canton Purchasing web site at <https://cantonohio.gov/448/Purchasing-Procurement>, which is the only authorized source of the Contract Documents. The City of Canton's sourcing tool, Vendor Registry, will maintain the Bidder's list and will provide notice and copies of Addenda as issued. It is the responsibility of any person or organization interested in a hard copy of the Contract Documents to pay all costs associated with printing.

Bidders shall use complete sets of Contract Documents in preparing bids. Neither the Owner nor the Design Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

The Owner, in making the Contract Documents available on the above terms, does so only for the purpose of obtaining bids on the Work and does not confer a license or grant for any other use.



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H. PREPARATION OF BIDS

1. All bids must be submitted on the "Bid Form" furnished with the Contract Documents.
2. All blank spaces shall be filled in, in ink or typewritten, in words and figures, and in figures only where no space is provided for words, and signed by the Bidder. The wording on the Bid Form shall be used without change, alteration, or addition. Any change in the wording or omission of specified accompanying documents may cause the bid to be rejected. If there is an inconsistency or conflict in the Bid, the lowest amount shall control, whether expressed in numbers or words.
3. Bidders shall note receipt of Addenda on the Bid Form. If the Bidder fails to acknowledge receipt of each Addendum, the Bid shall be deemed non-responsive, unless the Bid amount clearly and unambiguously reflects receipt of the Addendum or the Addendum involves only a matter of form and does not materially affect the price, quantity or quality of the Work to be performed.
4. Each Bidder shall submit **an original** of its bid to the Owner. The Bid Form shall be signed with the name typed or printed below the signature. A Bid shall not be submitted by facsimile transmission or any other electronic means. A Bidder that is a corporation shall sign its bid with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.
5. Each Bid shall be enclosed in a sealed opaque envelope with the Bidder's name and the title of the Project printed in the upper left hand corner and addressed as follows:

The City of Canton
ATTN: Purchasing/Bids
218 Cleveland Avenue SW
Canton, OH 44702

Bids must be received at the designated location for the bid opening before 2:00 PM, local time, on 2/22/2023.

6. The completed Bid Form shall be accompanied by the following completed documents:
 - a. Pre-Bid Substitution, if any proposed substitutes have been pre-approved. (See Section K, below.)
 - b. Bid Guaranty and, if applicable Contract Bond (See Paragraph H.8, below.)
 - c. Contractor's Qualification Statement (See Paragraph I.4, below.)
 - d. Contractor's List of Subcontracted Work Categories (See Paragraph I.5, below.)
 - e. A list identifying its DBE subcontractors and participation rates as a percentage of the Contract Price, and if the DBE participation goal has not been met, certification of good faith efforts to meet the DBE participation goal. (See Section W, below.)
 - f. The Project Labor Agreement (PLA) Letter of Assent (See Appendix A).
 - g. If this project is funded in whole or part by the Ohio Public Works Commission, then certification of agreement and compliance with certain



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statements and covenants regarding Bidder's subscription to the State's Equal Employment Opportunity Requirements for State-assisted Construction Contracts (See Section Y, below.)

7. The Bidder shall take the following precautions in preparing its bid:
 - a. Sign the bid and check to ensure all blank spaces have been filled in with requested information and that the specified accompanying documents (listed in Paragraph H.6 above) have been included in a sealed opaque envelope addressed as described in Paragraph H.5 above.
 - b. When the Bid Form provides for quoting either an addition or deduction for an Alternate item, indicate whether the sum named is an addition or deduction. If it is not indicated, it will be conclusively presumed that the amount is a deduction.
 - c. When the Bid Form provides for quoting a unit price, the Bidder should quote the unit price as set forth in the Contract Documents as described in Paragraph M.1 below.
 - d. When applicable, make sure that the Bid Guaranty is properly executed and signed by:
 - 1) The Bidder
 - 2) The Surety or Sureties
 - e. Make sure that the amount of the Bid Guaranty (if the Bid Guaranty is in the form of a certified check, letter of credit, or cashier's check) is for a specific sum in an amount as instructed in Paragraph H.8.a below. If the Bid Guaranty is in the form of the Bid Guaranty and Contract Bond, the amount may be left blank; if an amount is inserted, it must equal the total of the base bid and all add alternates included. If inserted, then the failure to state an amount equal to the total of the base bid and all add alternates shall make the bid non-responsive if the Owner selects alternates not included in the amount.
 - f. Make sure that the appropriate bid package and scope of work is inserted in the correct space on the Bid Guaranty and Contract Bond Form. Failure to include work covered by the bid submitted may make the bid non-responsive.
8. Bonds and Guarantees
 - a. **Bid Guaranty:** Bidder shall furnish a Bid Guaranty, as prescribed in Sections 153.54, 153.57, and 153.571 of the Ohio Revised Code, in the form of either: (1) a bond for the full amount of the bid in the form of the Bid Guaranty and Contract Bond included in the Contract Documents; or (2) a certified check, cashier's check, or irrevocable letter of credit in a form satisfactory to the Owner in an amount equal to 10% of the bid. Bid amount shall be the total of all sums bid, including all add alternatives, but excluding all deduct alternatives. **NOTE: AIA or EJCDC Bid Bond forms are not acceptable.**
 - b. **Contract Bond:** The successful Bidder, who, as a Bid Guaranty, submits a certified check, cashier's check, or irrevocable letter of credit in an amount equal to 10% of the bid, shall furnish a Contract Bond in the form included in the Contract Documents in an amount equal to 100% of the



Contract Sum. **NOTE: AIA or EJCDC Bond forms are not acceptable.**

- c. The bond must be issued by a surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio and acceptable to the Owner. The bond must be issued by a surety capable of demonstrating a record of competent underwriting, efficient management, adequate reserves, and sound investments. These criteria will be deemed to be met if the surety currently has an A.M. Best Company Policyholders Rating of "A-" or better and has or exceeds the Best Financial Size Category of Class VI. Other sureties may be acceptable to the Owner, in its sole discretion.
- d. All bonds shall be signed by an authorized agent of an acceptable surety and by the Bidder.
- e. Surety bonds shall be supported by credentials showing the Power of Attorney of the agent, a certificate showing the legal right of the Surety Company to do business in the State of Ohio, and a financial statement of the Surety.
- f. The Bid Guaranty, as applicable, shall be in the name of or payable to the order of the Owner.
- g. The name and address of the Surety and the name and address of the Surety's Agent must be typed or printed on each bond.

9. Permits

- a. Owner has obtained, or will obtain the following permits for the Project, as applicable:

NA

- b. Contractor shall secure and pay for all other permits necessary to complete the Project. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

I. METHOD OF AWARD

1. All bids shall remain open for acceptance for sixty (60) days following the day of the bid opening, but the Owner may, in its sole discretion, release any bid and return the Bid Guaranty prior to that date. The Bid Guaranty shall be subject to forfeiture, as provided in the Ohio Revised Code, if a bid is withdrawn during the period when bids are being held.
2. The Owner reserves the right to reject any, part of any, or all bids and to waive any informalities and irregularities. The Bidder expressly acknowledges this right of the Owner to reject any or all bids or to reject any incomplete or irregular bid. Bidders must furnish all information requested on the Bid Form. Failure to do so may result in disqualification of the bid.
3. Determination of the Lowest and Best Bid. Subject to the right of the Owner to reject any or all bids, pursuant to the Codified Ordinances of Canton Chapters 105, 182, and 507, the Owner will award the Contract for the Work to the bidder submitting the lowest and best bid, taking into consideration accepted alternates. In evaluating bids, the Owner will consider the qualifications of the Bidders, whether or not the bids comply with the



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prescribed requirements, and alternates and unit prices, if requested, on the Bid Form. The Owner may also consider the qualifications and experience of subcontractors and suppliers. The Owner may conduct such investigations as are deemed necessary to establish the qualifications and financial ability of the Bidder and its subcontractors and suppliers. The factors the Owner may consider in determining which bid is the lowest and best include the factors set forth below, including the Additional Criteria. Depending upon the type of work, the Owner, in its discretion, may also consider other essential factors, as the Owner may determine and as are included in the Specifications. The Owner, in its discretion, may consider and give such weight to these criteria as it deems appropriate. The Owner, in its discretion, reserves the right to request additional information and documentation relating to these criteria from Bidders after the bid opening.

- a. Work to be subcontracted. The Bidder must identify all work to be subcontracted. See paragraph I.5 below. All subcontractors are subject to the approval of the Owner based on the criteria set forth in this Section I.
- b. The Bidder's work history. The Bidder should have a record of consistent customer satisfaction and of consistent completion of projects, including projects that are comparable to or larger and more complex than the Owner's Project, on time and in accordance with the applicable Contract Documents, and based upon the Bidder's claims history. If the Bidder's management operates or has operated another construction company, the Owner may consider the work history of that company in determining whether the Bidder submitted the lowest and best bid.

The Owner will consider the Bidder's prior experience on other projects of similar scope and/or complexity including prior projects with the Owner and/or Design Professional, including the Bidder's demonstrated ability to complete its work on these projects in accordance with the Contract Documents and on time, and will also consider its ability and capacity to perform a substantial portion of the project with its own forces and its ability to work with the Owner and Engineer as a willing, cooperative, and successful team member. Bringing overstated claims, an excessive number of claims, acting uncooperatively, and filing lawsuits against project owners and/or their design professionals on prior projects of similar scope and/or complexity will be deemed evidence of a Bidder's inability to work with the Owner and Engineer as a willing, cooperative, and successful team member.

The Bidder authorizes the Owner and its representatives to contact the owners and design professionals (and construction managers, if applicable) on projects on which the Bidder has worked and authorizes and requests such owners and design professionals (and construction managers) to provide the Owner with a candid evaluation of the Bidder's performance. By submitting its bid, the Bidder agrees that if it or any person, directly or indirectly, on its behalf or for its benefit brings an action against any of such owners or design professionals (or construction managers) or the employees of any of them as a result of or related to such candid evaluation, the Bidder will indemnify and hold harmless such owners, design professionals (and construction managers) and the employees of any of them from any claims, whether or not proven, that are part of or are related to such action and from all legal fees and expenses incurred by any of them arising out of or related to such legal action. This obligation is expressly intended for the benefit of such owners, design professionals (and construction managers), and the employees of each of them.



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- c. The Bidder's prior history regarding timeliness of performance, quality of work, the Bidder's history of filing claims and having claims filed against it, extension requests, fines and penalties imposed and payments thereof, and contract defaults, with explanations.
- d. The Bidder's compliance with federal, state, and local laws, rules, and regulations, including but not limited to the Occupational Safety and Health Act, Ohio Prevailing Wage laws, Davis Bacon, and Ohio ethics laws.
- e. The Bidder's prior experience with similar work on comparable or more complex projects.
- f. The number of years the Bidder has been actively engaged as a contractor in the construction industry.
- g. The Bidder's recent experience record in the construction industry, including the original contract price for each construction job undertaken by the bidder, the amount of any change orders or cost overruns on each job, the reasons for the change orders or cost overruns, and the bidder's record for complying with and meeting completion deadlines on construction projects.
- h. A public entities' determination, within the previous five years, that the Bidder was not a responsible bidder, the reasons given by the public entity, and the Bidder's explanation thereof.
- i. The Bidder's financial ability to complete the Contract successfully and on time without resort to its Surety.
- j. Financial responsibility demonstrated by the Bidder and whether Bidder possesses adequate resources and availability of credit, the means and ability to procure insurance and acceptable performance bonds required for the Project and whether any claims have been made against performance bonds secured by the bidder on other construction projects.
- k. Any suspension or revocations of any professional license of any director, officer, owner, or managerial employees of the Bidder, to the extent that any work to be performed on this Project is within the field of such licensed profession.
- l. The Bidder's equipment and facilities.
- m. The size and experience of the Bidder's work force and the Bidder's ability to complete the Contract successfully and on time.
- n. The experience and the continuity of the Bidder's work force including the project manager and project superintendent's tenure with the Bidder.
- o. The Bidder's participation in a drug-free workplace program acceptable to the Owner, and the Bidder's record for both resolved and unresolved findings of the Auditor of State for recovery as defined in Section 9.24 of the Ohio Revised Code.
- p. The Owner's prior experience with the Bidder's surety.
- q. The Bidder's interest in the Project as evidenced by its attendance at any pre-bid meetings or conferences for bidders.
- r. The adequacy, in numbers and experience, of the Bidders' work force to complete the Contract successfully and on time.



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- s. The foregoing information with respect to each of the Subcontractors and Suppliers that the Bidder intends to use on the Project.
4. Qualifications Statement. Each Bidder will submit with its bid a completed Contractor Qualifications Statement, which is included with the Contract Documents, and thereafter provide the Owner promptly with such additional information as the Owner may request regarding the Bidder's qualifications. A Bidder shall submit any requested additional information within three (3) business days of the date on the request.
5. List of Subcontracted Work Categories. Each Bidder will submit with its bid a completed list of Subcontracted Work Categories, which is included with the Contract Documents, and thereafter provide the Owner promptly with such additional information as the Owner may request regarding the Bidder's qualifications. A Bidder shall submit any requested information within three (3) business days of the date on the request.
6. Additional Criteria for Determining Lowest and Best Bid. Pursuant to the Codified Ordinances of the City of Canton, Chapter 105, the Owner, in its discretion, may consider any or all of the Additional Criteria below in determining which bid is lowest and best.
 - a. Any OSHA violations within the previous three years, as well as all notices of OSHA citations filed against the Bidder in the same three year period, together with a description and explanation of remediation or other steps taken regarding such violations and notices of violation.
 - b. Any violations within the previous five years pertaining to unlawful intimidation or discrimination against any employee by reason of race, creed, color, disability, gender, or national origin, and/or violation of any employee's civil or labor rights or equal employment opportunities.
 - c. Any litigation in which the Bidder has been named as a defendant or third party defendant in an action involving a claim for personal injury or wrongful death arising from performance of work related to any project in which it has been engaged within the previous five years. Bidders shall provide copies of pleadings.
 - d. Allegations of violations of the prevailing wage law and any other state or federal labor law, including, but not limited to, child labor violations, failure to pay wages, or unemployment insurance tax delinquencies or unfair labor practices within the past five years.
 - e. Violations of the workers compensation law.
 - f. Any criminal convictions or criminal indictments, involving the Bidder, its officers, directors, owners, and/or managers within the past five years.
 - g. Any violation within the past five years or pending charges concerning federal, state, or municipal environmental and/or health laws, codes, rules, and/or regulations.
 - h. Documentation that the Bidder provides health insurance and pension benefits to its employees.
 - i. Whether the Bidder participates in a bona fide apprenticeship program that is approved by the Ohio State Apprenticeship Council and the United States Department of Labor.
 - j. Whether the Bidder has adopted and implemented a comprehensive drug and alcohol testing program for its employees.



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- k. Whether the Bidder's employees are OSHA-10 and/or OSHA-30 certified.
 - l. The Bidder's commitment to comply with the Owner's Contract Compliance Program regarding equal employment opportunity. Each Bidder shall file contract employment reports with the Owner's contracting agency or as may be directed by the Owner or its representative. Such contract employment reports shall include such information as to the employment practices, policies, programs, and statistics of the Bidder and shall be in such form as the Owner may prescribe.
 - m. The foregoing information with respect to each of the Subcontractors and Suppliers that the Bidder intends to use on the Project.
7. The failure to submit information that Owner has the right to receive under these Instructions to Bidders on a timely basis may result in the determination that the Bidder has not submitted the lowest and best bid.
 8. By submitting its bid, the Bidder agrees that the Owner's determination of which bidder is the lowest and best bidder shall be final and conclusive, and that if the Bidder or any person on its behalf challenges such determination in any legal proceeding, the Bidder will indemnify and hold the Owner and its employees and agents harmless from any claims included or related to such legal proceeding, and from legal fees and expenses incurred by the Owner, its employees, or agents that arise out of or are related to such challenge.
 9. After bid opening, within three (3) business days of a request made by the Owner, the apparent low Bidder and any other Bidder so requested by the Owner must submit the following:

For all subcontracts with an estimated value of at least \$50,000, a list of all Subcontractors that the Bidder will use to construct the Project, as well as an indication of whether or not the Bidder has ever worked with a proposed Subcontractor before, including the following information for the three most recent projects on which the Bidder and each Subcontractor have worked together:

- i. Project Owner
- ii. Project Name
- iii. Subcontract Scope
- iv. Subcontract Value
- v. Owner's contact name and phone number.

If Bidder and a proposed Subcontractor have not worked together on at least three projects in the past five years, Bidder must submit the information set forth above for the three most recent similar projects to the Project that a proposed Subcontractor has worked on.

The above Subcontractor information, as well as the criteria set forth in Paragraph I.3 herein, as it pertains to each Subcontractor may be used in the Owner's determination of the lowest and best bid.

Once a Bidder identifies its proposed Subcontractors as set forth in this Paragraph I.9, the list shall not be changed unless written approval or direction for the change is made by Owner.

10. Additional Post-Bid Submittals



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- a) Affidavit as to Personal Property Taxes. The successful Bidder shall submit, prior to the time of the entry into the Contract, an affidavit in the form required by Section 5719.042, Ohio Revised Code, regarding the status of the Bidder's personal property taxes. A copy of the affidavit form is included with the Contract Documents.
11. The Owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices on the part of the Bidder.
12. Award of Contract. The award of the Contract will only be made pursuant to approval of the City's Board of Control.

J. EXECUTION OF CONTRACT

1. Within the time designated by the Owner after award of the Contract, the successful Bidder shall execute and deliver to the Owner the required number of copies of the Owner-Contractor Agreement, in the form included in the Contract Documents, and all accompanying documents requested, including, but not limited to, a Contract Bond (if applicable), insurance certificates, and a valid Workers' Compensation Certificate. The successful Bidder shall have no property interest or rights under the Owner-Contractor Agreement until the Agreement is executed by the Owner.

K. SUBSTITUTIONS/NON-SPECIFIED PRODUCTS

1. Certain brands of material or apparatus may be specified. Should this be the case, each bid will be based on these brands, which may be referred to in the Contract Documents as Standards. The use of another brand (referred to as a substitution or proposed equal in the Contract Documents, when a bidder or the contractor seeks to have a different brand of material or apparatus than that specified approved by the Owner of use in the Project) may be requested as provided herein. Substitutions, however, will not be considered in determining the lowest and best bid.
2. The products specified in the Contract Documents establish a standard of required function, dimension, appearance, and quality.
3. Bidders wishing to obtain approval to bid non-specified products shall submit written requests to the Owner a minimum of seven (7) working days before the bid date and hour. To facilitate the submission of requests, a Substitution Form is included in the Contract Documents. The Bidder shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution, including the name of the proposed manufacturer and/or product and a complete description of the product including the manufacturer's name and model number or system proposed, drawings, product literature, performance and test data, color selections or limitations, and any other information necessary for evaluation. Include a statement including any changes in other materials, equipment, or other work that would be required if the proposed product is incorporated in the work. The burden of proof of the merit of the proposed product is on the proposer. The Owner's decision on approval of a proposed product will be final.

The following will be cause for rejection of a proposed substitution:

- a. Requests submitted by subcontractors, material suppliers, and individuals other than Bidders;
- b. Requests submitted without adequate documentation;
- c. Requests received after the specified cut-off date;



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- d. Requests, which in the sole discretion of the Owner, do not offer a sufficient benefit to the Project.
4. When the Owner approves a product submission before receipt of bids, the approval will be included in an Addendum, and Bidders may include the pricing of this product in their bid. Bidders shall not rely on approvals made in any other manner.
5. In proposing a non-specified product or a substitution, the Bidder represents and warrants that each proposed product will not result in any changes to the Project, including changes to the Work or other contractors, or any decrease in the performance of any equipment or systems to be installed in the Project and agrees to pay any additional costs incurred by the Owner and the Owner's consultants as a result of a non-specified or substitute product that is accepted.
6. If an addendum is issued approving a substitution for a specified Standard, any Bidder proposed to use said substitution must indicate so with its Bid, using the form provided.
7. Following the award of the Contract, there shall be no substitution for specified products, except pursuant to a Change Order. The Owner in its sole discretion may decline to consider a substitution for a Change Order.
8. The Owner reserves the right to value engineer any item within the specifications if it is deemed to be in the best interest of the Owner.

L. ALTERNATES

1. The Owner may request bids on alternates. At the time of awarding the Contract, the Owner will select or reject alternates as it determines is in its best interest. A Bidder's failure to include on its Bid Form the cost of an alternate selected by the Owner and applicable to the Bidder's work shall render the bid non-responsive and be grounds for the rejection of the bid. Otherwise, the failure to include the cost of an alternate will not be deemed material.
2. The Bidder acknowledges that although there is an estimate for the cost of the Project, the market conditions may and frequently do result in the estimate being different from the sum of the bids received, either higher or lower. The Bidder understands that the Owner may include alternates, which may include deduct alternates as well as add alternates, to give it flexibility to build the Project with the funds available. The Bidder further understands and acknowledges that use of add and deduct alternates is a long held customary practice in the construction industry in the State of Ohio. The Bidder also acknowledges that the Owner will not make a decision about the alternates on which to base the award of contracts until the bids are received, and the Owner can compare its available funds with the base bids and the cost or savings from selecting different alternates. The Bidder understands that the award to the Bidder submitting the lowest and best bid will be based on the base bid plus selected alternates, and may result in an award to a Bidder other than the Bidder that submitted the lowest base bid.

M. UNIT PRICES

1. Where unit prices are requested in the Bid Form the Bidder should quote a unit price. Unless otherwise expressly provided in the Contract Documents, such unit prices shall include all labor, materials, and services necessary for the timely and proper installation of the item for which the unit prices are requested. The unit prices quoted in the bid shall be the basis for any Change Orders entered into under the Owner-Contractor Agreement, unless the Owner determines that the use of such unit prices will cause substantial inequity to either the Contractor or the Owner.



N. ADDENDA

1. All questions should be submitted in writing at least five (5) business days prior to the bid opening. **This is 2/15/2023, 2:00 PM.** The Owner reserves the right to issue Addenda changing, altering, or supplementing the Contract Documents prior to the time set for receiving bids. The Owner will issue the Addenda to clarify bidders' questions and/or to change, alter, or supplement the Contract Documents.
2. Any explanation, interpretation, correction, or modification of the Contract Documents will be issued in writing in the form of an Addendum, which shall be the only means considered binding; explanations, interpretations, etc., made by any other means shall **NOT** be legally binding. All Addenda shall become a part of the Contract Documents.
3. All Addenda will be issued, except as hereafter provided, via the current City bid tool at least seventy-two (72) hours prior to the published time for the opening of bids, excluding Saturdays, Sundays, and legal holidays. If any Addendum is issued within such seventy-two (72) hour period, then the time for opening of bids shall be extended one (1) week with no further advertising of bids required.
4. Copies of each Addendum will be posted via the Owner's current bid tool and it is the responsibility of the bidder or any other interested party to check the bid tool for any updates or addenda. Receipt of Addenda shall be indicated by Bidders in the space provided on the Bid Form. Bidders are responsible for acquiring issued Addenda in time to incorporate them into their bid. Bidders should check the Owner's bid tool prior to the bid opening to verify the number of Addenda issued.
5. Each Bidder shall carefully read and review the Contract Documents and immediately bring to the attention of the Owner any error, omission, inconsistency, or ambiguity therein.
6. If a Bidder fails to indicate receipt of all Addenda through the last Addendum issued by the Owner on its Bid Form, the bid of such Bidder will be deemed to be responsive only if:
 - a. The bid received clearly indicates that the Bidder received the Addendum, such as where the Addendum added another item to be bid upon and the Bidder submitted a bid on that item; or
 - b. The Addendum involves only a matter of form or is one which has either no effect or has merely a trivial or negligible effect on price, quantity, quality, or delivery of the item bid upon.

O. INTERPRETATION

1. If a Bidder contemplating submitting a bid for the proposed Project is in doubt as to the true meaning of any part of the Contract Documents, it may submit a written request for an interpretation thereof to the Owner at purchasing@cantonohio.gov. Requests received fewer than 5 days prior to bid opening may not be answered. Any interpretation of the proposed documents will be made by Addendum only and will be made available by the City's web tool. The Owner will not be responsible for any other explanation or interpretation of the proposed documents.
2. In interpreting the Contract Documents, words describing materials that have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with the well-known meaning recognized by the trade.



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3. Bidders are responsible for notifying the Owner in a timely manner of any ambiguities, inconsistencies, errors, or omissions in the Contract Documents. The Bidder shall not, at any time after the execution of the Contract, be compensated for a claim alleging insufficient data, incomplete Contract Documents, or incorrectly assumed conditions regarding the nature or character of the Work, if no request was made by the Bidder prior to the bid opening.

P. STATE SALES AND USE TAXES

1. The Owner is a political subdivision of the State of Ohio and is exempt from taxation under the Ohio Sales Tax and Use Tax Laws. Building materials that the successful Bidder purchases for incorporation into the Project will be exempt from state sales and use taxes if the successful Bidder provides a properly completed Ohio Department of Taxation Construction Contract Exemption Certificate to the vendors or suppliers when the materials are acquired. The Owner will execute properly completed certificates on request.

Q. DATE FOR SUBSTANTIAL COMPLETION/DATE FOR FINAL COMPLETION/LIQUIDATED DAMAGES

1. Dates for Substantial Completion. The Contract Time shall run from the date of the Notice to Proceed or if there is no Notice to Proceed from the Effective Date of the Owner-Contractor Agreement. The Date for Substantial Completion and the Contract Time may be extended only by Change Order. **By submitting its Bid, each Bidder agrees that the period for performing its Work is reasonable.**

- a. Date for Overall Project Substantial Completion. The successful Bidder shall have all of its Work on the Project Substantially Complete (as Substantial Completion is defined in the Contract Documents) by the following date as applicable to the Bidder's scope of work.

Date for Substantial Completion (aka Contract Time) expressed as calendar days from Notice to Proceed:

120 calendar days

2. Liquidated Damages.
 - a. Overall Project Substantial Completion. If the successful Bidder does not have its Work Substantially Complete by its Date for Substantial Completion or Finally Complete within thirty (30) calendar days of achieving Substantial Completion, whichever may be applicable, the successful Bidder shall pay the Owner and the Owner may set off from amounts otherwise due the successful Bidder Liquidated Damages. The daily amounts of Liquidated Damages for Overall Project Substantial Completion are set forth in the tables included in the Owner-Contractor Agreement. The total amount of Liquidated Damages will be calculated based on the total number of calendar days beyond the Date for Substantial Completion that the Bidder's Work is not Substantially Complete or to the extent that its Work is not Finally Complete more than thirty (30) calendar days after the Substantial Completion of its Work, i.e., number of late days times the per diem rate(s) for Liquidated Damages in the tables.
3. The Bidder acknowledges and agrees, by submitting its bid for the Work and entering into a Contract with the Owner, that such amounts of Liquidated Damages represent a reasonable estimate of the actual damages for loss of or interference with the intended use of the Project that the Owner would incur if the Bidder's Work is not Substantially Complete by its Date for Substantial Completion and/or not Finally Complete by thirty



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(30) days of the Date of Substantial Completion. The Bidder further acknowledges, agrees and understands that it may seek an extension of the Contract Time (and its Date for Substantial Completion) to avoid or reduce Liquidated Damages by properly following the Claim procedures in the Contract Documents.

R. OWNER'S RIGHT TO WAIVE DEFECTS AND IRREGULARITIES

1. The Owner reserves the right to waive any and all irregularities provided that the defects and irregularities do not affect the amount of the bid in any material respect or otherwise give the Bidder a competitive advantage.

S. MODIFICATION/WITHDRAWAL OF BIDS

1. Modification. A Bidder may modify its bid by written communication to the Owner at any time prior to the scheduled closing time for receipt of bids, provided such written communication is received by Owner prior to the bid deadline. The written communication shall not reveal the bid price, but should provide the addition or subtraction or other modification so that the final prices or terms will not be known until the sealed bid is opened. If the Bidder's written instructions with the change in bid reveal the bid amount in any way prior to the bid opening, the bid may be rejected as non-responsive.
2. Withdrawal Prior to Bid Deadline. A Bidder may withdraw its bid at any time for any reason prior to the bid deadline for the opening of bids established in the Legal Notice. The request to withdraw shall be made in writing to and received by the Owner prior to the time of the bid opening.
3. Withdrawal after Bid Deadline.
 - a. All bids shall remain valid and open for acceptance for a period of at least 60 days after the bid opening; provided, however, that a Bidder may withdraw its bid from consideration after the bid deadline when all of the following apply:
 - (1) the price bid was substantially lower than the other bids;
 - (2) the reason for the bid being substantially lower was a clerical mistake, rather than a mistake in judgment, and was due to an unintentional and substantial error in arithmetic or an unintentional omission of a substantial quantity of work, labor, or material;
 - (3) the bid was submitted in good faith; and
 - (4) the Bidder provides written notice to the Owner within two (2) business days after the bid opening for which the right to withdraw is claimed.
 - b. No bid may be withdrawn under this provision if the result would be the awarding of the contract on another bid for the bid package from which the Bidder is withdrawing its bid to the same Bidder.
 - c. If a bid is withdrawn under this provision, the Owner may award the Contract to another Bidder determined by the Owner to be the lowest and best bidder or the Owner may reject all bids and advertise for other bids. In the event the Owner advertises for other bids, the withdrawing Bidder shall pay the costs incurred in connection with the rebidding by the Owner, including the cost of printing new Contract Documents, required advertising, and printing and mailing notices to prospective bidders, if the Owner finds that such costs would not have been incurred but for such withdrawal.



T. COMPLIANCE WITH APPLICABLE LAWS

1. By submitting a bid for Work on the Project, the Bidder acknowledges that it is in compliance with applicable federal, state, and local laws and regulations, including, but not limited to, the following:
 - a. Equal Employment Opportunity/Nondiscrimination. The Bidder agrees that if it is awarded a contract that in the hiring of employees for performance of work under the contract or any subcontract, neither it nor any subcontractor, or any person acting on its behalf or its subcontractor's behalf, by reason of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color, shall discriminate against any citizen of the state in the employment of labor or workers who are qualified and available to perform work to which the employment relates. The Bidder further agrees that neither it nor any subcontractor or any person on its behalf or on behalf of any subcontractor, in any manner, shall discriminate against or intimidate any employees hired for the performance of the work under the contract on account of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color.
 - b. Ethics Laws. The Bidder represents that it is familiar with all applicable ethics law requirements, including without limitation Sections 102.04 and 3517.13 of the Ohio Revised Code, and certifies that it is in compliance with such requirements.

U. FINDINGS FOR RECOVERY

1. By submitting its bid, each Bidder certifies for reliance of the Owner that it has no unresolved finding for recovery against it issued by the Auditor of the State of Ohio on or after January 1, 2001, except as permitted by Section 9.24 (F) of the Ohio Revised Code.

V. PREVAILING WAGES

1. The Project is a "Construction" project as defined in Section 4115.03 of the Ohio Revised Code. If the Project is defined as such as "Construction" project, the successful Bidder and all of its subcontractors, regardless of tier, will strictly comply with its obligation to pay a rate of wages on the Project not less than the rate of wages fixed for this Project under Section 4115.04 of the Ohio Revised Code. Additionally, the successful Bidder will comply with all other provisions of Chapter 4115 of the Ohio Revised Code.

W. DBE PARTICIPATION GOALS

1. Owner has established the following Disadvantaged Business Enterprise ("DBE") participation goal for the Project as a percentage of the Contract Price:

10%

2. Any Minority Business Enterprise ("MBE") or Woman-Owned Business Enterprise ("WBE") proposed to count towards the DBE participation goal must first be certified at bid time as an MBE or WBE under the Ohio Department of Administrative Services MBE Cross Certification Program (which includes MBEs and WBEs certified by the City of Canton), or certified as a DBE under Ohio's Unified Certification Program administered by the Ohio Department of Transportation.
3. **Documentation of DBE Participation**. Each Bidder must submit with its bid a list identifying its DBE subcontractors and participation rates as a percentage of the Contract Price.



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4. **Certification of Good Faith Efforts.** If a Bidder has not met the DBE participation goal, it must attach to its bid, a narrative (which may include exhibits) demonstrating the good faith efforts made by the Bidder to secure DBE participation in the Project. Good faith efforts include:
 - **Conducting outreach and recruiting activities;**
 - **Informing DBEs of the opportunity to participate in the Project at least 30 calendar days before the bid closes;**
 - **Considering subcontracting with a consortium of DBEs; and**
 - **Using the services and assistance of the Small Business Administration and Minority Development Agency of the U.S. Department of Commerce.**

Owner, in its sole discretion, will be the sole evaluator of whether any particular Bidders' efforts sufficiently demonstrate good faith efforts for securing DBE participation.

5. **Challenges to Owner's Discretion.** If any Bidder directly challenges, or indirectly challenges through contribution of money or other resources to a third party, Owner's discretion in determining any Bidder's compliance with the DBE goal stated in these Instructions to Bidders, or good faith efforts pertaining to same, that Bidder agrees to indemnify Owner for all claims, costs, losses and damages, including attorney and consultant fees, arising out of such challenge, should there be an adjudication by a court of competent jurisdiction that the Owner did not abuse its discretion in making its determination.
6. **Failure to Comply.** If a Bidder is awarded a contract for the Project, and later fails to fulfill its stated DBE participation goals, that Bidder agrees to indemnify Owner for all claims, costs, losses and damages, including attorney and consultant fees, arising out of such failure. That Bidder also agrees to cooperate with all reasonable requests to determine actual DBE participation, including but not limited to certifying actual participation and providing documentation in support of same.

X. OTHER LOCAL ORDINANCE REQUIREMENTS

1. Each Bidder, by the act of submitting its bid agrees to withhold all City income taxes due or payable under Chapter 182 of the Codified Ordinances of the City of Canton for wages, salaries, fees, and commissions paid to its employees and further agrees that any of its subcontractors shall be required to agree to withhold any such City income taxes due for services performed under this Agreement. Bidder agrees with the Owner regarding the manner of withholding of City income taxes as provided in Section 718.011(F) of the Ohio Revised Code. Municipal income tax withholding provisions of Section 718.011(B)(1) and 718.011(D) of the Ohio Revised Code shall not apply to qualifying wages paid to employees for work done or services performed or rendered inside the City or on City property. Each Bidder agrees to withhold income tax for the City from employees' qualifying wages earned inside the City or on City property, beginning with the first day of work done or services performed or rendered inside the City.
2. Each Bidder, by the act of submitting its bid agrees that all steel necessary in the construction of the Work performed under the Agreement shall be steel that is produced in the United States unless a specific product which is required is not produced by manufacturers in the United States in which event this prohibition does not apply.
3. Each Bidder, by the act of submitting its bid agrees that all materials used in the construction covered by the Agreement shall be purchased in the Canton area except such materials which are unavailable in the Canton area.
4. Chapter 105.12 – Local Bidder Preference.



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- a. The Board of Control, in determining the lowest and best bidder in the award of contracts to which this section is applicable, is authorized to award contracts to local bidders as hereinafter defined, whose bid is not more than five percent (5%) higher, subject to a maximum amount of twenty thousand dollars (\$20,000.00), than the lowest dollar bid submitted by non-local bidders. The Board of Control's decision in making such an award shall be final.
- b. For purposes of this section, "local bidder" means an individual or business entity which at the time of the award of the contract has a headquarters, division, sales office, sales outlet, manufacturing facility, or similar significant business-related location in Stark County, Ohio.
- c. All contract specifications and/or bid documents that are distributed by Canton for the purpose of soliciting bids for goods and/or services shall contain the following notice:

Prospective bidders will take notice that the City of Canton, in determining the lowest and best bidder in the award of this contract, may award a local bidder preference to any qualified bidder pursuant to Section 105.12 of the Codified Ordinances of the City of Canton. The determination of whether a bidder qualifies for the local preference shall be made by Board of Control. The Board's decision shall be final. A copy of Section 105.12 is attached.

- d. This section shall be applicable to all contracts for equipment, goods, machinery, materials, supplies, vehicles and/or services, which are purchased, leased and/or constructed at a cost in excess of fifty thousand dollars (\$50,000.00) and which require bidding pursuant to Ohio R.C. 735.05 through 735.09 and Ohio R.C. 737.03. (Ord. 115-2018. Passed 5-14-18.)
5. Each Bidder, by the act of submitting its bid agrees as follows during the performance of the Agreement:
 - a. The Contractor shall not discriminate against any employee or applicant for employment because of race, age, handicap, religion, color, sex, national origin, sexual orientation, or gender identity. The Contractor shall take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to race, religion, color, sex, national origin, military status, sexual orientation, or gender identity. As used herein, the word "treated" shall mean and include without limitation the following: recruited, whether by advertising or other means; compensation, whether in the form of rates or pay or other forms of compensation; selected for training, including apprenticeship; promoted; demoted; upgraded; downgraded; transferred; laid off; and terminated. The Contractor agrees to and shall post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting officers setting forth the provisions of this nondiscrimination clause.
 - b. The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, age, handicap, religion, color, sex, national origin, military status, sexual orientation, or gender identity.
 - c. The Contractor shall send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the Contractor's commitments under the equal opportunity clause of the Owner; and it shall post copies of the notice in conspicuous places available to employees and applicants for employment.



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- d. The Contractor shall submit in writing to the Owner its affirmative action plan, and each subcontractor and supplier of equipment or supplies shall submit to the Contractor its affirmative action plan. The responsibility for securing these affirmative action plans falls upon the Contractor and shall be on file at the office of the Contractor. The Contractor shall furnish all information and reports required by the Owner or its representative pursuant to the Contract Documents, and shall permit access to its books, records, and accounts by the contracting agency of the Owner and by the Executive Secretary of the Owner for purposes of investigation to ascertain compliance with the program.
 - e. The Contractor shall take such action with respect to any subcontractor as the Owner may direct as a means of enforcing the provisions of this equal opportunity clause, including penalties and sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in or is threatened with litigation as is necessary to protect the interests of the Owner and to effectuate the Owner's equal opportunity program and, in the case of contracts receiving Federal assistance, the Contractor or the Owner may request the United States to enter into such litigation to protect the interests of the United States.
 - f. The Contractor shall file and shall cause its subcontractors, if any, to file compliance reports with the Owner in the form and to the extent prescribed by the Owner or its representative. Compliance reports filed at such times as directed shall contain information as to the employment practices, policies, programs, and statistics of the Contractor and its subcontractors.
 - g. The Contractor shall include the provisions of this equal employment opportunity clause in every subcontract or purchase order, so that such provisions will be binding upon each subcontractor or vendor.
 - h. Refusal by the Contractor or subcontractor to comply with any portion of this program as herein stated and described will subject the offending party to any or all of the following penalties:
 - (1) Withholding of all future payments under the involved public contract to the Contractor in violation, until it is determined that the Contractor or subcontractor is in compliance with the provisions of the Agreement.
 - (2) Refusal of all future bids for any public contract with the Owner or any of its departments or divisions, until such time as the Contractor or subcontractor demonstrates that it has established and shall carry out the policies of the program as herein outlined.
 - (3) Cancellation of the public contract and declaration of forfeiture of the performance bond.
 - (4) In cases in which there is substantial or material violation or the threat of substantial or material violation of the compliance procedure or as may be provided by contract, appropriate proceedings may be brought to enforce these provisions, including enjoining within applicable laws of contractors, subcontractors, or other organizations, individuals, or groups who prevent, directly or indirectly, or seek to prevent, directly or indirectly, compliance with the policy as herein outlined.
2. A Project Labor Agreement (PLA) has been required for this project (See Appendix A if applicable). Prevailing Wages are required for this Project (See Appendix B).



Y. OHIO PUBLIC WORKS COMMISSION FUNDING

1. no When this line is checked by the Owner, e.g. with an "X" or other mark, the Project is being funded in whole or part by the Ohio Public Works Commission ("OPWC"), and the requirements of the OPWC, attached to these Instructions to Bidders, apply.
2. The OPWC requirements include that the Bidder include with its bid certification of agreement and compliance with certain statements and covenants regarding its subscription to the State's Equal Employment Opportunity Requirements for State-assisted Construction Contracts.

END OF INSTRUCTIONS TO BIDDERS



The City of Canton

OWNER-CONTRACTOR AGREEMENT

***[Where Engineer is a Third Party Hired by Owner and
Engineer Has Construction Administration Duties]***

Owner:

The City of Canton
218 Cleveland Avenue SW
Canton, OH 44702
Telephone: 330.489.3283

Contract:

Ordinance: 88/2022
Alternates:

Contractor:

Telephone:
Fax:

Project: 2022 Service Center Upgrade and
Reconfiguration Project - GP 1331

This document is an agreement between the Owner and the Contractor for the Work described in the Contract Documents related to the Contract identified above for the Project defined above and is effective as of the date the Agreement is signed by the Owner (the "Effective Date").

The Owner and the Contractor agree as set forth in the following sections:

1. CONTRACT DOCUMENTS. The Contract Documents consist of the following documents:

- A. Legal Notice;
- B. Instructions to Bidders;
- C. Bid Form;
- D. Owner-Contractor Agreement;
- E. General Conditions of the Contract for Construction (EJCDC C-700), as modified;
- F. Supplementary Conditions (when applicable);
- G. Drawings;
- H. Specifications;
- I. Project Labor Agreement (if applicable)
- J. Addenda issued;
- K. Contractor's Personal Property Tax Affidavit (O.R.C. 5719.042);
- L. Statement of Claim Form; and
- M. Modifications issued after the execution of the contract, including:
 - i. A Change Order;
 - ii. A Work Change Directive; or,
 - iii. A written order for a minor change of the Work issued by the Owner or Engineer in accordance with the General Conditions.
- N. When this line is checked by the Owner, e.g. with an "X" or other mark, the State of Ohio Department of Transportation, Construction and Material Specifications, effective as of January 1, 2019, will be a Contract Document, but only as modified by the document titled *ODOT Manual Supplement*, prepared by Owner.
- O. Project Labor Agreement (if applicable)

1.1 Notwithstanding anything in the Contract Documents to the contrary, in the event of any inconsistency, the provisions of this Agreement shall control over any other Contract Document, proposal, document, or other attachment. In the event inconsistencies, conflicts, or ambiguities between or among the Contract Documents



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are discovered after execution of the Agreement, Contractor shall provide the better quality or greater quantity of Work or comply with the more stringent requirements.

Note: Non-Contract Documents. The following are the reports and tests of subsurface conditions at or contiguous to the Site, if any, that the Engineer has used in preparing the Contract Documents. These are not Contract Documents. Geotechnical data is not a warranty of subsurface conditions and is not to be relied upon as a complete representation of all possible soil conditions. It is possible that there may be other reports, and/or tests of subsurface conditions at or contiguous to the Site not prepared by or on behalf of Owner. The Owner makes no representation about such reports and/or tests, assuming they exist. Additional information, if needed by Contractor for geotechnical data or site survey, shall be obtained by the Contractor at no additional cost to Owner. The General Conditions, as modified, contain additional terms related to these reports and tests.

Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings listed below, and except for such reliance on "technical data," Contractor shall not rely upon or make any claim against Owner or Engineer with respect to: (1) the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or (3) any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information. For example, all interpolations and extrapolations of data performed by Contractor to estimate locations or quantities of subsurface strata are independent factual assumptions which Owner does not warrant. (Not applicable, if none are listed).

Note: Non-Contract Documents. The following are those reports and drawings related to any Hazardous Conditions at the Site, if any. These are not Contract Documents. The General Conditions, as modified, contain additional terms related to these reports and drawings. (None if none are listed).

2. ENGINEER RELATIONSHIP. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Engineer and the Contractor or any Subcontractor or Material Supplier to the Project. The Engineer, however, shall be entitled to performance of the obligations of the Contractor intended for its benefit and to enforcement of such obligations, but nothing contained herein shall be deemed to give the Contractor or any third party any claim or right of action against the Engineer that does not otherwise exist without regard to this Contract. The Contractor and its Subcontractors shall not be deemed to be beneficiaries of any of the acts or services of the Engineer that are performed for the sole benefit of the Owner. The Contractor shall forward all communications to the Owner through the Engineer and hereby acknowledges and agrees that any instructions, reviews, advice, approvals, orders, or directives that are rendered to it by the Engineer are specifically authorized and directed by the Owner to the Contractor through the Engineer acting on behalf of the Owner.

Engineer will be performing construction administration duties as identified in the General Conditions, including, but not limited to: reviewing Applications for Payment, Change Proposals, Claims, and Shop Drawings; measuring Work quantities; and issuing Work Change Directives.

2.1 The Engineer is:
GPD Group
520 South Main St. Suite 2531, Akron, OH 44311
Akron, Ohio 44311



3. TIME FOR COMPLETION AND PROJECT COORDINATION.

3.1 DATE OF COMMENCEMENT. The date of commencement of the Work shall be the date identified in the Notice to Proceed issued by the Owner, or by the Owner through the Engineer, to the Contractor, or if there is no Notice to Proceed, the Effective Date of this Agreement.

3.2 DATE OF SUBSTANTIAL COMPLETION. The Project and Work for the Project consists of all labor, materials, equipment, and services necessary for construction of the Project, all in accordance with the Drawings and Specifications prepared by the Owner or Engineer. The Contractor shall achieve Substantial Completion of its Work on the Project, as defined in the General Conditions, within **120 calendar days** of the Date of Commencement (“Date of Substantial Completion”). Substantial Completion is the time at which the Work has progressed to the point where the Work is sufficiently complete, in accordance with the Contract Documents, so that the Work can be utilized for the purposes for which it is intended.

3.2.1 DATE OF FINAL COMPLETION. The Contractor shall achieve Final Completion of its Work on the Project, as defined in the General Conditions, within **30 calendar days** of the Date of Substantial Completion (“Date of Final Completion”). Final Completion shall mean that the Work is complete in accordance with the Contract Documents and the Contractor has submitted to the Owner or Engineer all documents required to be submitted to the Owner or Engineer for final payment.

3.2.2 UTILITIES AND OPERATIONS. Contractor shall not interrupt utilities to facilities or existing operations without prior written notice and approval by Owner.

3.2.3 SHUTDOWN DATES. Due to events scheduled by the Owner and/or other Owner considerations, Contractor will not be able to perform Work on the Project on the following dates (there are no shutdown dates if none are listed):

Contractor’s Construction Schedule for performing the Work shall account for Contractor not being able to perform Work on these dates and the contractual dates for Substantial Completion and Final Completion will not be changed due to Contractor not being able to perform Work on these dates.

3.3 CONSTRUCTION SCHEDULE. The Construction Schedule shall be developed by the Contractor as provided in the Contract Documents.

3.4 LIQUIDATED DAMAGES. If the Contractor does not have its Work on the Project Substantially Complete by the specified Date for Substantial Completion or Finally Complete by the Date of Final Completion, the Contractor shall pay the Owner (and the Owner may set off from sums coming due the Contractor) Liquidated Damages in the per diem amounts as set forth in the following tables, whichever may be applicable. “Contract Amount” of the Work will be determined by totaling the cost of all line items of Work.

LIQUIDATED DAMAGES – DATE FOR SUBSTANTIAL COMPLETION OF OVERALL PROJECT

<u>Original Contract Amount</u>	<u>Dollars Per Day</u>
\$1.00 to \$500,000.00	\$ 750.00
\$500,000.01 to \$2,000,000.00	\$ 1,000.00
\$2,000,000.01 to \$10,000,000.00	\$ 1,300.00
\$10,000,000.01 to \$50,000,000.00	\$ 2,000.00
\$50,000,000.01 and greater	\$ 2,500.00

LIQUIDATED DAMAGES – FINAL COMPLETION



The City of Canton

<u>Original Contract Amount</u>	<u>Dollars Per Day</u>
\$1.00 to \$500,000.00	\$ 200.00
\$500,000.01 to \$2,000,000.00	\$ 250.00
\$2,000,000.01 to \$10,000,000.00	\$ 325.00
\$10,000,000.01 to \$50,000,000.00	\$ 500.00
\$50,000,000.01 and greater	\$ 625.00

LIQUIDATED DAMAGES FOR SUBSTANTIAL COMPLETION FOR ANY INTERIM MILESTONE SCOPE WILL BE \$1,000 PER DAY FOR EACH DAY OF UNEXCUSED DELAY BEYOND THE MILESTONE.

The Contractor acknowledges that such amounts of Liquidated Damages represent a reasonable estimate of the actual damages for loss of or interference with the intended use of the Project that the Owner would incur if the Contractor's Work is not Substantially Complete by its Date for Substantial Completion or Finally Complete by the required date for Final Completion.

4. CONTRACT SUM (also called Contract Price). The Contract Sum to be paid by the Owner to the Contractor, as provided herein, for the satisfactory performance and completion of the Work and all of the duties, obligations, and responsibilities of the Contractor under this Agreement and the other Contract Documents is , subject to adjustment as set forth in the Contract Documents. The Contract Sum includes Allowances, Accepted Alternates, and all federal, state, county, municipal, and other taxes imposed by law, including but not limited to any sales, use, commercial activity, and personal property taxes payable by or levied against the Contractor on account of the Work or the materials incorporated into the Work. The Contractor will pay any such taxes. The Contract Sum includes the following:

4.1 Base Bid Amount: (Lump Sum Bid); and

4.2 Accepted Alternates, included in the Contract Sum:

Alternate No.	Description	Amount
1	Additional Impound Lot Parking Area - South	
2	Additional Parking Area - Storage Building	
3	Additional Visitor Parking Area	
4	Additional Sidewalk	

4.3 Allowances included in the Contract Sum:

Allowance Description	Amount
Allowance #1: Owner Directed Allowance	
Allowance #2: NA	

4.4 If after Substantial Completion of its Work, the Contractor fails to submit its final payment application with all the documents required to be submitted with such application within ninety (90) days after written notice to do so from the Owner and without prejudice to any other rights and remedies the Owner may have available to it, the balance of the Contract Sum shall become the Owner's sole and exclusive property, and the Contractor shall have no further interest in or right to such balance.

5. RETAINAGE. Retainage applicable to the Contract by Ohio Revised Code Sections 153.12, .13, and .14 will be withheld as defined in the Modified General Conditions. The Contractor agrees that the



The City of Canton

financial institution selected by the Owner for deposit of retained funds is acceptable to the Contractor and will sign any documents requested related to said account.

6. GENERAL.

6.1 MODIFICATION. No modification or waiver of any of the terms of this Agreement or of any other Contract Documents will be effective against a party unless set forth in writing and signed by or on behalf of a party. In the case of the Owner, the person executing the modification or waiver must have express authority to execute the Modification on behalf of the Owner pursuant to a resolution that is duly adopted by the Owner. Under no circumstances will forbearance, including the failure or repeated failure to insist upon compliance with the terms of the Contract Documents, constitute the waiver or modification of any such terms. The parties acknowledge that no person has authority to modify this Agreement or the other Contract Documents or to waive any of its or their terms, except as expressly provided in this section.

6.2 ASSIGNMENT. The Contractor may not assign this Agreement without the written consent of the Owner, which the Owner may withhold in its sole discretion.

6.3 LAW AND JURISDICTION. All questions regarding the validity, intention, or meaning of this Agreement or any modifications of it relating to the rights and obligation of the parties will be construed and resolved under the laws of the State of Ohio. Any suit, which may be brought to enforce any provision of this Agreement or any remedy with respect hereto, shall be brought in the Common Pleas Court of the county in which the Project is located and each party hereby expressly consents to the exclusive jurisdiction of such court to the exclusion of any other court, including any U.S. District Court or any other federal court.

6.4 CONSTRUCTION. The parties acknowledge that each party has reviewed this Agreement and the other Contract Documents and entered into this Agreement as a free and voluntary act. Accordingly, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party will not be employed in the interpretation of this Agreement, the other Contract Documents, or any amendments or exhibits to it or them.

6.5 APPROVALS. Except as expressly provided herein, the approvals and determinations of the Owner and Engineer will be subject to the sole discretion of the respective party and be valid and binding on the Contractor, provided only that they be made in good faith, i.e., honestly. If the Contractor challenges any such approval or determination, the Contractor has the burden of proving that it was not made in good faith by clear and convincing evidence.

6.6 PARTIAL INVALIDITY. If any term or provision of this Agreement is found to be illegal, unenforceable, or in violation of any laws, statutes, ordinances, or regulations of any public authority having jurisdiction, then, notwithstanding such term or provision, this Agreement will remain in full force and effect and such term will be deemed stricken; provided this Agreement will be interpreted, when possible, so as to reflect the intentions of the parties as indicated by any such stricken term or provision.

6.7 COMPLIANCE WITH LAWS AND REGULATIONS. The Contractor, at its expense, will comply with all applicable federal, state, and local laws, rules, and regulations applicable to the Work, including but not limited to Chapter 4115 of the Ohio Revised Code and Sections 153.59 and 153.60 of the Ohio Revised Code, which prohibit discrimination in the hiring and treatment of employees, with respect to which the Contractor agrees to comply and to require its subcontractors to comply.

6.7.1 NON-DISCRIMINATION. Contractor agrees:

- .1 That in the hiring of employees for the performance of Work under this Agreement or in any subcontract, neither the Contractor, subcontractor, or any person acting on behalf of either of them, shall by reason of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color discriminate against any citizen of the state in the employment of labor or workers who are qualified and available to perform the Work to which the employment relates.



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- .2 That neither the Contractor, subcontractor, nor any person acting on behalf of either of them shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work under this Agreement on account of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color.
- .3 That there shall be deducted from the amount payable to the Contractor by the Owner under this Agreement a forfeiture of twenty-five dollars (\$25.00) as required by Ohio Revised Code Section 153.60 for each person who is discriminated against or intimidated in violation of this Agreement.
- .4 That this Agreement may be canceled or terminated by the Owner and all money to become due hereunder may be forfeited for a second or subsequent violation of the terms of this section of this Agreement.

6.7.2 PREVAILING WAGE RATES. The Contractor and its subcontractors, regardless of tier, shall strictly comply with their obligation, if any, to pay their employees working on the Project site at the applicable prevailing wage rates for the type of work, including any changes thereto, pursuant to Ohio Revised Code Chapter 4115 or Davis Bacon rates and requirements.

6.7.3 ETHICS. By signing and entering into this agreement with the Owner, the Contractor represents that it is familiar with all applicable ethics law requirements, including without limitation Sections 102.04 and 3517.13 of the Ohio Revised Code, and certifies that it is in compliance with such requirements. The Contractor understands that failure to comply with the ethics laws is, in itself, grounds for termination of this contract and may result in the loss of other contracts with the Owner.

6.8 JOB MEETINGS. The Contractor or one of its representatives with authority to bind the Contractor will attend all job meetings. The Owner anticipates that job meetings will be scheduled on a weekly basis during construction or as needed. The Contractor will ensure that its Subcontractors also hold regular job meetings at which safety issues and job matters are discussed as these relate to the Work being performed. Job meetings include, but are not limited to, pre-construction meetings, weekly job meetings, weekly safety tool box meetings, and monthly safety meetings.

6.9 PROPERTY TAX AFFIDAVIT. The Contractor's affidavit given under Section 5719.024, Ohio Revised Code, is incorporated herein.

6.10 WARRANTIES. Notwithstanding anything to the contrary in the Contract Documents, including the Project Manual and Specifications, no warranties by Contractor shall be limited to any time shorter than the statute of limitations for written contracts in Ohio.

6.11 CONTRACTOR ATTESTATIONS.

- .1 Contractor attests that it has not scaled these contract documents to determine quantities for bids, as Contractor has field verified and taken its own dimensions to determine the quantities for its bid.
- .2 Contractor agrees that all the scales noted on the drawings are correct; so as to give it an "intent" of what is to be bid. Contractor has not relied on any other dimensions than what are noted in text and dimension lines.
- .3 Contractor has thoroughly read the Contract Documents and has asked any and all questions it has on the intent of the scope of work, or supposed errors and omissions contained in these drawings, during the bid process and prior to signing this Agreement.
- .4 Contractor will not be asserting a claim for additional time or money associated with the three issues listed above.
- .5 Contractor believes it has accurately interpreted the Contract Documents and has asked for clarification and received satisfactory response for all items not thoroughly addressed or appeared to be conflicting in the Contract Documents and has found all stipulations and



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requirements contained in this Agreement are as stated in the bid specifications and are enforceable according to Ohio Law, including but not limited to the Owner's right of offset, and the Owner's right to assess liquidated damages for work not completed according to the milestones listed on the project schedule contained in the Contract Documents.

6.12 ENTIRE AGREEMENT. This Agreement and the other Contract Documents constitute the entire agreement among the parties with respect to their subject matter and will supersede all prior and contemporaneous, oral or written, agreements, negotiations, communications, representations, and understandings with respect to such subject matter, and no person is justified in relying on such agreements, negotiations, communications, representations, or understandings.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their properly authorized representatives and agree that this Agreement is effective as of the date first set forth above.

Owner:
The City of Canton
By: _____
Name: _____
Title: _____
Date: _____

Contractor:
By: _____
Name: _____
Title: _____
Date: _____



The City of Canton

CERTIFICATE
(Section 5705.41, R.C.)

The undersigned, fiscal officer of the Owner, certifies that the moneys required to pay that part of the Contract Sum coming due during the current fiscal year, under the Agreement to which this Certificate is attached have been lawfully appropriated for such purpose and are in the appropriate account of the Owner, or in the process of collection to the credit of the appropriate account or fund, free from any previous encumbrances. Moneys due in excess of the Contract Sum shall require an additional and separate Fiscal Officer's Certificate.

DATED: _____

Fiscal Officer



The City of Canton

BID GUARANTY AND CONTRACT BOND

(O.R.C. § 153.571)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned _____
_____ ("Contractor") as principal and _____
_____ as surety are hereby held and firmly bound unto the **City of Canton** as
obligee in the penal sum of the dollar amount of the bid submitted by the principal to the obligee on _____
_____, 20___, to undertake the construction of the **2022 Service Center Upgrade and
Reconfiguration Project - GP 1331 Project** ("Project"). The penal sum referred to herein shall be the
dollar amount of the principal's bid to the obligee, incorporating any additive or deductive Alternates made
by the principal on the date referred to above to the obligee, which are accepted by the obligee. In no
case shall the penal sum exceed the amount of _____ Dollars (\$_____
_____). (If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid,
including add Alternates. Alternatively, if the blank is filled in the amount stated must not be less than the
full amount of the bid including add Alternates, in dollars and cents. A percentage is not acceptable.) For
the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves,
our heirs, executors, administrators, successors, and assigns.

Signed this _____ day of _____, 20___.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the above named principal has
submitted a bid for work on the Project.

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter into a
proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the
event the principal pays to the obligee the difference not to exceed ten percent (10%) of the penalty
hereof between the amount specified in the bid and such larger amount for which the obligee may in good
faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the
obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the
principal pays to the obligee the difference not-to-exceed ten percent (10%) of the penalty hereof
between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new
contract documents, required advertising, and printing and mailing notices to prospective bidders,
whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if
the obligee accepts the bid of the principal and the principal within ten (10) days after the awarding of the
contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of
material, which said contract is made a part of this bond the same as though set forth herein.

Now also, if the said principal shall well and faithfully do and perform the things agreed by said
principal to be done and performed according to the terms of said contract; and shall pay all lawful claims
of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying
forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall
be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then
this obligation shall be void; otherwise the same shall remain in full force and effect; and surety shall
indemnify the obligee against all damage suffered by failure of the principal to perform the contract
according to its provisions and in accordance with the plans, details, specifications, and bills of material
therefor and to pay all lawful claims of subcontractors, materialmen, and laborers for labor performed or
material furnished in carrying forward, performing, or completing the contract and surety further agrees
and assents that this undertaking is for the benefit of any subcontractor, materialman, or laborer having a
just claim, as well as for the obligee; it being expressly understood and agreed that the liability of the
surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as
herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions in or
to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the



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obligations of said surety on its bond, and does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

Signed and sealed this _____ day of _____, 20__.

PRINCIPAL

By: _____

Printed Name & Title: _____

SURETY

By: _____

Printed Name & Title: _____

Surety's Address: _____

Surety's Telephone Number: _____

Surety's Fax Number: _____

SURETY'S AGENT

Surety's Agent's Address: _____

Surety's Agent's Telephone Number: _____

Surety's Agent's Fax Number: _____



NOTE: The Contract Bond form that follows is to be used ONLY by a bidder that is awarded a contract and submits a form of bid guaranty other than the combined Bid Guaranty and Contract Bond with its bid. If a bidder submits a combined Bid Guaranty and Contract Bond, then the bid guaranty becomes the contract bond when the contract is awarded.

AIA and EJCDC Bid Bond or Payment and Performance Bond forms are not acceptable for this Project.



The City of Canton

CONTRACT BOND
(O.R.C. § 153.57)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned ("Contractor"), as principal, and _____, as surety, are hereby held and firmly bound unto the **City of Canton** ("Owner") as obligee, in the penal sum of _____ Dollars (\$ _____), for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas, the above-named principal did on the _____ day of _____, 20____, enter into a contract with the Owner for construction of the **2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project** ("Project"), which said contract is made a part of this bond the same as though set forth herein:

Now, if the said Contractor shall well and faithfully do and perform the things agreed by the Contractor to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions in or to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the obligations of said surety on its bond, and does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

Signed and sealed this _____ day of _____, 20__.

(PRINCIPAL)

(SURETY)

By: _____

By: _____

Printed Name & Title: _____

Printed Name & Title: _____

Surety's Address: _____

Surety's Telephone Number: _____

Surety's Fax Number: _____

NAME OF SURETY'S AGENT

Surety's Agent's Address: _____

Surety's Agent's Telephone Number: _____

Surety's Agent's Fax Number: _____



BID FORM

1.01 BID SUBMITTED BY:

(Contractor)

Date bid submitted: _____

1.02 DELIVER TO:

The City of Canton
ATTN: **Purchasing/Bids**
218 Cleveland Avenue SW
Canton, OH 44702

1.03 Having carefully reviewed the Instructions to Bidders, Drawings, Specifications and other Contract Documents for the Project titled **2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project** including having also received, read, and taken into account the following Addenda:

Addendum No.	Dated
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

and likewise having inspected the site and the conditions affecting and governing the Project, the undersigned hereby proposes to furnish all materials and to perform all labor, as specified and described in the said Specifications and/or as shown on the said Drawings for all Work necessary to complete the Project on a timely basis and in accordance with the Contract Documents regardless of whether expressly provided for in such Specifications and Drawings.

1.04 Before completing the Bid Form, the undersigned represents that it has carefully reviewed the Legal Notice to Bidders, Instructions to Bidders, this Bid Form, Form of Bid Guaranty and Contract Bond, Contractor's Affidavit (O.R.C. 5719.042), Owner-Contractor Agreement, General Conditions of the Contract (EJCDC C-700) (as modified for the Project), Drawings, Project Specifications, and other Contract Documents. Failure to comply with provisions of the Contract Documents may be cause for disqualification of the bid.

1.05 BONDS AND CONTRACT: If the undersigned is notified of bid acceptance, it agrees to furnish required bonds as indicated in the Instructions to Bidders.

1.06 COMPLETION OF WORK: In submitting a bid, the undersigned agrees to execute the Owner-Contractor Agreement in the form included in the Contract Documents and to complete its Work as required by the Contract Documents.

NOTE A: The wording of the Bid Form shall be used throughout, without change, alteration, or addition. Any change may cause it to be rejected.

NOTE B: Bidder is cautioned to bid only on the Brands or Standards specified.

NOTE C: If there is an inconsistency or conflict in the Bid amount, the lowest amount shall control, whether expressed in numbers or words.



The City of Canton

2.01 **BID:**

Include the cost of all labor and material for the contract listed below. Bidder is to fill in all blanks related to the Bid Package for which a bid is being submitted. If no bid is submitted for an item, leave the item blank or insert "NO BID" in the blank. For alternate items, indicate whether the amount stated is in addition to or a deduction from the base bid amount (if there is no indication whether the amount for an alternate is an addition or a deduction, the amount shall be a deduction).

2.02 **Bidder will complete the Work in accordance with the Contract Documents for the prices set forth in the attached Bid Schedule.**

3.01 **INSTRUCTIONS FOR SIGNING**

- A. The person signing for a sole proprietorship must be the sole proprietor or his authorized representative. The name of the sole proprietor must be shown below.
- B. The person signing for a partnership must be a partner or his authorized representative.
- C. The person signing for a corporation must be the president, vice president or other authorized representative; or he must show authority, by affidavit, to bind the corporation.
- D. The person signing for some other legal entity must show his authority, by affidavit, to bind the legal entity.

4.01 **BIDDER CERTIFICATIONS.** The Bidder hereby acknowledges that the following representations in this bid are material and not mere recitals:

1. **The Bidder acknowledges that this is a public project involving public funds, and that the Owner expects and requires that each successful Bidder adhere to the highest ethical and performance standards. The Bidder by submitting its bid pledges and agrees that (a) it will act at all times with absolute integrity and truthfulness in its dealings with the Owner and the Design Professional, (b) it will use its best efforts to cooperate with the Owner and the Design Professional and all other Contractors on the Project and at all times will act with professionalism and dignity in its dealings with the Owner, Design Professional and other Contractors, (c) it will assign only competent supervisors and workers to the Project, each of whom is fully qualified to perform the tasks that are assigned to him/her, and (d) it has read, understands and will comply with the terms of the Contract Documents.**
2. The Bidder represents that it has had a competent person carefully and diligently review each part of the Contract Documents, including any Divisions of the Specifications and parts of the Drawings that are not directly applicable to the Work on which the Bidder is submitting its bid. By submitting its bid, each Bidder represents and agrees, based upon its careful and diligent review of the Contract Documents, that it is not aware of any conflicts, inconsistencies, errors or omissions in the Contract Documents for which it has not notified the Owner in writing at least ten (10) days prior to the bid opening. If there are any such conflicts, inconsistencies, errors or omissions in the Contract Documents, the Bidder (i) will provide the labor, equipment or materials of the better quality or greater quantity of Work; and/or (ii) will comply with the more stringent requirements. The Bidder will not be entitled to any additional compensation for any conflicts, inconsistencies, errors or omissions that would have been discovered by such careful and diligent review, unless it has given such prior written notice to Owner.
3. The Bidder represents that it has had a competent person carefully and diligently inspect and examine the entire site for the Project and the surrounding area, including all parts of the site applicable to the Work for which it is submitting its bid, and carefully correlate the results of the inspection with the requirements of the Contract Documents. The Bidder agrees that its bid shall include all costs attributable to site and surrounding area conditions that would have been



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discovered by such careful and diligent inspection and examination of the site and the surrounding area, and the Bidder shall not be entitled to any Change Order, additional compensation, or additional time on account of conditions that could have been discovered by such an investigation.

4. The Bidder represents, understands and agrees that a) the Claim procedures in the General Conditions as modified for the Project are material terms of the Contract Documents, b) if it has a Claim, it will have its personnel provide complete and accurate information to complete and submit the Statement of Claim form on a timely basis, c) the proper completion and timely submission of a Statement of Claim form is a condition precedent to any change in the Contract Sum or the Contract Time(s), and d) the proper and timely submission of the Statement of Claim form provides the Owner with necessary information so that the Owner may investigate the Claim and mitigate its damages.
5. The Bidder represents that the bid contains the name of every person interested therein and is based upon the Standards specified by the Contract Documents.
6. The Bidder and each person signing on behalf of the Bidder certifies, and in the case of a bid by joint venture, each member thereof certifies as to such member's entity, under penalty of perjury, that to the best of the undersigned's knowledge and belief: (a) the Base Bid, any Unit Prices and any Alternate bid in the bid have been arrived at independently without collusion, consultation, communication or agreement, or for the purpose of restricting competition as to any matter relating to such Base Bid, Unit Prices or Alternate bid with any other Bidder; (b) unless otherwise required by law, the Base Bid, any Unit Prices and any Alternate bid in the bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to the bid opening, directly or indirectly, to any other Bidder who would have any interest in the Base Bid, Unit Prices or Alternate bid; (c) no attempt has been made or will be made by the Bidder to induce any other Person to submit or not to submit a bid for the purpose of restricting competition; and (d) the statements made in this Bid Form are true and correct.
7. The Bidder will execute the form of Owner/Contractor Agreement in the form included with the Contract Documents, if a Contract is awarded on the basis of this bid, and if the Bidder does not execute the Contract Form for any reason, other than as authorized by law, the Bidder and the Bidder's Surety are liable to the Owner.
8. The Bidder certifies that the upon the award of a Contract, the Contractor will ensure that all of the Contractor's employees, while working on the Project site, will not purchase, transfer, use or possess illegal drugs or alcohol or abuse prescription drugs in any way.
9. The Bidder agrees to furnish any information requested by the Owner's authorized representative to evaluate that the Bidder has submitted the lowest and best bid and that the bid is responsive to the specifications.
10. The Bidder certifies that it has no unresolved findings for recovery issued by the Auditor of State.
11. The Bidder certifies that it is aware of and in compliance with the requirements of Ohio Revised Code Section 3517.13 regarding campaign contributions.

LEGAL NAME OF BIDDER: _____

BIDDER IS (check one): sole proprietor partnership corporation other legal entity



The City of Canton

NAME & TITLE OF PERSON LEGALLY AUTHORIZED TO BIND BIDDER TO A CONTRACT:

Name	Title
DATE SIGNED: _____	SIGNATURE: _____
	ADDRESS: _____
	TELEPHONE: _____
	FAX: _____
	FEDERAL TAX I.D. # _____

When the Bidder is a partnership or a joint venture, state name and address of each partner in the partnership or participant in the joint venture below:

Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address
Name	Address

END OF SECTION



The City of Canton

CONTRACTOR'S QUALIFICATION STATEMENT

2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project

SUBMITTED TO: The City of Canton
ATTN: **Purchasing/Bids**
218 Cleveland Avenue SW
Canton, OH 44702

SUBMITTED BY: _____

NAME: _____

ADDRESS: _____

PRINCIPAL OFFICE: _____

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

NAME OF PROJECT: 2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project

1. ORGANIZATION

- 1.1 How many years has your organization been in business as a Contractor in the construction industry?
- 1.2 How many years has your organization been in business under its present business name?
 - 1.2.1 Under what other or former names has your organization operated?
- 1.3 If your organization is a corporation, answer the following:
 - 1.3.1 Date of incorporation:
 - 1.3.2 State of incorporation:
 - 1.3.3 President's name:
 - 1.3.4 Vice President's name(s):
 - 1.3.5 Secretary's name:
 - 1.3.6 Treasurer's name:
- 1.4 If your organization is a partnership, answer the following:



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- 1.4.1 Date of organization:
 - 1.4.2 Type of partnership (if applicable):
 - 1.4.3 Name(s) of general partner(s):
 - 1.5 If your organization is individually owned, answer the following:
 - 1.5.1 Date of organization:
 - 1.5.2 Name of owner:
 - 1.6 If the form of your organization is other than those listed above, describe it and name the principals:
2. LICENSING
- 2.1. List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.
 - 2.2. List jurisdictions in which your organization's partnership or trade name is filed.
 - 2.3. List any suspension or revocations of any professional license of any director, officer, owner, or managerial employees of the Contractor, to the extent that any work to be performed on this Project is within the field of such licensed profession.
3. EXPERIENCE
- 3.1. List the categories of work that your organization normally performs with its own forces.
 - 3.2. Claims and Lawsuits (If the answer to any of the questions below is yes, please attach details.)
 - 3.2.1. Has your organization ever failed to complete any work?
 - 3.2.2. Has your organization ever failed to complete any work by the substantial completion date, final completion date, or in a timely manner?
 - 3.2.3. Within the last five (5) years has your organization or any of its officers prosecuted any Claims, had any Claims prosecuted against it or them, or been involved in or is currently involved in any mediation or arbitration proceedings or lawsuits related to any construction project, or has any judgments or awards outstanding against it or them? Has your organization had any extension requests, fines and penalties imposed, or contract defaults? If the answer is yes, please attach the details for each Claim, including the names and telephone numbers of the persons who are parties, the amount of the Claim, the type of Claim and the basis for the Claim, and the outcome.

Note: As used in this document "Claim" means a Claim initiated under the Contract Documents for a project or relating to the Work for a project, including Claims made against performance bonds secured by the Contractor on other construction projects.
 - 3.3. Has your organization ever failed to comply with federal, state, and local laws, rules, and regulations, including but not limited to the Occupational Safety and Health Act, the Ohio Prevailing Wage laws, and Ohio ethics laws? If the answer is yes, please attach details and reason(s) for each instance and the outcome including any fines or penalties imposed.
 - 3.4. Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? If the answer is yes, please attach details for each instance, including the names and telephone numbers of the persons who are parties to the contract, and the reason(s) the contract was not completed.



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3.5. On a separate sheet, list construction projects your organization has in progress with an original Contract Sum of more than \$10,000,000, giving the name of project, owner and its telephone number, design professional and its telephone number, contract amount, percent complete and scheduled completion date.

3.5.1. State total amount of work in progress and under contract:

3.6. Provide the following information for each contract your organization has had during the last five (5) years, including current contracts, where the Contract Sum is fifty percent (50%) or more of the bid amount for this Project, including add alternates. Include details regarding timeliness of performance and quality of work. List the original contract price for each project, the amount of any change orders or cost overruns on each, the reasons for the change orders or cost overruns, and your organization's record for complying with and meeting completion deadlines on construction projects. If there are more than ten (10) of these contracts, only provide information on the most recent ten (10) contracts, including current contracts.

Project And Work	Contract Sum	Owner's Representative & Telephone Number	Engineer's Or Architect's Representative Name & Telephone Number	Additional Comments



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- 3.7. Provide the following information for each project your organization has had during the last five (5) years, which your organization believes is of comparable or greater size and complexity than the Owner's project. Include details regarding how such projects demonstrate your organization's ability and capacity to perform a substantial portion of the Project with its own work force. If there are more than five (5) of these projects, only provide information on the most recent five (5) projects, including current projects.

Project And Work	Contract Sum	Owner's Representative & Telephone Number	Engineer's Or Architect's Representative Name & Telephone Number	Additional Comments

- 3.7.1. State average annual amount of construction work your organization has performed during the last five years.
- 3.7.2. If any of the following members of your organization's management -- president, chairman of the board, or any director -- operates or has operated another construction company during the last five (5) years, identify the member of management and the name of the construction company.
- 3.7.3. If your organization is operating under a trade name registration with the Secretary of State for the State of Ohio, identify the entity for which the trade name is registered. If none, state "none."
- 3.7.4. If your organization is a division or wholly-owned subsidiary of another entity or has another relationship with another entity, identify the entity of which it is a division or wholly-owned subsidiary or with which it has another relationship and also identify the nature of the relationship. If none, state "not applicable."
- 3.8. On a separate sheet, list the construction education, training, construction experience, and tenure with your organization for each person who will fill a management role on the Project, including without limitation the Project Executive, Project Engineer, Project Manager, and Project Superintendent. For each person listed, include with the other information the last three projects on which the person worked and the name and telephone number of the Design Professional and the Owner.
- 3.9. Describe the size and experience of your organization's work force and your equipment and facilities, in relation to your organization's ability to complete the Project successfully and on time.

4. REFERENCES

- 4.1. Trade References:
- 4.2. Bank References:
- 4.3. Surety:
- 4.3.1. Name of bonding company:
- 4.3.2. Name and address of agent:



5. FINANCING

5.1 Financial Statement (May be required, but only post-bid. Not a requirement to provide with bid.)

5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes); and

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

5.1.2 Name and address of firm preparing attached financial statement, and date thereof.

5.1.3 Is the attached financial statement for the identical organization named on page one?

5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsiidiary).

5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

5.3 Attach additional documentation or explanations demonstrating your organization's financial responsibility, adequate resources and availability of credit, its means and ability to procure insurance and acceptable performance bonds required for the Project.

6. Does your organization participate in a drug-free workplace program? Provide your organization's record for both resolved and unresolved findings of the Auditor of the State of Ohio for recovery as defined in Section 9.24 of the Ohio Revised Code.

7. List any projects within the previous five years where a public entity determined that your organization was not a responsible bidder, including the name of the public entity, the reasons given by the public entity, and an explanation thereof.

8. Additional Criteria. Pursuant to the Codified Ordinance of the City of Canton, Chapter 105, the Owner, in its discretion, reserves the right to request additional information and documentation relating to the foregoing and related to any of the criteria listed in Paragraph I.6 of the Instructions to Bidders from Bidders after the bid opening. The Owner may consider such information and documentation in determining which bid is lowest and best. The Owner, in its discretion, may consider and give such weight to any and all criteria as it deems appropriate.

[left intentionally blank]



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Certification. The undersigned certifies for the reliance of the Owner that after diligent investigation, to the best of the undersigned's belief, the information provided with this Contractor's Qualification Statement is true, accurate and not misleading.

SIGNATURE:

Dated this ____ day of _____ 20__.

Name of
Organization: _____

By: _____
[print name]

Signature: _____

Title: _____

State of _____

County of _____

_____, being duly sworn, deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this ____ day of _____ 20__.

Notary Public

My Commission Expires: _____

SEAL



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Modified General Conditions (EJCDC)

Please go to this [link](#) for the document or enter the following link information into a web browser:

<https://cantonohio.gov/DocumentCenter/View/596/Modified-Standard-General-Conditions-of-the-Construction-Contract--3rd-Party-Engineer>



ODOT MANUAL SUPPLEMENT

This Supplement shall apply where and to the extent that the State of Ohio Department of Transportation Construction and Material Specifications, in the current version as of January 1, 2019, is expressly incorporated into the Contract Documents via the Owner-Contractor Agreement, or when designated as a Contract Document in the list of Contract Documents in the Owner-Contractor Agreement, or is referenced anywhere else in the Contract Documents as one of the Contract Documents.

1. **Regardless of any terms to the contrary in Division 100 or elsewhere, any directions or orders of the Engineer that will result in an adjustment of the Contract Price or the Contract Time shall require the prior written approval of the Owner. It is expressly understood and agreed that the Engineer does not have authority to authorize changes or modifications in the Contract Price or Contract Time.**
2. The Contractor's obligations under this ODOT Supplement are in addition to and not in limitation of its other obligations under the Contract Documents.
3. Delays. Regardless of the terms in this ODOT Supplement, including Item 109.05, all time adjustments shall be subject to a) filing a Change Proposal and / or Claim in accordance with Articles 11 and 12 of the Modified Standard General Conditions **of the Contract for Construction (EJCDC C-700, 2013 edition) ("Modified Standard General Conditions")**, b) substantiating the Contractor's entitlement to a time adjustment in accordance with the Modified Standard General Conditions and c) Item 109.05. The Contractor will be entitled to additional compensation for delays but only for those delays described in the Modified Standard General Conditions. As part of the Claims process and as a condition precedent to receiving any additional compensation, the Contractor shall prepare a cost analysis as allowed by Item 109.05.D substantiating its entitlement to additional compensation.
4. Division 100, General Provisions. The following Division 100 General Provisions of the State of Ohio Department of Transportation, Construction Specifications Manual in the current version as of January 31, 2019, are incorporated in this ODOT Supplement, subject to any changes or limitations herein.
 - a. **Item 101.01, General.**
 - b. Item 101.02, Abbreviations, provided that references to DCA, DDD, DET, DGE shall mean the Owner.
 - c. Item 101.03, Definitions, provided where terms that are defined in the other Contract Documents, the definition in the other Contract Documents shall control, and further provided that the following definitions are deleted, modified and/or added:
 - i. Claims is deleted
 - ii. Contract Bond is deleted.
 - iii. Contract Documents is deleted.
 - iv. Contract Price is deleted.
 - v. Contract Time is deleted.
 - vi. Contractor is deleted.
 - vii. Department shall mean the Owner.
 - viii. Director shall mean the Owner's representative.
 - ix. Disputes is deleted.
 - x. Engineer is deleted.



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- xi. Extra Work Contract is deleted.
- xii. Final Acceptance shall mean Final Completion as defined in the Owner Contractor Agreement.
- xiii. Final Inspector shall mean the Owner.
- xiv. Laboratory is deleted.
- xv. Prebid Question is deleted.
- xvi. Proposal Guaranty is deleted.
- xvii. Questionnaire is deleted.
- xviii. Shop Drawings is deleted.
- xix. Signatures on Contract Documents is deleted.
- xx. State or state shall mean the Owner.
- xxi. Subcontractor is deleted.
- xxii. Work is deleted.
- d. **Item 101.04, Interpretations.**
- e. Item 103.03, Cancellation of Award.
- f. Item 104.02.D.2, Significant Changes in the Character of the Work (including Tables 104.02-1 and 104.02-2 following this Item), provided that all references to Item 108 and 109.12 are deleted and that all time adjustments shall be subject to filing a Change Proposal and / or Claim in accordance with the Modified Standard General Conditions and substantiating the entitlement to an extension of time as provided in the Modified Standard General Conditions (EJCDC Document C-700, 2013 edition) ("Modified Standard General Conditions").
- g. Item 104.03, Rights in and Use of Materials Found on the Work.
- h. Item 104.04, Cleaning Up.
- i. Item 105.02, Plans and Working Drawings, provided that the review of submittals may be by the Owner or the Engineer in the Owner's discretion.
- j. Item 105.06, Superintendent.
- k. Item 105.10, Inspection of Work.
- l. Item 105.11, Removal of Defective and Unauthorized Work.
- m. Item 105.12, Load Restrictions.
- n. Item 105.13, Haul Roads, provided that the second paragraph in this Item is deleted. The Contractor shall be responsible for any damage to the roads referred to in the second paragraph.
- o. Item 105.14, Maintenance During Construction, except substitute "Final Completion" for "Final Inspector accepts the work under 109.12" and delete the remainder of the first sentence. Additionally, delete the second to last sentence in this Item.
- p. Item 105.15, Failure to Maintain Roadway or Structure.
- q. Item 105.16, Borrow and Waste Areas.
- r. Item 105.17, Construction and Demolition Debris.
- s. Item 106.01, Source of Supply and Quality Requirements.
- t. Item 106.02, Samples, Tests and Cited Specifications, provided that this Item will be optional at the discretion of the Owner. If the Owner elects to proceed under this Item, a) the Contractor



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without additional cost will provide material samples as required by the Owner, and b) the Owner may conduct such tests as it determines proper.

- u. **Item 106.03, Small Quantities and Materials for Temporary Application.**
- v. **Item 106.04, Plant Sampling and Testing Plan.**
- w. **Item 106.05, Storage of Materials.**
- x. **Item 106.06, Handling Materials.**
- y. **Item 106.07, Unacceptable Materials, except substitute the word “unacceptance” in the third sentence with the word “unacceptable.”**
- z. **Item 106.08, Department-Furnished Material.**
- aa. **Item 106.09, Steel and Iron Products Made in the United States.**
- bb. **Item 107.01, Laws to be Observed.**
- cc. **Item 107.02, Permits, Licenses, and Taxes.**
- dd. **Item 107.03, Patented Devices, Materials, and Processes.**
- ee. **Item 107.05, Federal-Aid Provisions.**
- ff. **Item 107.06, Sanitary Provisions.**
- gg. **Item 107.07, Public Convenience and Safety.**
- hh. **Item 107.08, Bridges Over Navigable Waters.**
- ii. **Item 107.09, Use of Explosives, provided that both bringing explosives onto the site and any use of explosives shall require the prior written approval of the Owner.**
- jj. **Item 107.10, Protection and Restoration of Property, provided that the Contractor shall remain responsible for all damage and injury to property until the Project is Finally Complete, and all references to Items 109.11 and 109.12 are deleted.**
- kk. **Item 107.11, Contractor’s Use of the Project Right-of-Way or Other Department-Owned Property, provided the reference to Item 109.12 is deleted.**
- ll. **Item 107.12, Responsibility for Damage Claims and Liability Insurance, provided that all notices and certificates shall be delivered to the Owner’s representative and, if there is no Owner’s representative, to the Engineer. Reference to the “State of Ohio, Department of Transportation” shall mean the Owner.**
- mm. **Item 107.13, Reporting, Investigating, and Resolving Motorist Damage Claims, provided that this item is modified to read, “When a motorist reports damage to its vehicle either verbally or in writing to the Contractor, the Contractor shall within 3 days make and file a written report to the Owner and the Engineer and also file a report with its insurance carrier”.**
- nn. **Item 107.14 Opening Sections of Project to Traffic, provided that the reference to Item 108.06 is deleted.**
- oo. **Item 107.15, Contractor’s Responsibility for Work, provided that reference to “Final Inspection according to 109.12.A” shall mean “Final Completion.” and all references to Item 108 are deleted.**
- pp. **Item 107.17, Furnishing Right-of-Way.**
- qq. **Item 107.19, Environmental Protection, provided that the Owner makes no representation as to having acquired any permits unless expressly provided in the Contract Documents. The Contractor will comply with any permits obtained by the Owner.**
- rr. **Item 107.20, Civil Rights.**



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- ss. Item **107.21, Prompt Payment.**
- tt. **with information or reports on DBE participation unless the Contract Documents otherwise require such reports or information. Additionally, unless otherwise provided in the Contract Documents, the 50% self-contracting requirement in the first sentence is waived.**
- uu. Item **108.04, Limitation of Operations.**
- vv. Item **108.05, Character of Workers, Methods, and Equipment.**
- ww. Item **108.10, Payroll Records.**
- xx. Item 109.01, Measurement of Quantities, provided that this item will apply only where payment is to be based on the measurement of quantities.
- yy. Item 109.02, Measurement Units.
- zz. Item 109.03, Scope of Payment.
- aaa. Item **108.01, Subletting of the Contract, provided that the Contractor need not provide the Owner (Reserved.)**
- bbb. Item 109.05, Extra Work as modified in this Supplement, provided that a) the references to Items 105.07, 105.10 and 108 are deleted, b) all negotiated prices shall require the Owner's written approval, c) the Owner must approve in writing any directions or orders by the Engineer to proceed with force account work, d) in Item 109.05.B.2 the reference to Department shall mean the Ohio Department of Transportation, e) the compensation provided in 109.05.B through 109.05.D constitutes payment in full for all the items referred to in Items 109.05.C.1-10, except for any additional compensation for delays, f) the mark-ups provided in Items 109.05.D.2.b and 109.05.D.2.d are deleted, and g) Item 109.05.D.2.f regarding home office overhead is deleted. The Contractor's entitlement to home office overhead, if any, shall be subject to current Ohio law.
- ccc. **109.06, Directed Acceleration.**
- ddd. **(Reserved.)**
- eee. **109.08, Unrecoverable Costs.**
5. Divisions 200 through 700. Divisions 200 through 700 of the State of Ohio Department of Transportation, Construction Specifications Manual in the current version as of January 31, 2019 are incorporated in this ODOT Supplement.
- a. All references to Division 100 Items in Divisions 200 through 700 shall be to the Division 100 Items as modified in this Supplement.
- b. Where Division 100 Items are referred to in Divisions 200 through 700 but are not included in this Supplement, the deleted references will be governed by this Paragraph 5.
- c. In Item 203.04, the reference to Item 108.06 shall be governed by Paragraph 3, Delays, in this Supplement.
- d. In Item 514.24, the reference to Item 109.10 shall be governed by the payment provisions in the Modified Standard General Conditions.
- e. In Item 624.04, the reference to item 109.09 shall be governed by the payment provisions in the Modified Standard General Conditions, i.e., the Owner will process and make payments in accordance with the provisions in the Modified Standard General Conditions. In this regard, the basis for payment of mobilization costs will be as provided in Item 624.04.
- f. General to Divisions 200 through 700. The basis for payment provided in the Basis for Payment items in these Divisions shall be the basis for payment to the Contractor when applicable.



City of Canton Codified Ordinances

Bidders shall take notice that they are to comply with the Codified Ordinances of the City of Canton, including but not limited to, the following:

1. Chapter 105.02 – Public Paving Time Restrictions.

All City public paving contracts shall include a provision for liquidated damages in order to provide the City reasonable compensation for actual damages due to a failure to ensure that asphalt paving take place on the City's road surfaces from May 1st to October 1st; and/or during optimal climatic conditions that are conducive to the best mix compacting and long term durability of the pavement, according to the highest and best practices of the asphalt paving industry.

(Ord. 270-2014. Passed 12-29-14.)

2. Chapter 105.03 – U.S. Steel Usage Required; Exception.

All City contracts shall stipulate or provide that all steel necessary in the construction of any work performed under such contracts shall be steel that is produced in the United States unless a specific product which is required is not produced by manufacturers in the United States in which event this prohibition does not apply. This section shall apply to only contracts awarded by the Board of Control of the City.

(Ord. 224-77. Passed 6-27-77.)

3. Chapter 105.05 – Materials to be Purchased Locally.

In all future contracts for the construction of buildings, structures, or other improvements under the Capital Improvement Budget, the following clause shall be printed or typewritten on each contract:

It is the desire of the City of Canton that all materials used in the construction covered by this contract shall be purchased in the Canton area except such materials which are unavailable in the Canton area.

(Res. 49-77. Passed 2-7-77.)

4. Chapter 105.06 – Minority Contract Provision.

a. All contracts with the City shall include the following clause:

The bidder agrees to expend at least \$_____ of the Contract in the event the contract is awarded to such bidder for minority/women's business enterprises. For purposes of this pledge, the term "minority/women's business enterprise" means a bona fide business established as a sole proprietorship, partnership or corporation owned, operated and controlled by one or more minority persons or women who have at least fifty-one percent (51%) ownership. "Minority" includes African Americans, Asian/Pacific Islanders, Hispanic/Latino Americans and Native American Indians. The minority or woman must have operational and managerial control, interest in capital, and earnings commensurate with the percentage of ownership. Minority/women's business enterprises may be employed as construction contractors, subcontractors, vendors or suppliers.

(Ord. 185-2011. Passed 10-31-11.)

5. Chapter 105.12 – Local Bidder Preference.

a. The Board of Control, in determining the lowest and best bidder in the award of contracts to which this section is applicable, is authorized to award contracts to local bidders as hereinafter defined, whose bid is not more than five percent (5%) higher, subject to a maximum amount of twenty thousand dollars (\$20,000.00), than the lowest dollar bid submitted by non-local bidders. The Board of Control's decision in making such an award shall be final.



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- b. For purposes of this section, "local bidder" means an individual or business entity which at the time of the award of the contract has a headquarters, division, sales office, sales outlet, manufacturing facility, or similar significant business-related location in Stark County, Ohio.
- c. All contract specifications and/or bid documents that are distributed by Canton for the purpose of soliciting bids for goods and/or services shall contain the following notice:
Prospective bidders will take notice that the City of Canton, in determining the lowest and best bidder in the award of this contract, may award a local bidder preference to any qualified bidder pursuant to Section 105.12 of the Codified Ordinances of the City of Canton. The determination of whether a bidder qualifies for the local preference shall be made by Board of Control. The Board's decision shall be final. A copy of Section 105.12 is attached.
- d. This section shall be applicable to all contracts for equipment, goods, machinery, materials, supplies, vehicles and/or services, which are purchased, leased and/or constructed at a cost in excess of fifty thousand dollars (\$50,000.00) and which require bidding pursuant to Ohio R.C. 735.05 through 735.09 and Ohio R.C. 737.03. (*Ord. 115-2018. Passed 5-14-18.*)

6. Chapter 105.15 – City Income Tax

- a. No person, partnership, corporation or unincorporated association may be awarded a contract with the City under Sections 105.09 or 105.10, unless the bidder is paid in full or is current and not otherwise delinquent in the payment of City income taxes, including any obligation to pay taxes withheld from employees under Section 182.05 and any payment on net profits under Section 182.06.
- b. Falsification of any information related to or any post-contractual violation of the requirement to pay City income taxes set forth in subsection (a) shall constitute cause for the rescission of the balance of the contract at the City's discretion.
- c. No partnership, corporation or unincorporated association which has as one of its partners, shareholders or owners a person who is a twenty percent (20%) or greater equity owner in such partnership, corporation or unincorporated association and who is delinquent in the payment of City income taxes as set forth in subsection (a), may be awarded a contract with the City under Sections 105.09 or 105.10.
- d. A person who is a twenty percent (20%) or greater equity owner in any partnership, corporation or unincorporated association which is delinquent in the payment of City income taxes as set forth in subsection (a) may not be awarded a contract with the City under Sections 105.09 or 105.10.
- e. A contract awarded under Sections 105.09 or 105.10 for a public improvement project, services other than personal or professional services, and personal or professional services shall not be binding or valid unless such contract contains the following provisions:

Said _____ hereby further agrees to withhold all City income taxes due or payable under Chapter 182 of the Codified Ordinances for wages, salaries, fees and commissions paid to its employees and further agrees that any of its subcontractors shall be required to agree to withhold any such City income taxes due for services performed under this contract. Furthermore, any person, firm or agency that has



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a contract or agreement with the City shall be subject to City income tax whether a resident or nonresident in the City, and whether the work being done is in the City or out of the City. In addition to the tax withheld for employees, the net profits on the contract shall be subject to City income tax.

(Ord. 238-2015. Passed 11-30-15.)

7. **Chapter 182.30 – Contract Provisions**

a. No contract on behalf of the City under Sections 105.09 or 105.10 of the Codified Ordinances of Canton for a public improvement project, services other than personal or professional services, and personal or professional services shall be binding or valid unless such contract contains the following provisions:

Said _____ hereby further agrees to withhold all City income taxes due or payable under Chapter 182 of the Codified Ordinances for wages, salaries, fees and commissions paid to its employees and further agrees that any of its subcontractors shall be required to agree to withhold any such City income taxes due for services performed under this contract. Furthermore, any person, firm or agency that has a contract or agreement with the City shall be subject to City income tax whether a resident or nonresident in the City, and whether the work being done is in the City or out of the City. In addition to the tax withheld for employees, the net profits on the contract shall be subject to City income tax.

b. By entering into contract with the City of Canton _____ agrees with the City regarding the manner of withholding of City income taxes as provided in Section 718.011(F) of the Ohio Revised Code.

i. Municipal income tax withholding provisions of Sections 718.011(B)(1) and 718.011(D) ORC shall not apply to qualifying wages paid to employees for work done or services performed or rendered inside the City or on City property.

ii. _____ agrees to withhold income tax for the City from employees' qualifying wages earned inside the City or on City property, beginning with the first day of work done or services performed or rendered inside the City.

(Ord. 238-2015. Passed 11-30-15.)

8. **Chapter 507.03 – Equal Employment Opportunity Clause.**

b. During the performance of this contract, the contractor agrees as follows:

1. The contractor shall not discriminate against any employee or applicant for employment because of race, age, handicap, religion, color, sex, national origin, sexual orientation or gender identity. The contractor shall take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to race, religion, color, sex, national origin, military status, sexual orientation or gender identity. As used herein, the word "treated" shall mean and include without limitation the following: recruited, whether by advertising or other means; compensation, whether in the form of rates or pay or other forms of compensation; selected for training, including apprenticeship; promoted; demoted; upgraded; downgraded; transferred; laid off; and terminated. The contractor agrees to and shall post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting officers setting forth the provisions of this nondiscrimination clause.

2. The contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, age, handicap, religion, color, sex, national origin, military status, sexual orientation or gender identity.

(Ord. 153-2012. Passed 9-24-12.)



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3. The contractor shall send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the contractor's commitments under the equal opportunity clause of the City; and he shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The contractor shall submit in writing to the City his affirmative action plan, and each subcontractor and supplier of equipment or supplies shall submit to the general contractor his affirmative action plan. The responsibility for securing these affirmative action plans falls upon the general contractor and shall be on file at the office of the general contractor. The contractor shall furnish all information and reports required by the City or its representative pursuant to this chapter, and shall permit access to his books, records, and accounts by the contracting agency and by the Executive Secretary for purposes of investigation to ascertain compliance with the program.
5. The contractor shall take such action with respect to any subcontractor as the City may direct as a means of enforcing the provisions of this equal opportunity clause, including penalties and sanctions for noncompliance; provided, however, that in the event the contractor becomes involved in or is threatened with litigation as the result of such direction by the City, the City will enter into such litigation as is necessary to protect the interests of the City and to effectuate the City's equal opportunity program and, in the case of contracts receiving Federal assistance, the contractor or the City may request the United States to enter into such litigation to protect the interests of the United States.
6. The contractor shall file and shall cause his subcontractors, if any, to file compliance reports with the City in the form and to the extent prescribed by the City or its representative. Compliance reports filed at such times as directed shall contain information as to the employment practices, policies, programs and statistics of the contractor and his subcontractors.
7. The contractor shall include the provisions of this equal employment opportunity clause in every subcontract or purchase order, so that such provisions will be binding upon each subcontractor or vendor.
8. Refusal by the contractor or subcontractor to comply with any portion of this program as herein stated and described will subject the offending party to any or all of the following penalties:
 - A. Withholding of all future payments under the involved public contract to the contractor in violation, until it is determined that the contractor or subcontractor is in compliance with the provisions of this contract.
 - B. Refusal of all future bids for any public contract with the City or any of its departments or divisions, until such time as the contractor or subcontractor demonstrates that he has established and shall carry out the policies of the program as herein outlined.
 - C. Cancellation of the public contract and declaration of forfeiture of the performance bond.
 - D. In cases in which there is substantial or material violation or the threat of substantial or material violation of the compliance procedure or as may be provided by contract, appropriate proceedings may be brought to enforce these provisions, including the enjoining within applicable laws of groups who prevent, directly or indirectly, or seek to prevent, directly or indirectly, compliance with the policy as herein outlined.

(Ord. 179-74. Passed 6-17-74.)



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STATEMENT OF CLAIM FORM
Claim No. ____ for Contractor

1. Name of Contractor: _____
2. Date written claim given: _____.
3. Contractor's representative to contact regarding the claim:
Name: _____ Title: _____
Telephone No. _____ (office) FAX No. _____
E-mail: _____
4. General description of claim:

5. Contract Documents. If the claim is based upon any part or provision in the Contract Documents, including but not limited to pages in the Drawings and/or paragraphs in the Specifications, Owner-Contractor Agreement, General Conditions or Supplementary General Conditions, state upon which parts or provisions the claim is based:

6. Delay claims:
 - 6.1 Date delay commenced: _____
 - 6.2 Duration of the delay: _____
 - 6.3 Apparent cause of the delay and part of critical path affected:

 - 6.4 Impact of the delay and recommendations for minimizing such impact:

7. Additional compensation. Set forth in detail all additional compensation to which the Contractor believes it is entitled with respect to this claim:

8. Instructions for Completing the Statement of Claim Form ("Instructions"). The Instructions are incorporated in this Form.



9. Truth of Claim. By submitting this claim, the Contractor and its representative certify that after conscientious and thorough review and to the best of his or her knowledge and belief a) the Contractor has complied fully with the Instructions, b) the information in this State of Claim is accurate, c) the Contractor is entitled to recover the compensation in paragraph 7, and d) the Contractor has not knowingly presented a false or fraudulent claim. The Contractor by its authorized representative must acknowledge this Statement of Claim before a notary public.

CONTRACTOR: _____

By: _____

Name and Title: _____

Date: _____

CONTRACTOR'S ACKNOWLEDGMENT

State of _____,

County of _____, ss:

_____ first being sworn, states that after conscientious and thorough review, the statements made in attached Statement of Claim Form are complete and true to the best of his or her knowledge and belief.

Sworn to before me a notary public by _____ on _____, 20__.

Notary Public

WHEN COMPLETED, FORWARD A COPY OF THIS NOTICE AND STATEMENT OF CLAIM FORM TO THE OWNER AND ENGINEER.



INSTRUCTIONS FOR COMPLETING THE STATEMENT OF CLAIM FORM

1. Completing the Statement of Claim Form ("Claim Form") is a material term of the Contract. The Claim Form tells the Owner and Design Professional that the Contractor is making a Claim and that they need to act promptly to mitigate the effects of the occurrence giving rise to the Claim. The Claim Form also provides them with information so that they can mitigate such effects. The Contractor acknowledges that constructive knowledge of the conditions giving rise to the Claim through job meetings, correspondence, site observations, etc. is inadequate notice, because knowledge of these conditions does not tell the Owner and Engineer that the Contractor will be making a Claim and most often is incomplete.
2. If the space provided in the Claim Form is insufficient, the Contractor, as necessary to provide complete and detailed information, must attach pages to the Claim Form with the required information.
3. Paragraph 4. The Contractor must state what it wants, *i.e.*, time and/or compensation, and the reason why it is entitled to time and/or compensation.
4. Paragraph 5. The Contractor must identify the exact provisions of the Contract Documents it is relying on in making its Claim. For example, if the Claim is for a change in the scope of the Contractor's Work, the Contractor must identify the specific provisions of the Specifications, and the Plan sheets and details that provide the basis for the scope change.
5. Paragraph 6. This paragraph applies to delay claims, including delays that the Contractor believes result in constructive acceleration. The Contractor must identify the cause of the delay, party or parties responsible, and what the party did or did not do that caused the delay, *i.e.*, specific work activities. The Contractor acknowledges that general statements are not sufficient, and do not provide the Owner with sufficient information to exercise the remedies available to the Owner or to mitigate the effects of the delay.

For example, if the Contractor claims a slow response time on submittals caused a delay, the Contractor must identify the specific submittals, all relevant dates, and then show on the applicable schedule, by circling or highlighting, the activities immediately affected by the delays. Also for example, if the Contractor claims it was delayed by another Contractor, the Contractor must identify the delaying Contractor, specifically what the delaying Contractor did or did not do that caused the delay, and then show the applicable schedule, by circling or highlighting, the activities immediately affected by the delays. Further by example, if the Contractor seeks an extension of time for unusually severe weather, the Contractor must submit comparative weather data along with a record of the actual weather at the job site and job site conditions.

6. Paragraph 6.4. Time is of the essence under the Contract Documents. If there is a delay, it is important to know what can be done to minimize the impact of the delay. It therefore is important that the Contractor provide specific recommendations on how to do so.
7. Paragraph 7. The Contractor must provide a specific and detailed breakdown of the additional compensation it seeks to recover. For future compensation, the Contractor shall provide its best estimate of such compensation.
8. Paragraph 8 and Acknowledgment. By submitting this Claim, the Contractor and its representative certify that after conscientious and thorough review and to the best of his or her knowledge and belief a) the Contractor has complied fully with the Instructions, b) the information in this Claim Form is accurate, c) the Contractor is entitled to recover the compensation in paragraph 7, and d) the



The City of Canton

Contractor has not knowingly presented a false or fraudulent claim. The Contractor by its authorized representative must acknowledge this Statement of Claim before a notary public.

End of Instructions



The City of Canton

CONTRACTOR'S PERSONAL PROPERTY TAX AFFIDAVIT
(O.R.C. § 5719.042)

State of Ohio
County of _____, ss:

_____, being first duly sworn, deposes and says that he is the
(Name)

_____ of _____ with offices located at
(Title) (Contractor)

_____, and as its duly
(Address of Contractor)

authorized representative, states that effective this ____ day of _____, 20__,

(Name of Contractor)

() is charged with delinquent personal property taxes on the general list of personal property as set forth below:

<u>County</u>	<u>Amount</u> (includes total amount due, plus penalties and interest thereon)
Stark	\$ _____

() is not charged with delinquent personal property taxes on the general list of personal property in Stark County.

(Affiant)

Sworn to and subscribed before me by the above-named affiant this ____ day of _____, 20__.

(Notary Public)

My commission expires
_____, 20__



The City of Canton

**CONTRACTOR’S FINAL WAIVER & RELEASE AFFIDAVIT
("AFFIDAVIT")**

Project: **2022 Service Center Upgrade and Reconfiguration Project - GP 1331**

In consideration for payment received from the City of Canton (the "City") in the amount requested in Contractor’s Final Application for Payment to the City, the receipt of which is hereby acknowledged, the undersigned Contractor hereby waives and releases any rights it has or may have to any and all types of claims relating to the Project, including without limitation claims of payment, Mechanic’s Lien, stop notice, equitable lien, labor and material bond, breach of contract or unjust enrichment, or any other claim against the City, for any labor, materials, or equipment the undersigned may have delivered or provided to the Project, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form. The undersigned further certifies that this Affidavit covers claims by all contractors, subcontractors, and suppliers who may have provided any labor, material, or equipment to the Project through the undersigned or at the undersigned’s request. The undersigned acknowledges that all such contractors, subcontractors, sub-subcontractors and suppliers have signed an affidavit in the form of this Affidavit releasing any and all claims against the City, except for any Claims the undersigned has made by properly and timely submitting a written statement of its Claim. The undersigned hereby represents and warrants that it has paid any and all welfare, pension, vacation or other contributions required to be paid on account of the employment by the undersigned of any laborers on the Project.

This Affidavit is for the benefit of, and may be relied upon by the City. The undersigned hereby agrees to indemnify, defend and hold harmless each of the foregoing, the Project, work of improvement, and real property from any and all claims, or liens that are or should have been released in accordance with this Affidavit.

Company Name

State of: _____ County of _____

Authorized Signature (Company Officer)

Subscribed and sworn to before me this _____

day of _____

Title

Notary Public: _____

Date

My Commission Expires: _____



CITY OF CANTON

2022 Service Center Upgrade and Reconfiguration Project - GP 1331 Project

PRE-BID SUBSTITUTION FORM

- 1. Note. Certain brands of material or apparatus are specified. Each bid will be based on these brands, which may be referred to in the Contract Documents as Standards. The use of another brand (referred to as a substitution or proposed equal in the Contract Documents, when a bidder or the contractor seeks to have a different brand of material or apparatus than that specified approved by the Owner for use in the Project) may be requested as provided in the Instructions to Bidders. Substitutions, however, unless approved and issued in an Addendum, will not be considered in determining which bidder to award the contract to.

- 2. The detailed procedures for submitting substitutions are set forth in Paragraph K of the Instructions to Bidders.

Specification Section	Brand or Name Specified	Proposed Substitution

Appendix A

**PROJECT LABOR AGREEMENT
FOR**

**CITY SERVICE CENTER SITE IMPROVEMENTS – GP 1331
ENTERED INTO BETWEEN**

**CITY OF CANTON
AND**

**EAST CENTRAL OHIO BUILDING AND CONSTRUCTION
TRADES COUNCIL AFL-CIO
AND**

SIGNATORY LOCAL UNIONS

Effective _____

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ARTICLE I

INTENT AND DURATION

Section 1. Intent And Duration. This Project Labor Agreement (the "Agreement" or "PLA") is entered into between the City of Canton (the "Owner"); the East Central Ohio Building and Construction Trades Council, AFL-CIO ("ECOB & CTC" or "Council"); and the Signatory Unions (the "Unions"), and applies exclusively to the construction work within the scope of this Agreement to be performed on the City Service Center Site Improvements – GP 1331 (hereinafter "the Project"). The purpose of this Agreement is to promote efficiency and cost-savings in the construction and refurbishment that is a part of the Project and to provide for the peaceful settlement of any and all labor disputes and grievances without strikes or lockouts, thereby promoting the public interest in assuring the timely and economical completion of the Project. This Agreement shall expire and be of no further force or effect upon the completion of the Project.

Upon execution of this Agreement by all parties, all construction, reconstruction, repair, and renovation work covered by this Agreement on the Project shall be contracted exclusively to Contractors, of whatever tier, who agree to execute and be bound by the terms of this Agreement. Prior to performing any work on the Project, all Contractors of whatever tier shall execute the Letter of Assent (attached as Appendix 1) *and* participate in a Pre-Job Conference as required by Article VIII, Section 4 of this Agreement. The Owner (or its permitted designee) shall monitor compliance with this Agreement by all contractors and subcontractors. For purposes of the Agreement, the term "Contractor" shall be deemed to include all construction contractors and subcontractors of whatever tier engaged in any on-site construction, reconstruction, repair, and renovation work required to complete the Project, unless such work is specifically excluded by Article IV, Section 2 of this Agreement. The Owner, the Unions and all signatory Contractors agree to abide by the terms and conditions contained in the Agreement. This Agreement represents the complete understanding of all parties, and no Contractor is or will be required to sign any other agreement with a signatory union as a condition of performing work coming within the scope of this Agreement. No practice, understanding or agreement between a Contractor and a Union, which

conflicts with any provisions in this Agreement, will be binding on any other party unless endorsed in writing by the Owner.

Section 2. Limitation Of Agreement To Project. The Unions agree that this Agreement will be made available to, and will fully apply to, any successful bidder for work on the Project, without regard to whether that successful bidder performs work at other sites on either a union or a non-union basis, and without regard to whether employees of such bidder are or are not members of any union. The Unions further agree that this Agreement applies only to this Project. Nothing in this agreement is intended to, or shall, interfere with, or negate, any existing contractual relationship or collective bargaining agreement between the Union and any contractor or subcontractor that may execute this Agreement.

ARTICLE II

PURPOSE

Section 1. Purpose. This Project involves upgrades and reconfiguration (i.e. "improvements") of infrastructure at the location of the Canton City Service Center at 2436 30th Street NE. These improvements are necessary to support future construction and enhanced utilization of the Service Center as part of the City's Comprehensive Plan. Specifically, this Project calls for demolition of existing salt domes, asphalt paving for driveways and parking lots, construction of storm sewer and appurtenances, and the removal, installation, and relocation of fencing.

The Project has an estimated cost of \$2 million and is planned to be let out for bid on or around September 1, 2022.

Section 2. Time Is Of The Essence. The parties to this Agreement understand and agree that time is of the essence for this Project. The parties understand and agree that timely completion of the Project will require the use of substantial numbers of employees from construction and supporting crafts possessing skills and qualifications that are essential to the Project. The Unions pledge that they have members who are competent, skilled, and qualified to perform the required construction work. The parties also understand that on-budget completion of the Project is most critical; it is therefore essential that construction work on the Project

be done in an efficient, economical manner with optimum productivity and with no delays. In recognition of those special needs of the Project, the Unions signatory hereto and their members agree not to initiate, authorize, sanction, participate in or condone, or permit their members to engage in any strike, sympathy strike, jurisdictional strike, recognitional strike, slowdown, sabotage, work to rule, sickout, sit down, picketing of any type (including informational picketing), handbilling, boycott, interruption of work or any disruptive activity that interferes with or interrupts in any way work on the Project or other operations of the City of Canton. Contractors agree not to engage in any lockouts.

ARTICLE III

BENEFITS OF THE AGREEMENT

Section 1. Benefits Of The Agreement. This Agreement is intended to foster the achievement of a timely and on-budget completion of the Project by, among other things:

- (a) reducing and/or eliminating the tension and potential disagreements that might otherwise exist between Union and non-union workers on the Project;
- (b) avoiding the costly delays of strikes, sympathy strikes, jurisdictional strikes, slowdowns, walkouts, picketing, handbilling and any other disruptions or interference with work, and promoting labor harmony and peace for the duration of the Project;
- (c) standardizing terms and conditions governing the employment of labor on the Project;
- (d) permitting flexibility in work scheduling and shift hours and times;
- (e) achieving negotiated adjustments as to work rules and staffing requirements from those which otherwise might obtain;
- (f) providing comprehensive and standardized mechanisms for the settlement of work disputes;
- (g) ensuring a reliable source of skilled and experienced labor; and
- (h) furthering public policy objectives, to the extent lawful, as to improved employment opportunities for minorities, women and the economically

disadvantaged in the construction industry. Mindful of the economic condition and unemployment rate in Stark County, the Owner anticipates and expects that all construction workers and employees on this Project will be residents of Stark County. In view of the very technical and specialized work that is inherent in the construction industry, all parties acknowledge that this expectation by the Owner is a goal, not a mandate. To this end, all Contractors working under this Agreement pledge that they will make a good-faith effort to reach this goal expressed by the Owner.

ARTICLE IV

SCOPE OF AGREEMENT

Section 1. The Work. This Agreement is specifically defined and limited to onsite construction, reconstruction, repair, and renovation work required to complete the Project.

Section 2. Exclusions From Scope. Items specifically excluded from the scope of this Agreement, even if performed in connection with the Project, include the following:

- (a) Work of non-manual employees, including but not limited to, superintendents, supervisors, staff engineers, inspectors, quality control and quality assurance personnel, timekeepers, mail carriers, clerks, office workers, including messengers, guards, safety personnel, emergency medical and first aid technicians, and other professional, engineering, administrative, supervisory and management employees.
- (b) Equipment and machinery owned or controlled and operated by the Owner.
- (c) All off-site manufacture, fabrication or handling of materials, equipment or machinery (except at dedicated lay-down or storage areas and except as provided in Article IV, Section 9), and all deliveries of any type to and from the Project site (except on-site pouring of concrete).
- (d) All employees of the Owner, the Construction Supervisor, design team or any environmental, engineering or other consultant when such

employees do not perform labor coming within the scope of this Agreement.

- (e) Any work performed on or near or leading to or onto the site of work on the Project and undertaken by state, county, city or other governmental bodies, or their contractors; or by public utilities or their contractors.
- (f) Off-site maintenance of leased equipment and on-site supervision of all such maintenance work.
- (g) Work by employees of a manufacturer or vendor necessary to maintain such manufacturer's or vendor's warranty or guarantee, or work performed by supervisors or technicians employed by the manufacturer or vendor to oversee the testing of equipment once installed to insure that the equipment is fully operational.
- (h) Laboratory work for specialty testing or inspections not ordinarily done by the signatory local unions.
- (i) All work done by employees of any State agency, authority or entity or employees of any municipality or other public employer.
- (j) This Agreement does not apply to work covered under a collective bargaining agreement between a contractor and a local union in the outside line branch of the International Brotherhood of Electrical Workers, including, but not limited to, construction of electrical transmission and distribution lines (including above-ground and below-ground lines), catenary and trolley facilities, switch yards, and substations.

The Unions agree that there shall be no interference with or disruption of work, of those contractors, employers, and employees exempted from coverage of this Agreement by subparagraph (a) through (j) above.

Section 3. Contract Award and Consent to Agreement.

- (a) The Owner, and/or Contractors, as appropriate, have the absolute right to award contracts or subcontracts on the Project notwithstanding the existence or nonexistence of any agreements between such Contractor and any Union party, *provided that* any and all Contractors are willing,

ready and able to execute and comply with this Agreement should such Contractor be awarded work covered by this Agreement.

- (b) All Contractors, as a condition to awarding any contract or subcontract for any work covered by this Agreement, shall obtain and deliver to the Council a Letter of Assent (in the form provided by Appendix 1) executed by the awarded Contractor.
- (c) Where any Contractor violates the above Section 3(b), such Contractor and subcontractor shall be jointly and severally liable for damages incurred by any affected Union(s) from such failure of the Contractor to properly bind a subcontractor to the Agreement by Letter of Assent, determined pursuant to the Grievance Procedure set forth in Article VII of this Agreement.
- (d) Notwithstanding the foregoing Section 3(c), compliance with this Agreement is an absolute condition, as determined by the Owner, to performing any work on the Project unless such work is specifically excluded by Article IV, Section 2. Any Contractor performing work on the Project shall be deemed to have accepted this Agreement by such performance and agreed to be bound by all of its terms, without exception.

Section 4. Stand-Alone Agreement. This Agreement is a stand-alone Agreement. While this Agreement expressly does not incorporate any local area collective bargaining agreements, such local area collective bargaining agreements may be referenced for the limited purposes as hereinafter set forth in this Agreement. However, to the extent, if any, that any provisions of this Agreement conflict with any provision of a local area collective bargaining agreement, the provisions of this Agreement shall control, except for all work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, all instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, and the National Agreement of the International Union of Elevator Constructors, with the exception of Articles VII, VIII and X of this Agreement, which shall

apply to such work.

Section 5. Craft Jurisdiction. This Agreement shall recognize the traditional craft jurisdictions of the signatory unions. Any and all jurisdictional disputes shall be settled in accordance with Article VIII below. While this Agreement is a stand-alone Agreement, the Agreement will utilize the local area collective bargaining agreements of signatory locals, not state-wide agreements or other special project agreements, as a reference to define the signatory local unions' craft jurisdiction.

Section 6. Subcontracting. The Owner agrees that neither it nor any of its contractors or subcontractors will subcontract any work covered by this Agreement to be done on the Project except to a person, firm or corporation who is or agrees to become party to this Agreement by the procedure set forth in Article IV, Section 3. Contractors who are signatory to local are collective bargaining agreements shall be bound by the terms of their respective local collective bargaining agreements on subcontracting to the extent such terms are consistent with Article IV, Section 2 of this Agreement. Disputes concerning compliance with such local subcontracting provisions for this Project shall be subject to all of the dispute resolution provisions of this Agreement.

Section 7. Liability. It is understood that the liability of the Contractor and the liability of the separate Unions under this Agreement shall be several and not joint. The Unions agree that this Agreement does not have the effect of creating any joint employer status between or among the Owner, Construction Supervisor and/or any Contractor, and neither the Owner nor Construction Supervisor shall assume any liabilities of the Contractors.

Section 8. Abatement of Agreement. As areas of covered work on the Project are accepted by the Owner, this Agreement shall have no further force or effect on such areas except where the Contractor is directed by the Owner to engage in repairs or punch list modifications.

Section 9. Miscellaneous. Notwithstanding any other provision of this Agreement, this Agreement applies and is limited to the recognized and accepted historical definition of demolition and new construction work under the direction of and performed by the contractor(s), of whatever tier, who have contracts awarded for such

work on the project. Such work shall include site preparation work and dedicated off-site work except for the contractors and subcontractors specifically excluded in this Article II. Any off-site prefabrication of any building materials, systems and/or components traditionally performed on site shall be performed by the appropriate craft signatory to this Agreement and approved by the owner.

ARTICLE V
LABOR/MANAGEMENT COOPERATION
JOINT ADMINISTRATIVE COMMITTEE

Section 1. The parties to this Agreement shall establish a Project Joint Administrative Committee ("Committee"). This Committee will be a two-person committee comprised of one member each appointed by the Owner (or its designee) and the Unions, with an alternate appointee Union member available to replace the regular appointee when a problem or grievance concerns the regular appointee's Union. Each member of the Committee shall designate an alternate who shall serve in the absence of the member for any purpose contemplated by this Agreement.

Section 2. The Committee shall meet at least quarterly, or more often if special circumstances warrant, to discuss the administration of the Agreement, the progress of the Project, labor/management problems that may arise, and any other relevant matters. Any need for interpretation which might arise from the application of the terms and conditions of the Agreement shall be referred directly to the Committee for resolution.

ARTICLE VI
UNION RECOGNITION AND EMPLOYMENT

Section 1. Pre-Hire Recognition. Each Contractor and subcontractor recognizes the Unions as the sole and exclusive bargaining representatives of all craft and trade employees within their respective jurisdictions working on the Project under the Agreement.

Section 2. Contractor's Right of Selection. Each Contractor shall have the right to determine the competency of all employees, the number of employees required

and shall have the sole responsibility for selecting employees to be laid off. To the extent any training or vendor education is required to fill any position, said training shall be undertaken at no cost or expense to Owner.

Section 3. Union Referral. For local Unions having a job referral system, each Contractor agrees to comply with such system, and the referral system shall be used exclusively by such Contractor, except as modified by this Article. Such job referral system will be operated in a non-discriminatory manner and in full compliance with Federal, state, and local laws and regulations requiring equal employment opportunities and nondiscrimination, and referrals shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or requirements. The Union shall indemnify and hold each Contractor harmless with respect to any claim arising out of how the Union operates and administers its referral system. All hiring procedures, including related practices affecting apprenticeship and training, will be operated so as to facilitate the ability of the contractors to meet any and all equal employment opportunity/affirmative action obligations. The Contractor may reject any referral and request another, different referral; provided, however, the Contractor shall furnish, upon request from the Union, a written explanation for the rejection.

Section 4. Lack of Job Referral System. In the event that a signatory Local Union does not have a job referral system as set forth in Section 3 above, the Contractor shall give the Union a forty-eight (48) hour opportunity to refer applicants. The Contractor shall notify the Union of employees hired from any source other than referral by the Union.

Section 5. Unavailability of Union Referrals. In the event that local Unions are unable to fill any requisitions for qualified employees within forty-eight hours (48) after such requisition is made by the Contractor (Saturdays, Sundays, and Holidays excepted), the Contractor may employ applicants from any other available source. The Contractor shall inform the Union of the name, address and telephone number of any applicants hired from other sources and refer the applicant for the Local Union for dispatch to the Project.

Section 6. Union Best Efforts. The Local Unions will exert their utmost efforts

to recruit sufficient numbers of skilled craft workers to fulfill the manpower requirements of each Contractor, including calls to local unions in other geographic areas when its referral lists have been exhausted. The parties to this Agreement support the development of increased numbers of skilled construction workers from the residents of the area of the Project. Toward that end, the Unions agree to encourage the referral and utilization, to the extent permitted by law and the hiring hall procedures, of qualified residents as journeymen, apprentices and trainees on the Project.

ARTICLE VII

GRIEVANCE ARBITRATION PROCEDURE

Section 1. This Agreement is intended to provide close cooperation between management and labor. Each of the Unions will assign a representative to this Project for the purpose of completing the construction of the Project economically, efficiently, continuously, and without interruptions, delays, or work stoppages.

Section 2. The Contractors, Unions, and the employees, collectively and individually, realize the importance to all parties to maintain continuous and uninterrupted performance of the work of the Project, and agree to resolve disputes in accordance with the grievance-arbitration provisions set forth in this Article.

Section 3. Any question or dispute arising out of and during the term of this Agreement (other than trade jurisdictional disputes) shall be considered a grievance and subject to resolution under the following procedures:

Step 1. (a) When any employee subject to the provisions of this Agreement feels he or she is aggrieved by a violation of this Agreement, he or she, through his or her local union business representative or job steward, shall, within five (5) working days after the occurrence of the violation, give notice to the work-site representative of the involved Contractor stating the provision(s) alleged to have been violated. The business representative of the local union or the job steward and the work-site representative of the involved Contractor shall meet and endeavor to adjust the matter within three (3)

working days after timely notice has been given. The representative of the Contractor shall keep the meeting minutes and shall respond to the Union representative in writing at the conclusion of the meeting but not later than twenty-four (24) hours thereafter. If they fail to resolve the matter within the prescribed period, the Local Union may, within forty-eight (48) hours thereafter, pursue Step 2 of the Grievance Procedure, provided the grievance is reduced to writing, setting forth the relevant information concerning the alleged grievance, including a short description hereof, the date on which the grievance occurred, and the provisions of the Agreement alleged to have been violated.

(b) Should the Local Union(s) or the Project Contractor or any Contractor have a dispute with the other party and if, after conferring, a settlement is not reached within three (3) working days, the dispute may be reduced to writing and proceed to Step 2 in the same manner as outlined herein for the adjustment of an employee complaint.

Step 2. The International Union Representative and the involved Contractor shall meet within seven (7) working days of the referral of a dispute to this second step to arrive at a satisfactory settlement thereof. Meeting minutes shall be kept by the Contractor. If the parties fail to reach an agreement, the dispute may be appealed by the Union, in writing, in accordance with the provisions of Step 3.

Step 3. (a) If the grievance has been submitted but not adjusted under Step 2, either party may request in writing, within seven (7) calendar days thereafter, that the grievance be submitted to an Arbitrator mutually agreed upon by them. The Contractor and the involved Union shall attempt mutually to select an arbitrator, but if they are unable to do so, they shall request the Federal Mediation and Conciliation Services

(FMCS) to provide them with a list of arbitrators from which the Arbitrator shall be selected. The rules of FMCS shall govern the conduct of the arbitration hearing. The decision of the Arbitrator shall be final and binding on all parties. The fee and expenses of such Arbitration shall be borne equally by the Contractor and the involved Local Union(s).

Section 4. Failure of the grieving party to adhere to the time limits established herein shall render the grievance null and void. Failure of the Contractor to adhere to the time limits established herein shall result in the grievance being sustained. The time limits established herein may be extended only by written consent of the parties involved at the particular step where the extension is agreed upon. The Arbitrator shall have the authority to make decisions only on issues presented to him or her, and he or she shall not have authority to change, amend, add to or detract from any of the provisions of this Agreement.

Section 5. The Owner shall be notified of all actions at Steps 2 and 3 and shall, upon their request, be permitted to participate in all proceedings at these steps.

ARTICLE VIII

JURISDICTIONAL DISPUTES

Section 1. The assignment of work will be the responsibility of the Contractor performing the work involved and such work assignments will be in accordance with decisions issued under the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan"), or any successor Plan, adopted by the National Building and Construction Trades Department.

Section 2. All jurisdictional disputes on this Project, between or among Building and Construction Trades Unions and employers, parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractors and Unions parties to this Agreement.

Section 3. All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

Section 4. Each Contractor will conduct a Pre-Job Conference with the Council prior to commencing work which shall require completion of a Pre-Job Conference Verification Form (attached as Appendix 2). This Pre-Job Conference requirement may be waived only by the Council, in writing, upon request of a Contractor. The Owner will be advised in advance of all such conferences and may participate if they wish.

ARTICLE IX

MANAGEMENT'S RIGHTS

Section 1. Exclusive Owner - Workforce. Except as otherwise provided in this Agreement, the Owner (or its designee) and the Contractors retain the authority to manage their operations and workforces.

Section 2. Materials, Design, Machinery, Equipment. There shall be no limitation or restriction by a signatory Union upon a Contractor's choice of materials or design, nor, regardless of source or location, upon the full use and utilization of equipment, machinery packaging, pre-cast, pre-fabricated, pre-finish, or pre-assembled materials, tools or other labor saving devices. The on-site installation or application of all items shall be performed by the craft having jurisdiction of such work; provided, however, that installation of specialty items may be performed by employees employed under this Agreement who may be directed by other personnel in a supervisory role, in circumstances requiring special knowledge of the particular items.

Section 3. New Technology, Equipment. The use of new technology, equipment, machinery, tools and/or labor saving devices and methods of performing work may be initiated by any Contractor from time to time during the Project. The Union agrees that it will not in any way restrict the implementation of such new devices or work methods.

Section 4. Disputes. If there is any disagreement between any Contractor and the Union concerning the manner or implementation of such device or method of work,

the implementation shall proceed as directed by the Contractor, and the Union shall have the right to grieve and/or arbitrate the dispute as set forth in Article VII of this Agreement.

ARTICLE X

WORK STOPPAGES

Section 1. No Strikes or Work Disruptions. There shall be no strike, sympathy strike, jurisdictional strike, recognitional strike, slowdown, sabotage, work to rule, sickout, sit down, picketing of any type (including informational picketing), handbilling, boycott, interruption of work or any disruptive activity that interferes with or interrupts in any way work on the Project. The applicable local union shall not sanction, aid or abet, encourage or continue any work stoppage, strike, picketing or other disruptive activity which violates this Article and shall undertake all reasonable means to prevent or to terminate any such activity. No employee shall engage in activity which violates this Article. Any employee who participates in or encourages any activity which violates this Article shall be subject to disciplinary action, including discharge, and if justifiably discharged for the above reasons, shall not be eligible for rehire on the same project for a period of not less than ninety (90) days. Further, if the Local Union is unable to provide qualified replacements for those employees who are in violation of this Article by the beginning of the next shift, the Employer is free to hire from any source.

Section 2. Union Responsibilities. The Local Union shall not be liable for acts of employees for which it has no responsibility. The principal officers of the Local Union will immediately instruct, order and use their best efforts to cause the members of the Local Union they represent to cease any violations of this Article. If it complies with this obligation, the Local Union shall not be responsible for unauthorized acts of employees it represents.

ARTICLE XI

WAGES AND BENEFITS

Section 1. Wages. All employees covered by this Agreement shall be classified

in accordance with work performed and paid 100% of the wages and 100% of the fringe benefits as established in the respective Union's Local Area Collective Bargaining Agreement and any subsequent modifications thereto. The Contractor, upon request, shall provide the Unions and Owner with substantiation that wages and benefits are being paid on the Project. The Unions shall provide the Owner, and any Contractor or subcontractor that is party to this Agreement, with wage, fringe benefit and dues reporting forms.

Section 2. Payment of Benefits/Contributions. Each Contractor will also pay all required contributions in the amounts required by Section 1 of this Article to the established employee benefit funds that accrue to the direct benefit of the employees (such as pension and annuity, health and welfare, vacation, apprenticeship, training funds). With respect to contributions required in this Section to Employer-Union jointly trusted funds, the Contractor adopts and agrees to be bound by the written terms of the legally established trust agreement specifying the detailed basis on which payments are to be made into, and benefits paid out of, such Trust Funds. The Contractor authorizes the parties to such Trust Funds to appoint Trustees and successor Trustees to administer the Trust Funds and hereby ratifies and accepts the Trustees so appointed as if made by Contractor.

Section 3. Non-Affiliated Labor Organizations. The Contractor shall deduct from each employee's wages all uniform dues and working assessments the employee has voluntarily authorized in writing as set forth in the Employee's Local Collective Bargaining Agreement. If a labor organization is not affiliated with the Council, and supplies its members or referrals for work on the Project, such labor organization shall pay to the Council the dues and assessments it would owe the Council if affiliated, for all periods during which the labor organization has members or referrals working on the Project. Any disputes under this paragraph shall be resolved exclusively between the labor organization and the Council by using the grievance procedure appearing in Article VII, as provided herein. All grievances shall be reduced to writing within thirty (30) days of the date on which the aggrieved party discovered the dispute. The grievance shall be initiated at Article VII, Section 3, Step 3.

ARTICLE XII

LOCAL UNION NEGOTIATIONS DURING THE PENDENCY OF THE AGREEMENT

Section 1. All parties to this Agreement understand and acknowledge that some crafts who will be working on the Project are covered by local collective bargaining agreements that will expire prior to the projected completion of the Project. All parties understand and agree that irrespective of whether such local collective bargaining agreement negotiations are successful or unsuccessful, there shall be no strike, sympathy strike, jurisdictional strike, recognition strike, slowdown, sabotage, work to rule, sickout, sit down, picketing of any type (including informational picketing), handbilling, boycott, interruption of work or any disruptive activity that interferes with or interrupts in any way work on the Project by any Union involved in such local negotiations, or by any of its members, nor shall there be any lockout by a Contractor on the Project affecting such union or its members during the course of such negotiations. Irrespective of the status of any such local collective bargaining agreement negotiations, the affected Union and all of its members will observe and fully comply with the provisions of this Agreement. Should any Local Union fail or refuse to provide and/or refer qualified employees for work on the Project during an economic strike, any affected Contractor shall be permitted to utilize the procedures appearing in Article VI, Section 5 of this Agreement.

Section 2. Wage/Benefit Increases. Should a craft covered by this Agreement negotiate an increase in wages or an increase in benefits with any Contractor to become effective during the term of the Project, those wage and/or benefit increases shall be paid by the affected Contractor, as of the effective date of those increases, to those employees in that craft performing work covered by this Agreement.

ARTICLE XIII

HOURS OF WORK, OVERTIME, SHIFTS AND HOLIDAY

Section 1. Work Day and Work Week. Except as provided in Section 4, the first shift shall consist of eight (8) or ten (10) hours per day between the hours of 6:00 a.m. and 5:30 p.m., plus one-half (1/2) hour unpaid for lunch, approximately mid-way

through the shift. Forty (40) hours per week shall constitute a regular week's work, whether consisting of five (5) eight (8) hour days, or four (4) ten (10) hour days. The work week will start on Monday and conclude on Sunday. A uniform starting time will be established for all crafts on each project or segment of the work. Nothing herein shall be construed as guaranteeing any employee eight (8) or ten (10) hours per day or forty (40) hours per week. The Union(s) shall be informed of the work starting time set by the contractor at the pre job conference which may be changed thereafter upon three (3) days' notice to the Union(s) and the employees. A second shift, if used, shall consist of eight hours between 3:00 p.m. and 1:00 a.m.; a third shift, if used, shall begin between 10:00 p.m. and 1:00 a.m. For purposes of Section 3, the third shift shall be considered as part of the prior day's work.

Section 2. Starting Times. Employees shall be at their place of work at the starting time and shall remain at their place of work (as designated by the Contractor) performing their assigned functions until quitting time, which is defined as the scheduled end of the shift. The parties reaffirm their policy of a fair day's work for a fair day's wage. There shall be no pay for time not worked unless the employee is otherwise engaged at the direction of the Contractor.

Section 3. Overtime. Overtime shall be defined as all hours worked in excess of forty (40) hours in a work week or, for 8 hour shifts, in excess of eight (8) hours per day; or for 10 (ten) hour shifts for work in excess of 10 hours per day; such work and work performed on Saturdays shall be paid at one and one-half times the straight time rate of pay. However, in scheduled four (4) day/ten hour shift work weeks, Friday may be scheduled as a "makeup" day at straight time to make up for a day lost (Monday through Thursday) due to inclement weather. In addition, if a "make-up" day is scheduled, all employees directed to work on such day will be guaranteed a minimum of four (4) hours work or pay. In any week in which employees on the Project are scheduled on four/ten hour shifts, an employee whose first day of work on the Project begins on Wednesday or later day of the schedule shall be paid, during the first week of his employment only, time-and-one-half for all hours worked in excess of eight in a day or each day he works during said week. Work on Sundays and holidays shall be at double time. There shall be no restriction on any contractor's scheduling of overtime

or the non-discriminatory designation of employees who will work. The contractor shall have the right to schedule work so as to minimize overtime. There shall be no pyramiding of overtime pay under any circumstances.

Section 4. Shifts.

- (a) Shift work may be performed at the option of the Contractor(s) upon three (3) days' prior notice to the Union and shall continue for a period of not less than five (5) working days. Saturdays and Sundays, if worked, may be used for establishing the five (5) day minimum work shift. If two shifts are worked, each shall consist of eight (8) hours of continuous work exclusive of a one-half (½) hour non-paid lunch period. Any third shift shall consist of seven (7) hours of continuous work exclusive of one-half (½) hour non-paid lunch period for eight (8) hours pay. A premium of \$.25 per hour shall be paid for work on the second shift and \$.50 per hour for work on the third shift.
- (b) The Contractor may establish a work week of four (4) consecutive ten (10) hour work days (exclusive of one-half (½) hour unpaid lunch, approximately midway through the shift) between Monday through Thursday.

Section 5. Minimum Pay. An employee who reports for work at the regular starting time and for whom no work is provided shall receive pay equivalent to two (2) hours at the applicable hourly rate, provided the employee at the employer's discretion remains available for work. Any employee who reports for work and for whom work is provided shall be paid for actual time worked but not less than two (2) hours. It will not be a violation of this agreement when the employer considers it necessary to shut down to avoid the possible loss of human life, because of an emergency situation that could endanger the life and safety of an employee. In such cases, employees will be compensated only for the actual time worked. In the case of a situation described above where the employer requests employees to remain available for work, the employees will be compensation for such time. If a project is shut down because of weather, employees, who report for work, shall be paid actual time worked but not less than two (2) hours. Procedures for prior notification of work cancellation shall be determined at the pre-job conference. The provisions of this section are not applicable where the employee voluntarily quits or lays off.

Section 6. Holidays. Holidays shall be New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Day after Thanksgiving Day, and Christmas Day. A holiday falling on Saturday shall be observed on the preceding Friday. A holiday falling on Sunday shall be observed on the following Monday.

Section 7. Meal Period. The Contractor will schedule a meal period of not more than one-half hour duration at the work location at approximately the mid-point of the scheduled work shift (4 hours in a five day work week, 5 hours in a four-day work week), consistent with Section 1; provided, however, that the Contractor may, for efficiency of the operation, establish a schedule which coordinates the meal periods of two or more crafts. If an employee is required to work through his meal period, he shall be compensated for the time worked at the applicable overtime rate and the employee shall, when work permits, eat his lunch "on the fly".

Section 8. No Organized Work Breaks. There will be one (1) break during the first four (4) hours of a shift which shall be taken at the employee's work station. Individual nonalcoholic beverage containers will be permitted at the employee's work station.

Section 9. Helmets to Hardhats.

- (a) The Employers and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Employers and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.
- (b) The Unions and Employers agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on this Project and of apprenticeship and employment opportunities for this

Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

ARTICLE XIV
APPRENTICES

Section 1. Need For. The parties recognize the need to maintain continuing support of programs designed to develop adequate numbers of competent workers in the construction industry. The Contractor(s) will, accordingly, employ apprentices in their respective crafts to perform work on the Project in accordance with Section 2 below.

Section 2. Ratios. The Union agrees to cooperate with the Contractor in furnishing qualified apprentices as requested and if available. Apprentices shall perform the work of their craft in accordance with the ratios and terms in their local area collective bargaining agreements. To the extent requested by Owner, the Contractor(s) may use the maximum number of apprentices permitted by local collective bargaining agreements.

ARTICLE XV
DRUG AND ALCOHOL POLICY

Section 1. Drug and Alcohol Policy. All parties understand and agree that a drug and alcohol policy, approved by the Council, will be in force for all work performed under the Agreement. The drug and alcohol policy will prohibit the use, sale, transfer, purchase and/or possession of a controlled substance, alcohol and/or firearms while on the Project's premises and will require testing of employees. The drug and alcohol policy, attached hereto as Appendix 3, is incorporated into and made part of this Agreement and is implemented for all Contractors and employees working on the Project.

ARTICLE XVI
NON-DISCRIMINATION

Section 1. Policy. It is the continuing policy of the Owner, the Contractors and the Unions that the provisions of this Agreement shall be applied without discrimination

because of age, race, sex, color, religion, creed, national origin, sexual orientation or any other basis prohibited by applicable law.

ARTICLE XVII

SOLE AND COMPLETE AGREEMENT

Section 1. The parties agree that this Agreement constitutes the sole and complete agreement between them governing the rates of pay and working conditions of the construction employees working on the Project. This Agreement settles all demands and issues on the matters subject to collective bargaining and shall not be modified or supplemented in any way except by written agreement executed by the Owner and all parties.

ARTICLE XVIII

SEPARABILITY AND SAVINGS CLAUSE

Section 1. Intent of Parties. If any article or section of this Agreement shall be held invalid by law or by a tribunal of competent jurisdiction, or if compliance with or enforcement of any article should be restrained pending a final determination as to its validity, the remainder of this Agreement shall not be affected and shall remain in full force and effect. In the event that any article or section is held invalid, the parties hereto shall, upon the request of the Unions, enter into collective bargaining negotiations for the purpose of arriving at a mutually satisfactory replacement for such article during the period of invalidity or restraint. If the Owner and the Council cannot agree on a mutually satisfactory replacement, either party shall be permitted to submit its demand to formal interest arbitration under the Rules of Federal Mediation and Conciliation Service.

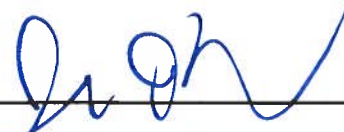
Section 2. Force of Agreement. The parties recognize the right of the Owner to withdraw, at its absolute discretion, the utilization of this Agreement as part of any bid specification should a court of competent jurisdiction issue any order which could result, temporarily or permanently, in a delay of the bidding, awarding, and/or construction work on the Project. Notwithstanding such an action by the Owner, or such court order, the parties agree that the Agreement shall remain in full force and effect on the Project, to the maximum extent legally possible. It is hereby agreed that

this Agreement covers all of the signatory local unions listed below.

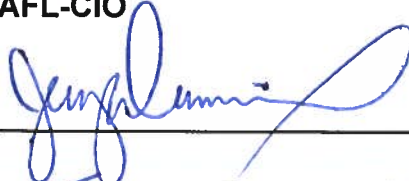
Section 3. Delegation. The Owner, in its sole and absolute discretion has the right to delegate its duties hereunder to a representative and/or designee who may be either an employee of Owner or a third party with whom Owner has contracted for contractor services.

OWNER
CITY OF CANTON

EAST CENTRAL OHIO BUILDING &
CONSTRUCTION TRADES COUNCIL,
AFL-CIO



Director of Public Safety




Jerry Duray

APPROVED AS TO FORM

BOILERMAKERS LOCAL NO. 744




CITY OF CANTON
DIRECTOR OF LAW

By: 

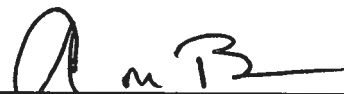
Name: MARTIN D. MAHON
Title: BUSINESS MANAGER
Date: 5.4.2022

BRICKLAYERS LOCAL 6

By: 


Name: Justin M. Gartrell
Title: Field Rep.
Date: 5-3-22

ELECTRICIANS LOCAL NO. 540


By: 

Name: AARON M. BROWN
Title: BUSINESS MANAGER
Date: 6/1/2022


**ELEVATOR CONSTRUCTORS
LOCAL NO. 45**

By: 
Name: Ron Johnston
Title: B.M
Date: 5/18/2022

**GENERAL TRUCK DRIVERS &
HELPERS UNION LOCAL NO. 92**

By: 
Name: Warren Brustoski
Title: B. A.
Date: 5-4-22

GLAZIERS LOCAL NO. 1162

By: 
Name: Scott Harten
Title: B.A.
Date: 5-18-22

**HEAT & FROST INSULATORS AND
ALLIED WORKERS LOCAL
NO. 84**

By: 

Name: DAMON WROBEL

Title: BUSINESS MANAGER

Date: 05/04/22

**INDIANA/KENTUCKY/OHIO
REGIONAL COUNCIL OF
CARPENTERS**

By: 

Name: Kevin M. Ennis II

Title: Senior Rep

Date: 5/9/22

IRONWORKERS LOCAL NO. 550

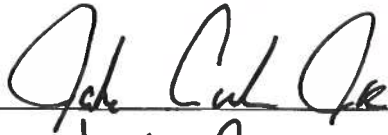
By: 

Name: William V. Therer II

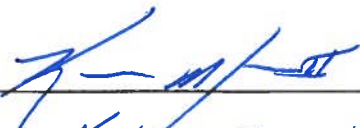
Title: Business Manager

Date: 5-4-22

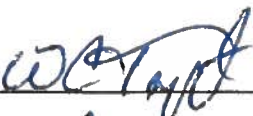
LABORERS LOCAL NO. 1015

By: 
Name: JAKE Croston Jr
Title: Business Manager
Date: 5/18/22


MILLWRIGHT PILEDRIVER LOCAL NO. 1090

By: 
Name: Kevin M. Emms II
Title: Senior Rep
Date: 5/9/22

OPERATIVE PLASTERERS AND CEMENT MASONS LOCAL NO. 109

By: 
Name: William C Taggart
Title: BA / Fin. SEC
Date: 04/28/2022

PAINTERS LOCAL NO. 841

By: 
Name: ~~Scott~~ Scott Harter
Title: B.A.
5-18-22

Date: _____

**PLUMBERS, PIPEFITTERS AND
REFRIGERATION LOCAL NO. 94**

By: Bry

Name: Brett McElfresh

Title: Business Manager

Date: 4-25-22

ROOFERS LOCAL UNION NO. 88

By: Barbara A. Dixon

Name: Barbara A. Dixon

Title: BUSINESS MANAGER

Date: 4-27-22

**SHEET METAL WORKERS LOCAL
NO. 33**

By: Henry Durcup

Name: Henry Durcup

Title: BUSINESS AGENT

Date: 4/26/2022

**SPRINKLER FITTERS LOCAL
NO. 669**

By: _____

Name: _____

Title: _____

Date: _____

APPENDIX 1

**LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT
FOR THE
CITY SERVICE CENTER SITE IMPROVEMENTS – GP 1331**

Pursuant to Article I, Section 1 and Article IV, Section 3 of the Project Labor Agreement (the "Agreement") for the above-referenced Project, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the Agreement and agrees to all approved amendments or revisions thereto.

By executing this Letter of Assent, the undersigned also reaffirms, acknowledges, and agrees that it must participate in a Pre-Job Conference with the East Central Ohio Building & Construction Trades Council prior to performing any work on the Project. A Pre-Job Conference shall be valid only where the undersigned Contractor completes the Pre-Job Conference Verification Form provided in Appendix 2.

This Letter of Assent shall ONLY apply to the above-referenced Project and shall remain in effect for the duration of the above-referenced Project, after which this Letter of Assent will automatically terminate without further notice.

For the Contractor (or Subcontractor of whatever tier)

Name of Contractor/Subcontractor: _____

By its Authorized Representative:

Print Name: _____

Title: _____

Signature: _____

Date: _____

Phone: _____

Email: _____

APPENDIX 2

Pre-Job Conference Verification Form

Date of Conference _____

Location of Conference _____

Project Name _____

Contractor Name _____

Address of Contractor _____

Point of Contact _____

Phone _____

Email _____

Scope of Work _____

Contractor has provided Council with a list of all proposed trade assignments by craft including scope of work for each assignment.

Y___ N___

Contractor has provided Council with a list of all subcontractors that will perform work on the Project.

Y___ N___

Contractor affirms that it is responsible for subcontracting any work on the Project in strict compliance with Article IV, Section 3 of the Project Labor Agreement.

Y___ N___

The Council has in its possession a Letter of Assent signed by Contractor.

Y___ N___

ACKNOWLEDGED:

BY COUNCIL: (signature) _____ (title) _____

BY CONTRACTOR: (signature) _____ (title) _____

APPENDIX 3
EMPLOYEE DRUG AND ALCOHOL TESTING POLICY
SPECIFICATIONS

The Owner is committed to providing a safe workplace for the workers assigned the Project, promoting high standards of employment health, and fostering productivity that satisfies its quality expectations. Consistent with the intent and spirit of this commitment, the Owner and ECOB & CTC have established a substance abuse testing specification for the Project with the goal of maintaining a work environment that is free from the effects of the use of illegal drugs and alcohol. The Owner will implement the terms of this policy.

This specification is not intended as a substitute for the Contractors' complete written substance abuse policy. Normally, such policies include other important features, including, but not limited to, an employee education and awareness Program, a supervisor training program and an employee assistance program.

The policy for this Project requires that any construction employee entering the project site will comply with the substance abuse testing requirements as outlined in this section. The Owner reserves the right to amend this specification upon written notice to the Contractor and the Unions on the Project. The parties to this agreement shall recognize the Drug Free Work Site Program as implemented through participating Unions and/or Contractors as administered by the contractor, or for contractors who are not signatory to agreements with signatory unions belonging to ECOB & CTC, and their core employees, an equivalent program that meets the specifications, contractual requirements, and testing requirements as set forth in Appendix 3.

CONTRACTUAL REQUIREMENTS

All Contractors must have and enforce a written Substance Abuse Program incorporating the testing requirements, term, and conditions set forth in this specification. This specification is applicable to all employees, current and prospective, in order to be eligible to perform work at the Project. The Contractors must comply with the specification. Suppliers, vendors, and visitors are subject to confirmation of their abstinence from the possession or use of substances indicated in this specification. A copy of each contractor's substance abuse program must be

submitted to the Owner for approval prior to commencement of any work on the Project site.

The substance abuse program must apply to all employees working on the Project and subcontractors' of any of tier working on the Project site. This includes workers, new hires, replacement workers, and supervisory personnel. No employee or prospective employee of a Contractor shall be permitted to work on the Project site unless such employee has submitted to testing by this specification and unless the results of such testing are negative as hereinafter defined. The Contractor must provide the Owner with a Monthly Summary Report of the Substance Abuse Program compliance.

All Contractors must train their respective employees in methods that will allow them to recognize substance abusers. Supervisory Employees of the Owner or its subcontractor shall be trained to take action, and to confront a substance abuser in a manner consistent with generally accepted safety-training procedures.

The cost of implementing the Substance Abuse program shall be borne by each respective Contractor affected by this specification.

Suppliers, vendors, and visitors must become signatory to the terms of this specification and their abstinence from substance abuse, and their continued avoidance of violations of the specification at the project site. Furthermore, in the event of an incident and/or accident occurrences involving suppliers, vendors, and/or visitors, the same agrees to submit to the substance abuse testing when requested. Refusal to comply would be grounds to have the supplier, vendor, or visitor permanently barred from the Project site by regulators.

TESTING REQUIREMENTS

The Project requires:

- Post-offer/Pre-engagement drug and alcohol testing.
- Testing for reasonable suspicion of illegal drug use or alcohol use.
- Post accident and post incident drug and alcohol testing upon reasonable suspicion.
- Drug testing following discovery of illegal or unauthorized drugs or paraphernalia as creating reasonable suspicion.

All Prime Contractors must perform post-offer/pre-engagement, and post accident/incident testing upon reasonable suspicion, as follows:

- a. All drug testing must be conducted by a National Institute of Drug Abuse (NIDA) certified laboratory with test results interpreted by a licensed medical review officer (MRO).
- b. The initial screen tests for alcohol shall be performed by using either a saliva test or breathalyzer test comparable to the type used by state or local law enforcement officials. Furthermore, alcohol confirmatory tests shall be performed by using either blood alcohol test or a Breathalyzer test comparable to the type used by state or local law enforcement officials.
- c. Evidence of the negative test results of individual employees required by this specification shall be furnished to the Owner prior to the commencement of work by the individual employee and promptly after performance of any subsequent testing required by this specification. Acceptable negative test result format.
 - A certificate signed by the testing laboratory, setting forth the nature and results of performed; or
 - An identification card signed by the respective Prime Contractor and issued to the individual employee, setting forth as reported on a certificate issued by the testing laboratory. The name of the testing laboratory shall also appear on the identification card; provided the affected employee authorizes the issuance of such identification card.

COMPLIANCE PROCEDURE

The Owner reserves the right to audit any substance abuse program required by this specification to verify compliance results within twenty-four (24) hours of notification of the intent to audit. The Owner shall have free right of access to all relevant records of the Prime Contractor and their subcontractors and supplies for this purpose, provided such record disclosures are within the scope of the States guidelines pertaining to confidentiality of employee records.

The Contractor's pre-engagement employees who receive a positive test result shall immediately leave the Project Site. Transportation of employees receiving the

positive test result is the direct responsibility of the employing Prime Contractor, including employees of its subcontractors. Furthermore, pre-engagement employees receiving a positive test shall not be permitted to return to the Project Site earlier than 90 days from the date of the positive test. At this time the employee may begin the process outlined by this specification again.

**DEFINITIONS/ CONFIDENTIALITY/RULES- DISCIPLINARY ACTIONS-
GRIEVANCE PROCEDURES**

1. DEFINITIONS:

- (a) Company Premises - the term "Company Premises" as used in this policy includes all property, facilities, land, building, structures, automobiles, trucks and other vehicles owned, leased or used by the Contractor on the Project. Construction job sites for which the Contractor has responsibility are included.
- (b) Prohibited Items & Substances - Prohibited substances include illegal drugs (including controlled substances, look alike drugs and designer drugs, alcoholic beverages, and drug paraphernalia in the possession of or being used by an employee on the job.
- (c) Employee - Individuals, who perform work for the Contractor, including, but not limited to management, supervision, engineering, craft workers and clerical personnel.
- (d) Accident - Any event resulting in injury to a person or property to which an employee, or contractor/contractor's employee, contributed as a direct or indirect cause.
- (e) Incident - An event which has all the attributes of an accident, except that no harm was caused to person or property.
- (f) Reasonable Cause - Reasonable cause shall be defined as tardiness, excessive absenteeism, and erratic behavior such as noticeable imbalance, incoherence, and disorientation.

2. CONFIDENTIALITY

- (a) All parties to this policy and program have only the interests of employees in mind; therefore, encourage any employee with a substance abuse problem

to come forward and voluntarily accept our assistance in dealing with the illness. An employee assistance program will provide guidance and direction for you during your recovery period. If you volunteer for help, the Contractor will make every reasonable effort to return you to work upon your recovery. The Contractor will also take action to assure that your illness is handled in a confidential manner.

- (b) All actions taken under this policy and program will be confidential and disclosed only to those with a "need to know."
- (c) When a test is required, the specimen will be identified with a code number, not by name, to insure confidentiality of the donor. Each specimen container will be properly label and made tamper proof. The donor must witness this procedure.
- (d) Unless an initial positive result is confirmed as positive, it shall be deemed negative and reported by the laboratory as such.
- (e) The handling and transportation of each specimen will be properly documented through the strict chain of custody procedures.

3. RULES - all employees must report to work in a physical condition that will enable them to perform their jobs in a safe and efficient manner. Employees shall not:

- (a) Use, possess, dispense or receive prohibited substances on or at the Project job site; or
- (b) Report to work at or on the Project with any measurable amount of prohibited substances in their system.

4. DISCIPLINE - When the Contractor has reasonable cause to believe an employee is under the influence of a prohibited substance, for reasons of safety, the employee may be suspended until test results are available. If no test results are received after three (3) working days, the employee, if available, shall return to work with back pay. If the test results prove negative, the employee shall be reinstated with back pay. In all other cases:

- (a) Applicants testing positive for drug use will not be hired.
- (b) Employees who have not voluntarily come forward, and who test positive for a drug use, will be terminated.

(c) Employees who refuse to cooperate with testing procedures will be terminated.

(d) Employees found in possession of drugs or drug paraphernalia will be terminated.

(e) Employees found under the influence of alcohol while on duty, or while operating a company vehicle, will be subject to termination.

5. PRESCRIPTION DRUGS - Employees using a prescribed medication which, in their physician's opinion, may impair the performance of their duties, either mental or motor functions, must immediately inform the supervisor of such prescription drug use if instructed by their physician to do so. For the safety of all employees, the Contractor will consult with you and your physician to determine if a reassignment of duties is necessary. The Contractor will attempt to accommodate your needs by making an appropriate reassignment. However, if a reassignment is not possible, you will be placed on temporary medical leave until released as fit for duty by the prescribing physician.

Prevailing Wage Requirements and Rates

Overview

This project will utilize Ohio Prevailing Wage Rates. All contractors and subcontractors are required to comply with all Prevailing Wage Requirements in the Ohio Revised Code. These requirements are outlined below and sample documents are contained in the following pages and will be utilized to comply with these requirements. **Please note that the City of Canton will withhold payroll and/or retainage for a pay application or for the project in total until all prevailing wage issues are resolved.**

Payroll Dates Form

Must be submitted to the Prevailing Wage Coordinator (PWC) on or before the date your company starts work under the contract. It is to be completed with the **actual payroll dates** and not a day of the week. This requirement applies to all contractors/subcontractors.

Letter of Authorization for Payroll Signature

The person signing the certified payrolls must be an Owner or Corporate Officer of the company, or an Authorization letter must be completed and sent to the Prevailing Wage Coordinator. The document sent **must be the original signed notarized document**. If the person signing the payroll changes during the course of the project then a new Letter of Authorization for payroll signature must be submitted.

Fringe Benefits Form

Please complete and return along with the payroll dates form and letter of authorization for payroll signature form.

Notification to Employee Form

If your company is a **non-union company** you **must provide a completed Notification form to each employee working on this site and provide the PWC a copy** (wage and fringe benefit amounts on Notification must match amounts listed on payrolls), the form must have the Prevailing Wage Coordinator information, if you are a **union company** you need to send the PWC **a copy of the contract/agreement your company has with the local Trade Union(s)**.

Certified Payroll

The **first certified payroll** must be sent to the Prevailing Wage Coordinator **within two weeks of 1st pay period on the job**, payrolls must be sent **weekly** to the Prevailing Wage Coordinator if your company is working **four months or less** on site, payrolls must be sent **at least monthly** if working **more than four months** on site. Certified payroll forms used by contractors **must include all the information that is on payroll form included** with this package, if the payroll form you use does not have sections for all the information, it must be included as an attachment to the certified payroll. (During the project you may send copies of the certified payroll but **by the end of the project you must provide the original signed documents to the Prevailing Wage Coordinator** before you will receive your final payment). Fringe benefit break down needs to be attached to **each** payroll. For any **work classifications** requiring a group number (1-5) such as laborer or operating engineer if the group number or identifying equipment employee is operating is not entered a revised payroll will be required.

Affidavit of Compliance

When each contractor/subcontractor has completed their work on the job site they're required to submit a Final Affidavit of Compliance before the primary contractor receives their final payment and any retainer. Must send Prevailing Wage Coordinator original signed document.

Apprentices

Any/all apprentices working on this project must be registered with the State of Ohio Apprenticeship Council, apprentices on site cannot exceed ratios in the wage decision rate schedule, contractors/subs must provide the Prevailing Wage Coordinator a copy of the Apprenticeship Agreement from the program for each apprentice on the project with the first payroll on which they appear. You must provide the apprentice level/year, i.e. 1, 2, 3, etc. and/or percent of Journeyman's pay rate, i.e. 50%, 55%, etc. on the certified payrolls.

Subcontractors

If any subcontractors will be used during this project then a list of subcontractors including their name, address, and phone number must be provided to the Prevailing Wage Coordinator. The Prime contractor is responsible for all forms to be furnished to subcontractors, **along with wage rates** or any other modification vital to the project.

Prevailing Wage Rates

Attached are the State of Ohio Prevailing Wage Rates as of the posting date of this bid. Actual rates due to workers will be those in affect at the time of work. Please note that the wages of the County where the work is be completed will be in effect. Due to the location of the water treatment plants, this could be either Stark or Tuscarawas counties. Both are attached. All applicable prevailing wage rates must be posted on the job site for the duration of the project.

WEEKLY PAYROLLS

Each week as work progresses the Contractor must submit to the Prevailing Wage Coordinator original, certified, signed weekly payrolls containing the following information:

- A) Name of each employee.
- B) Employees' social security numbers
- C) Special classification of employees (same as shown on wage determination or provisional approval.)
- D) Rate of pay not less than that shown on the wage determination.
- E) Allowable fringe benefits paid to the employee.
- F) Hours worked each day and total hours worked for each week for each employee.
- G) Gross amount paid to each employee.
- H) Itemized deductions for each employee.
- I) Net amount paid to each employee.
- J) The following certification:

"I certify that the payroll is correct and complete, that the wage rates contained therein are not less than the applicable rates contained in the Wage Determination decision of the Department of Industrial Relations, Prevailing Wage Rate Division, State of Ohio, and that the classifications set forth for each laborer or mechanic conform with the work he performs".

(SIGNATURE)

(TITLE)

PREVAILING WAGE COORDINATOR

The City of Canton has designated Cheryl Southwell as Prevailing Wage Coordinator, in accordance with Section 4115.071 of the Ohio Revised Code.

Her office is located at City of Canton, 218 Cleveland Ave SW, Canton, Ohio 47702
Cheryl Southwell: 330-438-4183

CONTRACTORS SUBMISSIONS TO THE WAGE COORDINATOR:

- 1) Contractors are required to supply to the Wage Coordinator, **a schedule of the dates during the life of the contract with City of Canton on which they are required to pay wages to the employees.** See Section 4115.03 (A) (2)
- 2) Contractors shall also deliver to the Wage Coordinator **a certified copy of the payroll within two weeks after the initial pay date and supplemental reports for each month thereafter, which shall exhibit for each employee, their name, current address, social security number, job classification, number of hours worked for project, rate of pay, project gross pay, fringe payments, total hours all jobs, total gross all jobs, and deductions from their wages.** See Section 4115.03 (A) (3)
- 3) If the life of the contract is expected to be no more than four months from the beginning of performance by the contractor or subcontractor, such supplemental reports shall be filed each week after the initial report. See Section 4115.03 (A) (6) (C)
- 4) The certification of each payroll shall be executed by the contractor, subcontractor, or duly appointed agent thereof and **include a State of Compliance** stating that the payroll is correct and complete and that during the payroll period, all persons employed on said project have been paid the full weekly wages earned, that no rebates have or will be made either directly or indirectly to, or on behalf of said contractor or subcontractor for the full weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions. See Section 4115.03 (A) (6) (C)
- 5) Contractors will also provide **each month a copy of any Labor Union Fringe Benefit Fund reports that they submitted to the unions.** See Section 4115.03

PREVAILING WAGE COORDINATOR MONITORING PROCEDURES

The wage Coordinator's duties are those specified in Section 4115.071 and shall include:

- 1 Attend Pre-Construction Meetings to advise contractor of Prevailing Wage responsibilities
- 2 Wage Coordinator has the authority to spot check employees pay checks in the field on the scheduled pay days for full compliance, with regard to the prevailing wage rates, including benefits.

- 3 Wage Coordinator shall visit the project site to get names of employees performing work on the project site, to cross check with payroll reports submitted.
- 4 Wage Coordinator shall verify the subcontractors performing work on the project site with regard to whether they have been approved by the contracting authority.
- 5 Wage Coordinator shall check to see that the prevailing wages are posted on the project site in a place accessible to employees.
- 6 Ascertain that the statement of compliance accompanying the certified payroll is the correct one for the project
- 7 Wage Coordinator has the right to request any addition information they feel is required for proper wage verification.
- 8 Contact Contractors of delinquent payrolls
- 9 Notify contractors when necessary to request payroll corrections
- 10 Investigate wage complaints ,by self or with Ohio Department of Commerce Division of Labor & Worker Safety

PAYROLL DATES PREVAILING WAGE LAW

Instructions to the Contractor: Please read the following and provide the required information noted on this form. This document must be submitted to the Prevailing Wage Coordinator for the public authority on or before your company begins any work under a contract for a public improvement. This requirement is also applicable to your subcontractors. Please make a copy of this document available to them. The prevailing wage laws state that contractors are responsible for their subcontractors.

.....

_____ will begin performance under contract on the
(Name of Contractor)

_____ project on _____
(Name and Location of Project) (Start Date)

and will conclude work on said project on _____
(End Date, if known)

In accordance with Section 4115.071 (C) of the Ohio Revised Code, listing of payroll dates, I hereby submit the following schedule of dates that my company is required to pay wages to its workers while on this project.

NOTE: If the life of the project is expected to be over three (3) months in length, provide only the days of the week your pay period starts and ends, plus the day you pay your workers.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Day Pay Period Starts: _____ Day Pay Period Ends: _____

Pay Day: _____

I acknowledge that I am required by section 4115.071 (C) of the Ohio Revised Code that I must submit a copy of my company's certified payroll records for this project to the Prevailing Wage Coordinator of the public authority within two weeks of the initial pay date listed above. I further acknowledge that I am responsible to collect and submit my subcontractor's prevailing wage documents, including their certified payroll records in accordance with the law.

(Contractor's Signature and Title)

(Company Name)

(Date)

LETTER OF AUTHORIZATION FOR PAYROLL SIGNATURE:

DATE: _____

COMPANY NAME: _____

ADDRESS: _____

FEDERAL I.D.# _____

RE: _____

(Project Name)

(Project Number)

(Address)

_____ hereby authorizes

(Company Officer/Owner-Title)

_____ as the person to

complete and sign all certified payroll forms for the above project.

BY: _____

(Print Name)

(Signature)

(Title)

Sworn and subscribed in my presence this _____ day of _____ 20__

Notary Public

FRINGE BENEFITS

PLEASE COMPLETE THIS FORM AND RETURN IT TO THE ADDRESS BELOW.

_____ FRINGE BENEFITS ARE ALL PAID IN CASH TO THE EMPLOYEE.

_____ FRINGE BENEFITS ARE PAID IN CASH AND TO THE BENEFIT PROGRAMS LISTED BELOW.

_____ FRINGE BENEFITS ARE ALL PAID TO THE FOLLOWING BENEFIT PROGRAMS:

HEALTH & WELFARE PLAN: _____

ADDRESS: _____

PENSION PLAN: _____

ADDRESS: _____

APPRENTICESHIP PROGRAM: _____

YOUR COMPANY IS: _____ UNION _____ NON-UNION

YOUR COMPANY PAYS ALL EMPLOYEES: _____ WEEKLY _____ BI-WEEKLY

FORWARD A BLANK FORM TO EACH SUBCONTRACTOR ON THE PROJECT FOR COMPLETION.
RETURN ALL FORMS TO:

CITY OF CANTON
218 CLEVELAND AVE SW
CANTON, OHIO 44702
ATTN: PREVAILING WAGE COORDINATOR

CONTRACTOR'S NAME: _____

ADDRESS: _____

PROJECT NAME: _____

PREVAILING WAGE NOTIFICATION TO EMPLOYEE

4115.05...the contractor or subcontractor shall furnish each employee **NOT covered by a collective bargaining agreement** written notification of the job classification to which the employee is assigned, the prevailing wage determined to be applicable to that classification, separated into the hourly rate of pay and the fringe payments, and the identity of the prevailing wage coordinator appointed by the public authority. The contractor or subcontractor shall furnish the same notification to each affected employee every time the job classification of the employee is changed.

Project Name:	Job Number:
---------------	-------------

Contractor:

Project Location:

Prevailing Wage Coordinator	Employee
Public Authority:	Name:
Name of PWC:	Street:
Street:	City:
City:	State/Zip:
State/Zip:	Phone:
	Email:
Phone:	Last 4 Digits of SS #:

You will be performing work on this project that falls under these classifications. You will be paid the appropriate rate for the type of work you are performing.

Classification:	Prevailing Wage Rate Total Package:	Minus your fringe benefits *:	Your hourly base rate and overtime:
			/
			/
			/
			/
			/
			/

Hourly fringe benefits paid on your behalf by this company (Yearly amount the **company pays** divided by 2080):

Fringe	Amount	Fringe	Amount
Health Insurance		Vacation	
Life Insurance		Holiday	
Pension		Sick Pay	
Other (Specify)		Training	
Other (Specify)		Total Hourly Fringes *	

Contractor's Signature:	Date:
-------------------------	-------

Employee's Signature:	Date:
-----------------------	-------

INSTRUCTIONS FOR PREPARING CERTIFIED PAYROLL REPORTS

General:

Contractors and subcontractors are required by law to submit certified payroll reports for work on projects covered by Ohio's Prevailing Wage Law. This form meets the reporting requirements established by Ohio Revised Code Chapter 4115. The use of this form is not mandatory; employers may submit their own forms if all of the required information is included. This form may be reproduced, or additional copies obtained from:

Ohio Department of Commerce
Division of Industrial Compliance
Bureau of Wage and Hour Administration
6606 Tussing Road, P.O. Box 4009
Reynoldsburg, Ohio 43068-9009
614-644-2239
www.com.ohio.gov

Certified Payroll Heading:

Employer name and address: Company's full name and address... Indicate if the company is a subcontractor.

Subcontractor: Check and list the name of the General Contractor or Prime.

Project: Name and location of the project, including county.

Contracting Public Authority: Name and address of the contracting public authority... (Owner of the project).

Week Ending: Month, day, and year for last day of reporting period.

Payroll #: Indicates first, second, third, etc. payroll filed by the company for the project.

Page indicator: number of pages included in the report.

Project Number: Determined by the public authority... If there is no number leave blank.

Payroll Information by column:

- Employee Name, Address and Social Security number:** This information must be provided for all employees that perform physical labor on the project. The Social Security number is required; the last four digits may be permitted by the public authority. Corporate officers, partners, and salaried employees are considered employees and must be paid the prevailing rate. Individual sole proprietors do not have to pay themselves prevailing rate but must report their hours on the project.
- Work Class:** List classification of work performed by employee. If unsure of work classification, consult the Ohio Department of Commerce-Division of Industrial Compliance & Labor-Bureau of Wage and Hour Administration. Employees working more than one classification should have separate line entries for each classification. Indicate what year/level for Apprentices. Be specific when using laborer and operator classifications; for example, Backhoe Operator or Asphalt Laborer or by "Group".
- Hours Worked, Day & Date:** In the first row of column 3, enter days of the company's pay period for example; M T W TH F S S. The second row is for the date that corresponds with each day for the pay period. In the employee information section, enter the number of hours worked on the prevailing wage project and which day the hours were worked. Separate rows are labeled for (ST) straight time hours and (OT) overtime hours. All hours worked after 40, must be paid at the appropriate overtime rate.
- Project Total Hours:** Total the hours entered for pay period.
- Base Rate:** Enter actual rate per hour paid to the employee. The overtime hourly rate is time and one-half the base rate listed in the prevailing wage schedule plus fringe benefits at straight time rate. The prevailing wage schedule lists the base rate plus fringe benefit amounts. These amounts added together equal the total prevailing wage rate. Employers must pay this total amount in one of three ways.
 - Total rate may be paid in entirety in the base rate to the employee; in which case, the cash designation will be checked for fringe benefits.
 - Total rate may be paid as listed in prevailing wage rate schedule with total fringe amounts paid approved plans.
 - Total rate may be paid with a combination of base rate and fringe payments to approved plans in amounts other than those listed in schedule.
- Project Gross:** Enter total gross wages earned on the project for straight time and overtime. Project hours "X" base rate should equal project gross.
- Fringes:** If fringe benefits are paid in the hourly base rate, indicate this by marking the **Cash** space. If fringe benefits are paid to approved plans as listed in the prevailing wage rate schedule, mark the space **Approved Plans**. If fringe benefits are paid partially in the base rate and partially to approved plans, mark the space **Cash & Approved Plans**. List the hourly amount paid to approved plans for each fringe. If payments are not made on a per hour basis, *calculate the hourly fringe credit by dividing the yearly employer contribution by the lesser of: hours actually worked in the year (these must be documented) or 2080*. Fringe benefits include: **Employer's share** of health insurance, life insurance, retirement plan, bonus/profit sharing, sick pay, holiday pay, personal leave, vacation, and education/training programs. If unsure of a possible fringe benefit, contact the Ohio Department of Commerce-Division of Industrial Compliance & Labor-Bureau of Wage and Hour Administration.
- Total Hours All Jobs:** Total all hours worked during the pay period including non-prevailing wage jobs.
- Total Gross All Jobs:** Gross amount earned in the pay period for all hours worked.
- Self-explanatory.
- Self-explanatory.

Certified Payroll Report

Report for: Check if Subcontractor¹⁾ Contract No: _____ Payroll No: _____
 Company:¹⁾ _____ If Sub, GC/Prime Contractor Name: _____ Project Name & Location: _____
 Address: _____ Public Authority (Owner): _____ Week Ending: _____
 City, State, Zip _____ Phone No: _____ Sheet:²⁾ _____ of _____

1. Employee Name, Address, & SS# (Last 4 digits if permitted)	2. Work Class ³⁾	3. Prevailing Wage Project		4. Total Hours	5. Base Rate	6. Project Gross	7. Fringes:			8. Total Hrs for all Jobs			9. Total Gross on All Jobs			10. Total Deductions	11. Net Pay on All Jobs		
		Hours Worked - Day & Date					Cash & Approved Plans	Approved Plans	Fringe Rate Your Company Pays Per Hour	H&W	Pens	Vac	Hol	Other	Total			Total	Total
	OT																		
	ST																		
	OT																		
	ST																		
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1) By signing below, I certify that: (1) I pay, or supervise the payment of the employees shown above; (2) during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done; (3) the fringe benefits have been paid as indicated above; (4) no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissible deductions as defined in ORC Chapter 4115; and (5) apprentices are registered with the U.S. Dept. of Labor, Bureau of Apprenticeship and Training. I understand that the willful falsification of any of the above statements may subject the Contractor or Subcontractor to civil or criminal prosecution.

Type or Print Name and Title _____ Signature _____ Date _____

11/14 jc 2) Attach additional sheets as necessary. 3) Type in continuous line, text will wrap.

DO NOT REDO FORM AND CHANGE RATES IF AN ERROR HAS BEEN MADE! SUBMIT A CORRECTED REPORT: ****CORRECTED**** CORRECTED FORMS CAN BE HANDWRITTEN

CERTIFIED PAYROLL REPORT

Employer Name & Address Fill out all other areas of the form as usual.		Name of General / Prime Contractor		Project Name & Location		Contracting Public Authority					
Check if subcontractor <input type="checkbox"/>		Week Ending		Payroll # Correcting from xx to xx		Project Number					
1. Employee Name, Address and Social Security Number	2. Work Class	3. Hours Worked - Day & Date	4. Project Total Hrs	5. Base Rate	6. Project Gross	7. Fringes: Cash, Approved Plans, Cash & Approved Plans	8. Total Hours All Jobs	9. Total Gross All Jobs	10. Other Taxes Withheld	11. Other Deducts	12. NET Paid
Name/Address/SSN	Class	OT ST				H&W Pens Vac App Other					
Name/Address/SSN	Class	Put the period that is being corrected, i.e.: Oct 26 to Dec 19, not individual weekly dates.									
		ST									
		OT									
		ST									
		OT									
		ST									
		OT									
		ST									
		OT									
		ST									
		OT									
		ST									

The net paid will be the total of difference paid and the total hours being corrected. Provide Check # in margin.

Difference in fringes & corrected fringes if applicable.

Fill In My signature on this form signifies that I pay, or supervise the payment of the employees shown above. I am certifying: 1) That during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done. 2) That the fringe benefits have been paid as indicated above. 3) That no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissible deductions as defined in the Ohio Revised Code Chapter 4115. 4) That apprentices are registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training. The willful falsification of any of the above statements may subject the contractor or subcontractor to civil or criminal prosecution.

Name and Title Complete Signature Sign

Send cover letter stating what happened, with a signed letter from the employee acknowledging that they were underpaid, received payment, check or transaction number.

**FINAL AFFIDAVIT OF COMPLIANCE
PREVAILING WAGES**

I, _____, _____ do hereby certify
(Name of person signing affidavit) (Title)

that the wages paid to all employees of: _____
(Company name)

for all hours worked on project: _____
(Project name)

_____ (Project location)

During the period from _____ to _____ are in compliance with
(Project Dates)

Prevailing Wage requirements of Chapter 4115 of the Ohio Revised Code. I further certify that no rebates or deductions have been or will be made, directly or indirectly, from any wages paid in connection with this project, other than those provided by law.

(Signature of Officer or Agent)

(Print Name of Officer or Agent)

Sworn to and subscribed in my presence this _____ day of _____, 20_____.

(Notary Public)

The above affidavit must be executed and sworn to by the officer or agent of the contractor or subcontractor who supervises the payment of employees. This affidavit must be submitted to the owner (public authority) before the surety is released or final payment due under the terms of the contract is made.

Prevailing Wage Determination Cover Letter

County: 

Determination Date: 01/24/2023

Expiration Date: 04/24/2023

THE FOLLOWING PAGES ARE PREVAILING RATES OF WAGES ON PUBLIC IMPROVEMENTS FAIRLY ESTIMATED TO BE MORE THAN THE AMOUNT IN O.R.C. SEC. 4115.03 (b) (1) or (2), AS APPLICABLE.

Section 4115.05 provides, in part: "Where contracts are not awarded or construction undertaken within ninety days from the date of the establishment of the prevailing wages, there shall be a redetermination of the prevailing rate of wages before the contract is awarded." The expiration date of this wage schedule is listed above for your convenience only. This wage determination is not intended as a blanket determination to be used for all projects during this period without prior approval of this Department.

Section 4115.04, Ohio Revised Code provides, in part: "Such schedule of wages shall be attached to and made a part of the specifications for the work, and shall be printed on the bidding blanks where the work is done by contract..."

The contract between the letting authority and the successful bidder shall contain a statement requiring that mechanics and laborers be paid a prevailing rate of wage as required in Section 4115.06, Ohio Revised Code.

The contractor or subcontractor is required to file with the contracting public authority upon completion of the project and prior to final payment therefore an affidavit stating that he has fully complied with Chapter 4115 of the Ohio Revised Code.

The wage rates contained in this schedule are the "Prevailing Wages" as defined by Section 4115.03, Ohio Revised Code (the basic hourly rates plus certain fringe benefits). These rates and fringes shall be a minimum to be paid under a contract regulated by Chapter 4115 of the Ohio Revised Code by contractors and subcontractors. The prevailing wage rates contained in this schedule include the effective dates and wage rates currently on file. In cases where future effective dates are not included in this schedule, modifications to the wage schedule will be furnished to the Prevailing Wage Coordinator appointed by the public authority as soon as prevailing wage rates increases are received by this office.

"There shall be posted in a prominent and accessible place on the site of work a legible statement of the Schedule of Wage Rates specified in the contract to the various classifications of laborers, workmen, and mechanics employed, said statement to remain posted during the life of such contract." Section 4115.07, Ohio Revised Code.

Apprentices will be permitted to work only under a bona fide apprenticeship program if such program exists and if such program is registered with the Ohio Apprenticeship Council.

Section 4115.071 provides that no later than ten days before the first payment of wages is due to any employee of any contractor or subcontractor working on a contract regulated by Chapter 4115, Ohio Revised Code, the contracting public authority shall appoint one of his own employees to act as the prevailing wage coordinator for said contract. The duties of the prevailing wage coordinator are outlined in Section 4115.071 of the Ohio Revised Code.

Section 4115.05 provides for an escalator in the prevailing wage rate. Each time a new rate is established, that rate is required to be paid on all ongoing public improvement projects.

A further requirement of Section 4115.05 of the Ohio Revised Code is: "On the occasion of the first pay date under a contract, the contractor shall furnish each employee not covered by a collective bargaining agreement or understanding between employers and bona fide organizations of Labor with individual written notification of the job classification to which the employee is assigned, the prevailing wage determined to be applicable to that classification, separated into the hourly rate of pay and the fringe payments, and the identity of the prevailing wage Coordinator appointed by the public authority. The contractor or subcontractor shall furnish the same notification to each affected employee every time the job classification of the employee is changed."

Work performed in connection with the installation of modular furniture may be subject to prevailing wage.

THIS PACKET IS NOT TO BE SEPARATED BUT IS TO REMAIN COMPLETE AS IT IS SUBMITTED TO YOU.
(Reference guidelines and forms are included in this packet to be helpful in the compliance of the Prevailing

Wage law.)
wh1500

of Ashtabula, Austinburg, Geneva, Harperfield, Jefferson, Plymouth & Saybrook) (townships of Andover, Cherry Valley, Colbrook, Canneaut, Denmark, Dorset, East Orwell, Hartsgrove, Kingville, Lenox, Monroe, Morgan, New Lyme, North Kingsville, Orwell, Pierpoint, Richmond Rock Creek, Rome, Sheffield, Trumbull, Wayne, Williamsfield & Windsor) Erie County: (post offices & townships of Berlin, Berlin Heights, Birmingham, Florence, Huron, Milan, Shinrock & Vermilion)

Details :

Asbestos & lead paint abatement including, but not limited to the removal or encapsulation of asbestos & lead paint, all work in conjunction with the preparation of the removal of same & all work in conjunction with the clean up after said removal. The removal of all insulation materials, whether they contain asbestos or not, from mechanical systems (pipes, boilers, ducts, flues, breaching, etc.) is recognized as being the exclusive work of the Asbestos Abatement Workers.

On all mechanical systems (pipes, boilers, ducts, flues, breaching, etc.) that are going to be demolished, the removal of all insulating materials whether they contain asbestos or not shall be the exclusive work of the Laborers.

An Abatement Journeyman is anyone who has more than 300 hours in the Asbestos Abatement field.

Prevailing Wage Rate Skilled Crafts

Name of Union: Asbestos Local 3 Heat & Frost Insulators

Change # : LCN01-2022sksLoc3

Craft : Asbestos Worker Effective Date : 09/21/2022 Last Posted : 09/21/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Asbestos Insulation Worker	\$41.23		\$14.40	\$10.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$65.63	\$86.25
Fire Stop Specialist	\$41.23		\$14.40	\$10.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$65.63	\$86.25
Fire Stop Technician	\$34.10		\$14.40	\$4.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.50	\$69.55
Apprentice	Percent											
1st year	50.20	\$20.70	\$14.40	\$1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$36.10	\$46.45
2nd year	63.68	\$26.26	\$14.40	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.66	\$55.78
3rd year	69.25	\$28.55	\$14.40	\$3.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.95	\$60.23
4th year	82.70	\$34.10	\$14.40	\$4.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.50	\$69.55

Special Calculation Note : There are no special calculations for this classification.

Ratio :

3 Journeymen to 1 Apprentice per shop

Jurisdiction (* denotes special jurisdictional note) :

ASHLAND, ASHTABULA*, CARROLL, COLUMBIANA, COSHOCTON, CUYAHOGA, ERIE*, GEAUGA, HARRISON, HOLMES, HURON, LAKE, LORAIN, MAHONING, MEDINA, PORTAGE, RICHLAND, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, WAYNE

Special Jurisdictional Note : Ashtabula (the townships of Ashtabula, Austinburg, Geneva, Jefferson, Plymouth & Saybrook), The remainder of Ashtabula County will be considered open counties on a 90 day basis automatically renewable unless revoked by the Union upon 15 day written notice by the employers. Erie (to Sandusky limits)

Details :

Mechanics & apprentices engaged in the manufacture, fabrication, assembling, molding, handling, erection, spraying, pouring, mixing, hanging, clean-up, preparation, application, adjusting, alteration, repairing, dismantling, reconditioning, testing & maintenance of Heat & Frost Insulation such as Magnesia, Asbestos, Hair Felt, Wool Felt, Cork, Mineral Wool, Infusorial Earth, Mercerized Silk, Flax, Fiber, Fire Felt, Asbestos Paper, Asbestos Curtain, Asbestos Millboard, Fiberglass,

Foam glass, Styrofoam, Polyurethane, fire stopping, smoke stopping, all recyclable material, soundproofing, all penetrations, any flexible or rigid fireproofing, all jacketing systems including metal, lead, and PVC or other material.

Prevailing Wage Rate Skilled Crafts

Name of Union: Asbestos Local 84 Heat & Frost Insulators

Change # : LCN01-2018fbLoc84

Craft : Asbestos Worker Effective Date : 06/06/2018 Last Posted : 06/06/2018

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Asbestos Insulation Worker	\$31.47		\$9.49	\$8.36	\$0.36	\$0.00	\$3.39	\$0.24	\$0.00	\$0.00	\$53.31	\$69.04
Apprentice	Percent											
1st Year	50.00	\$15.74	\$9.49	\$8.36	\$0.36	\$0.00	\$3.39	\$0.24	\$0.00	\$0.00	\$37.58	\$45.44
2nd Year	60.00	\$18.88	\$9.49	\$8.36	\$0.36	\$0.00	\$3.39	\$0.24	\$0.00	\$0.00	\$40.72	\$50.16
3rd Year	70.00	\$22.03	\$9.49	\$8.36	\$0.36	\$0.00	\$3.39	\$0.24	\$0.00	\$0.00	\$43.87	\$54.88
4th Year	80.00	\$25.18	\$9.49	\$8.36	\$0.36	\$0.00	\$3.39	\$0.24	\$0.00	\$0.00	\$47.02	\$59.60

Special Calculation Note : Other is Industry and Labor Management Fund

Ratio :

3 Journeymen to 1 Apprentice per shop

Jurisdiction (* denotes special jurisdictional note) :

ASHLAND, ASHTABULA*, CARROLL, COLUMBIANA, COSHOCTON, ERIE*, HARRISON, HOLMES, MAHONING, MEDINA, PORTAGE, RICHLAND, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, WAYNE

Special Jurisdictional Note : Ashtabula County: except for the townships of Ashtabula, Austinburg, Geneva, Harpersfield, Jefferson, Plymouth and Saybrook. Erie except Sandusky city limits.

Details :

The removal of all insulation materials, whether they contain asbestos or not, from mechanical systems (pipes, boilers, ducts, flues, breaching, etc.) is recognized as being the exclusive work of the Asbestos Workers.

On all mechanical systems (pipes, boilers, ducts, flues, breaching, etc.) that are going to be demolished, the removal of all insulating materials whether they contain asbestos or not shall be the exclusive work of the Laborers.

Prevailing Wage Rate Skilled Crafts

Name of Union: Boilermaker Local 744

Change # : LCNO1-2019fbLoc744

Craft : Boilermaker Effective Date : 04/03/2019 Last Posted : 04/03/2019

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Boilermaker	\$38.05		\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$67.76	\$86.78
Apprentice	Percent											
1st 6 months	70.02	\$26.64	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$56.35	\$69.67
2nd 6 months	72.52	\$27.59	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$57.30	\$71.10
3rd 6 months	75.00	\$28.54	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$58.25	\$72.52
4th 6 months	77.51	\$29.49	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$59.20	\$73.95
5th 6 months	80.00	\$30.44	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$60.15	\$75.37
6th 6 months	85.03	\$32.35	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$62.06	\$78.24
7th 6 months	90.00	\$34.25	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$63.96	\$81.08
8th 6 months	95.00	\$36.15	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$65.86	\$83.93
Helper	60.00	\$22.83	\$7.07	\$16.07	\$0.74	\$0.00	\$5.08	\$0.75	\$0.00	\$0.00	\$52.54	\$63.96

Special Calculation Note : Other is Supplemental Health

Ratio :

5 Journeymen to 1 Apprentice to 1 Helper

Jurisdiction (* denotes special jurisdictional note) :

ASHTABULA, CARROLL, COSHOCTON, CUYAHOGA, GEAUGA, HARRISON, HOLMES, LAKE, LORAIN, MAHONING, MEDINA, PORTAGE, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: **Bricklayer Local 6**

Change # : LCN01-2022sksLoc6

Craft : Bricklayer Effective Date : 05/04/2022 Last Posted : 05/04/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Bricklayer	\$30.76		\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$49.88	\$65.26
Pointer Caulker Cleaner	\$30.76		\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$49.88	\$65.26
Stone Mason	\$30.76		\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$49.88	\$65.26
Cement Mason	\$30.76		\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$49.88	\$65.26
Plaster	\$30.76		\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$49.88	\$65.26
Apprentice	Percent											
1st 6 months	55.00	\$16.92	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$36.04	\$44.50
2nd 6 months	60.00	\$18.46	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$37.58	\$46.80
3rd 6 months	65.00	\$19.99	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$39.11	\$49.11
4th 6 months	70.00	\$21.53	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$40.65	\$51.42
5th 6 months	75.00	\$23.07	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$42.19	\$53.73
6th 6 months	80.00	\$24.61	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$43.73	\$56.03
7th 6 months	90.00	\$27.68	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$46.80	\$60.65
8th 6 months	95.00	\$29.22	\$9.64	\$8.23	\$1.20	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$48.34	\$62.95

Special Calculation Note : OTHER IS DRUG TESTING

Ratio :

- 1 Journeymen to 1 Apprentice
- 5 Journeymen to 2 Apprentice
- 9 Journeymen to 3 Apprentice
- 13 Journeymen to 4 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, TUSCARAWAS

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 8 Zone 2 Tile Setters & Finishers

Change # : LCN1-2022sksLoc6

Craft : Bricklayer Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Bricklayer Tile Setter	\$26.74		\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.66	\$56.03
Marble Mason	\$26.74		\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.66	\$56.03
Terrazzo worker	\$26.74		\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.66	\$56.03
Finisher Support	\$24.16		\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40.08	\$52.16
Apprentice Finisher Support Only												
1st 30 days	\$14.50		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$14.50	\$21.75
30 days-6 months	\$14.50		\$8.69	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$23.19	\$30.44
2ND 6 months	\$16.91		\$8.69	\$6.60	\$0.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$32.80	\$41.26
3RD 6 months	\$18.12		\$8.69	\$6.60	\$0.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.01	\$43.07
4TH 6 months	\$19.33		\$8.69	\$6.60	\$0.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.22	\$44.89
5TH 6 months	\$20.54		\$8.69	\$6.60	\$0.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$36.43	\$46.70
6TH 6 months	\$21.74		\$8.69	\$6.60	\$0.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.63	\$48.50
Apprentice	Percent											
1st 30 Days	60.00	\$16.04	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$16.04	\$24.07
30 days- 6 months	60.00	\$16.04	\$8.69	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$24.73	\$32.76
2nd 6 months	70.00	\$18.72	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.64	\$44.00
3rd 6 months	75.00	\$20.05	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.98	\$46.00
4th 6 months	80.00	\$21.39	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.31	\$48.01

5th 6 months	85.00	\$22.73	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$38.65	\$50.01
6th 6 months	90.00	\$24.07	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39.99	\$52.02
7th 6 months	95.00	\$25.40	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.32	\$54.02
8th 6 months	95.00	\$25.40	\$8.69	\$6.60	\$0.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.32	\$54.02

Special Calculation Note : Classification title contains "Bricklayer" because contract originates within the Bricklayer Local.

Note that the classification description is clarified after the local union number at the top of the page.

Ratio :

4 Journeymen to 1 Apprentice
 6 Journeymen to 1 Apprentice (Thereafter)

Jurisdiction (* denotes special jurisdictional note) :

BELMONT, CARROLL, HARRISON, JEFFERSON,
 MONROE, STARK, TUSCARAWAS

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Commercial NE Zone 2B

Change # : LCN01-2022sksLocNEZone2B

Craft : Carpenter Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Carpenter	\$29.04		\$7.88	\$11.77	\$0.50	\$0.00	\$1.36	\$0.12	\$0.00	\$0.00	\$50.67	\$65.19
Apprentice	Percent											
1st 3 Months	60.00	\$17.42	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.42	\$26.14
2nd 3 Months	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$25.92	\$34.64
2nd 6 Months is 1st year	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$25.92	\$34.64
3rd 6 Months	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$25.92	\$34.64
4th 6 Months is 2nd year	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$25.92	\$34.64
5th 6 Months	70.00	\$20.33	\$7.88	\$8.24	\$0.50	\$0.00	\$0.95	\$0.12	\$0.00	\$0.00	\$38.02	\$48.18
6th 6 Months is 3rd year	75.00	\$21.78	\$7.88	\$8.83	\$0.50	\$0.00	\$1.02	\$0.12	\$0.00	\$0.00	\$40.13	\$51.02
7th 6 Months	80.00	\$23.23	\$7.88	\$9.42	\$0.50	\$0.00	\$1.09	\$0.12	\$0.00	\$0.00	\$42.24	\$53.86
8th 6 Months is 4th year	85.00	\$24.68	\$7.88	\$10.00	\$0.50	\$0.00	\$1.16	\$0.12	\$0.00	\$0.00	\$44.34	\$56.69

Special Calculation Note : *Other is International Training

Ratio :

2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Floorlayer NE Zone 2B

Change # : OCR01-2022sksLocNEZone2B

Craft : Carpenter Effective Date : 06/15/2022 Last Posted : 06/15/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Floorlayer	\$29.04		\$7.88	\$11.77	\$0.50	\$0.00	\$1.36	\$0.14	\$0.00	\$0.00	\$50.69	\$65.21
Apprentice	Percent											
1st 3 Months	60.00	\$17.42	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.42	\$26.14
2nd 3 Months	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.14	\$0.00	\$0.00	\$25.94	\$34.66
2nd 6 Months is 1st year	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.14	\$0.00	\$0.00	\$25.94	\$34.66
3rd 6 Months	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.14	\$0.00	\$0.00	\$25.94	\$34.66
4th 6 Months is 2nd year	60.00	\$17.42	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.14	\$0.00	\$0.00	\$25.94	\$34.66
5th 6 Months	70.00	\$20.33	\$7.88	\$8.24	\$0.50	\$0.00	\$0.95	\$0.14	\$0.00	\$0.00	\$38.04	\$48.20
6th 6 Months is 3rd year	75.00	\$21.78	\$7.88	\$8.83	\$0.50	\$0.00	\$1.02	\$0.14	\$0.00	\$0.00	\$40.15	\$51.04
7th 6 Months	80.00	\$23.23	\$7.88	\$9.42	\$0.50	\$0.00	\$1.09	\$0.14	\$0.00	\$0.00	\$42.26	\$53.88
8th 6 Months is 4th year	85.00	\$24.68	\$7.88	\$10.00	\$0.50	\$0.00	\$1.16	\$0.14	\$0.00	\$0.00	\$44.36	\$56.71

Special Calculation Note : *Other is International Training

Ratio :

2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Insulation NE Zone 2B

Change # : LCN01-2022sksLocNEZone2B

Craft : Carpenter Effective Date : 06/15/2022 Last Posted : 06/15/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Insulation	\$23.23		\$7.88	\$11.77	\$0.50	\$0.00	\$1.36	\$0.12	\$0.00	\$0.00	\$44.86	\$56.48
Apprentice	Percent											
1st 3 months	50.00	\$11.62	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11.62	\$17.42
2nd 3 months	50.00	\$11.62	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$20.12	\$25.92
2nd 6 months	50.00	\$11.62	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$20.12	\$25.92
3rd 6 months	55.00	\$12.78	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$21.28	\$27.66
4th 6 months	60.00	\$13.94	\$7.88	\$0.00	\$0.50	\$0.00	\$0.00	\$0.12	\$0.00	\$0.00	\$22.44	\$29.41
5th 6 months	70.00	\$16.26	\$7.88	\$8.24	\$0.50	\$0.00	\$0.95	\$0.12	\$0.00	\$0.00	\$33.95	\$42.08
6th 6 months	75.00	\$17.42	\$7.88	\$8.83	\$0.50	\$0.00	\$1.02	\$0.12	\$0.00	\$0.00	\$35.77	\$44.48
7th 6 months	80.00	\$18.58	\$7.88	\$9.42	\$0.50	\$0.00	\$1.09	\$0.12	\$0.00	\$0.00	\$37.59	\$46.89
8th 6 months	85.00	\$19.75	\$7.88	\$10.00	\$0.50	\$0.00	\$1.16	\$0.12	\$0.00	\$0.00	\$39.41	\$49.28

Special Calculation Note : *Other is Training

Ratio :

2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Millwright NE Zone M3

Change # : OCR01-2022sksLocNEZoneM3

Craft : Carpenter Effective Date : 06/15/2022 Last Posted : 06/15/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Carpenter Millwright	\$34.05		\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$56.44	\$73.46
Certified Welder	\$35.05		\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$57.44	\$74.96
Lay-Out Man on Monorail	\$35.55		\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$57.94	\$75.71
Apprentice	Percent											
1st 6 months	60.00	\$20.43	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$42.82	\$53.03
2nd 6 months	60.00	\$20.43	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$42.82	\$53.03
3rd 6 months	62.00	\$21.11	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$43.50	\$54.06
4th 6 months	65.50	\$22.30	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$44.69	\$55.84
5th 6 months	69.00	\$23.49	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$45.88	\$57.63
6th 6 months	72.50	\$24.69	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$47.08	\$59.42
7th 6 months	76.00	\$25.88	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$48.27	\$61.21
8th 6 months	80.00	\$27.24	\$7.96	\$11.50	\$0.50	\$0.00	\$2.26	\$0.17	\$0.00	\$0.00	\$49.63	\$63.25

Special Calculation Note : Other is Training

Ratio :

2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

The term "Millwright and Machine Erectors" jurisdiction shall mean the unloading, hoisting, rigging, skidding, moving, dismantling, aligning, erecting, assembling, repairing, maintenance and adjusting of all

structures, processing areas either under cover, under ground or elsewhere, required to process material, handle, manufacture or service, be it powered or receiving power manually, by steam, gas, electricity, gasoline, diesel, nuclear, solar, water, air or chemically, and in industries such as and including, which are identified for the purpose of description, but not limited to, the following: woodworking plants; canning industries; steel mills; coffee roasting plants; paper and pulp; cellophane; stone crushing; gravel and sand washing and handling; refineries; grain storage and handling; asphalt plants; sewage disposal; water plants; laundries; bakeries; mixing plants; can, bottle and bag packing plants; textile mills; paint mills; breweries; milk processing plants; power plants; aluminum processing or manufacturing plants; and amusement and entertainment fields. The installation of mechanical equipment in atomic energy plants; installation of reactors in power plants; installation of control rods and equipment in reactors; and installation of mechanical equipment in rocket missile bases, launchers, launching gantry, floating bases, hydraulic escape doors and any and all component parts thereto, either assembled, semi-assembled or disassembled. The installation of, but not limited to, the following: setting-up of all engines, motors, generators, air compressors, fans, pumps, scales, hoppers, conveyors of all types, sizes and their supports; escalators; man lifts; moving sidewalks; hoists; dumb waiters; all types of feeding machinery; amusement devices; mechanical pin setters and spotters in bowling alleys; refrigeration equipment; and the installation of all types of equipment necessary and required to process material either in the manufacturing or servicing. The handling and installation of pulleys, gears, sheaves, fly wheels, air and vacuum drives, worm drives and gear drives directly or indirectly coupled to motors, belts, chains, screws, legs, boots, guards, booth tanks, all bin valves, turn heads and indicators, shafting, bearings, cable sprockets, cutting all key seats in new and old work, troughs, chippers, filters, calendars, rolls, winders, rewinders, slitters, cutters, wrapping machines, blowers, forging machines, rams, hydraulic or otherwise, planing, extruder, ball, dust collectors, equipment in meat packing plants, splicing of ropes and cables. The laying-out, fabrication and installation of protection equipment including machinery guards, making and setting of templates for machinery, fabrication of bolts, nuts, pans, drilling of holes for any equipment which the Millwrights install regardless of materials; all welding and burning regardless of type, fabrication of all lines, hose or tubing used in lubricating machinery installed by Millwrights; grinding, cleaning, servicing and any machine work necessary for any part of any equipment installed by the Millwrights; and the break-in and trial run of any equipment or machinery installed by the Millwrights. It is agreed the Millwrights shall use the layout tools and optic equipment necessary to perform their work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter NE District Industrial Dock & Door

Change # : LCN01-2014fbCarpNEStatewide

Craft : Carpenter Effective Date : 03/05/2014 Last Posted : 03/05/2014 *fringe @ 6.20*

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Carpenter	\$19.70	\$5.05	\$1.00	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$25.90	\$35.75
Trainee	Percent										
1st Year	60.00	\$11.82	\$5.05	\$1.00	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00	\$18.02	\$23.93
2nd Year	80.20	\$15.80	\$5.05	\$1.00	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00	\$22.00	\$29.90

Special Calculation Note : No special calculations for this skilled craft wage rate are required at this time.

Ratio :

1 Journeymen to 1 Trainee

Jurisdiction (* denotes special jurisdictional note) :

- ADAMS, ALLEN, ASHLAND, ASHTABULA,
- ATHENS, AUGLAIZE, BELMONT, BROWN,
- BUTLER, CARROLL, CHAMPAIGN, CLARK,
- CLERMONT, CLINTON, COLUMBIANA,
- COSHOCTON, CRAWFORD, CUYAHOGA,
- DARKE, DEFIANCE, DELAWARE, ERIE,
- FAIRFIELD, FAYETTE, FRANKLIN, FULTON,
- GALLIA, GEAUGA, GREENE, GUERNSEY,
- HAMILTON, HANCOCK, HARDIN, HARRISON,
- HENRY, HIGHLAND, HOCKING, HOLMES,
- HURON, JACKSON, JEFFERSON, KNOX,
- LAKE, LAWRENCE, LICKING, LOGAN,
- LORAIN, LUCAS, MADISON, MAHONING,

MARION, MEDINA, MEIGS, MERCER, MIAMI,
MONROE, MONTGOMERY, MORGAN,
MORROW, MUSKINGUM, NOBLE, OTTAWA,
PAULDING, PERRY, PICKAWAY, PIKE,
PORTAGE, PREBLE, PUTNAM, RICHLAND,
ROSS, SANDUSKY, SCIOTO, SENECA,
SHELBY, STARK, SUMMIT, TRUMBULL,
TUSCARAWAS, UNION, VAN WERT, VINTON,
WARREN, WASHINGTON, WAYNE,
WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note : Industrial Dock and Door is the installation of overhead doors, roll up doors and dock leveling equipment

Details :

10/27/10 New Contract jc

Prevailing Wage Rate Skilled Crafts

Name of Union: Carpenter Pile Driver NE Zone P3

Change # : OCR01-2022sksLocNEZoneP3

Craft : Carpenter Effective Date : 06/15/2022 Last Posted : 06/15/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Carpenter Pile Driver	\$28.85		\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$51.22	\$65.65
Diver	\$43.28		\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$65.65	\$87.29
Certified Welder	\$29.90		\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$52.27	\$67.22
Apprentice	Percent											
1st 6 months	60.00	\$17.31	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$39.68	\$48.34
2nd 6 months	60.00	\$17.31	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$39.68	\$48.34
3rd 6 months	62.00	\$17.89	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$40.26	\$49.20
4th 6 months	65.50	\$18.90	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$41.27	\$50.72
5th 6 months	69.00	\$19.91	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$42.28	\$52.23
6th 6 months	72.50	\$20.92	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$43.29	\$53.74
7th 6 months	76.00	\$21.93	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$44.30	\$55.26
8th 6 months	80.00	\$23.08	\$8.05	\$11.50	\$0.50	\$0.00	\$2.15	\$0.17	\$0.00	\$0.00	\$45.45	\$56.99

Special Calculation Note : *Other is Training

Ratio :

2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

STARK, WAYNE, CARROLL, TUSCARAWAS

Special Jurisdictional Note :

Details :

Pile Drivers duties shall include but not limited to: Pile driving, milling, fashioning, joining assembling, erecting, fastening, or dismantling of all material of wood, plastic, metal, fiber, cork and composition and all other substitute materials: pile driving, cutting, fitting and placing of lagging, and the handling, cleaning, erecting, installing and dismantling of machinery, equipment and erecting pre-engineered metal buildings.

Pile Drivers work but not limited to: unloading, assembling, erection, repairs, operation, signaling, dismantling and reloading all equipment that is used for pile driving including pile butts is defined as sheeting or scrap piling. Underwater work that may be required in connection with the installation of piling. The driver and his tender work as a team and shall arrive at their own financial arrangements with the contractor. Any configuration of wood, steel, concrete or composite that is jettied, driven or vibrated onto the ground by conventional pile driving equipment for the purpose of supporting a future load that may be permanent or temporary. The construction of all wharves and docks, including the fabrication and installation of floating docks. Driving bracing, plumbing, cutting off and capping of all piling whether wood, metal, pipe piling or composite, loading, unloading, erecting, framing, dismantling, moving and handling of pile driving equipment piling used in the construction and repair of all wharves, docks, piers, trestles, caissons, cofferdams and erection of all sea walls and breakwaters. All underwater and marine work on bulkheads, wharves, docks, shipyards, caissons, piers, bridges, pipeline, work, viaducts, marine cable and trestles, as well as salvage and reclamation work where divers are employed. Rate shall include carpenters, acoustic and ceiling installers, drywall installers, pile drivers and floorlayers.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Bricklayer Local 97 HevHwy A

Change # : LCN01-2022sksHvyHwy

Craft : Bricklayer Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason Bricklayer Sewer Water Works A	\$31.40		\$9.75	\$8.30	\$0.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.95	\$65.65
Apprentice	Percent											
1st year	70.00	\$21.98	\$9.75	\$8.30	\$0.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40.53	\$51.52
2nd year	80.00	\$25.12	\$9.75	\$8.30	\$0.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$43.67	\$56.23
3rd year	90.00	\$28.26	\$9.75	\$8.30	\$0.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$46.81	\$60.94

Special Calculation Note : NOT FOR BUILDING CONSTRUCTION.

Ratio :

- 3 Journeymen to 1 Apprentice
- 6 Journeymen to 2 Apprentice
- 9 Journeymen to 3 Apprentice
- 12 Journeymen to 4 Apprentice
- 15 Journeymen to 5 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

- ADAMS, ALLEN, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DARKE, DEFIANCE, DELAWARE, ERIE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GEauga, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAKE, LAWRENCE, LICKING, LOGAN, LORAIN, LUCAS, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, PUTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, UNION, VAN

WERT, VINTON, WARREN, WASHINGTON,
WAYNE

Special Jurisdictional Note :

Details :

(A) Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site Heavy Construction, Airport Construction Or Railroad Construction Work.

(B) Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work ,Pollution Control,Sewer Plant, Waste Plant, & Water Treatment Facilities, Construction.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Bricklayer Local 97 HevHwy B

Change # : LCN01-2022sksHvyHwy

Craft : Bricklayer Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Cement Mason Bricklayer Power Plants Tunnels Amusement Parks B	\$32.39		\$9.75	\$8.30	\$0.51	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50.95	\$67.15
Apprentice	Percent											
1st year	70.00	\$22.67	\$9.75	\$8.30	\$0.51	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.23	\$52.57
2nd year	80.00	\$25.91	\$9.75	\$8.30	\$0.51	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$44.47	\$57.43
3rd year	90.00	\$29.15	\$9.75	\$8.30	\$0.51	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.71	\$62.29

Special Calculation Note : NOT FOR BUILDING CONSTRUCTION.

Ratio :

- 3 Journeymen to 1 Apprentice
- 6 Journeymen to 2 Apprentice
- 9 Journeymen to 2 Apprentice
- 12 Journeymen to 4 Apprentice
- 15 Journeymen to 5 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

- ADAMS, ALLEN, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DARKE, DEFIANCE, DELAWARE, ERIE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GEAUGA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAKE, LAWRENCE, LICKING, LOGAN, LORAIN, LUCAS, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, PUTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, SUMMIT,

TRUMBULL, TUSCARAWAS, UNION, VAN
WERT, VINTON, WARREN, WASHINGTON,
WAYNE

Special Jurisdictional Note :

Details :

(A) Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site Heavy Construction, Airport Construction Or Railroad Construction Work.

(B) Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work ,Pollution Control,Sewer Plant, Waste Plant, & Water Treatment Facilities, Construction.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Statewide HevHwy

Change # : OCR01-2022sksCementHevHwy

Craft : Cement Mason Effective Date : 05/05/2022 Last Posted : 05/05/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Cement Mason	\$32.49		\$8.45	\$7.35	\$0.65	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$51.26	\$67.50
Apprentice	Percent											
1st Year	70.00	\$22.74	\$8.45	\$7.35	\$0.65	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$41.51	\$52.88
2nd Year	80.00	\$25.99	\$8.45	\$7.35	\$0.65	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$44.76	\$57.76
3rd Year	90.00	\$29.24	\$8.45	\$7.35	\$0.65	\$0.00	\$2.25	\$0.07	\$0.00	\$0.00	\$48.01	\$62.63

Special Calculation Note : Other \$0.07 is for International Training Fund

Ratio :

1 Journeymen to 1 Apprentice
2 to 1 thereafter

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ASHTABULA*, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA*, DARKE, DEFIANCE, DELAWARE, ERIE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON*, GALLIA, GEAUGA*, GREENE, GUERNSEY, HAMILTON, HANCOCK*, HARDIN, HARRISON, HENRY*, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAKE*, LAWRENCE, LICKING, LOGAN, LORAIN, LUCAS*, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, PUTNAM*, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD*, WYANDOT

Special Jurisdictional Note : (A) Highway Construction, Sewer, Waterworks And Utility

Construction, Industrial & Building Site, Heavy
Construction, Airport Construction Or Railroad Construction Work, Power Plant, Tunnels,
Amusement Park, Athletic Stadium Site Work, Waste & Water Plant, Water Treatment Facilities
Construction.

*For Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work, Pollution Control, Sewer
Plant, Waste & Water Plant, Water Treatment Facility Construction work in the following Counties:
Ashtabula, Cuyahoga, Fulton, Geauga, Hancock, Henry, Lake, Lucas, Putnam and Wood Counties,
those counties will use the Cement Mason Statewide Heavy Highway Exhibit B District 1 Wage
Rate.

Details :

This rate replaces the previous Cement Mason Heavy Highway Statewide Rates (Exhibit A and Exhibit B
rates), except for Cement Mason Statewide Heavy Highway Exhibit B Dist 1. sks

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason & Plasterer Local 109

Change # : LCN01-2022sksLoc109

Craft : Cement Effective Date : 06/01/2022 Last Posted : 06/01/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason	\$31.74		\$9.09	\$7.35	\$0.70	\$0.00	\$4.74	\$0.07	\$0.00	\$0.00	\$53.69	\$69.56
Plasterer	\$30.61		\$8.75	\$7.35	\$0.70	\$0.00	\$4.75	\$0.07	\$0.00	\$0.00	\$52.23	\$67.53
Apprentice Cement Mason	Percent											
1st year	70.00	\$22.22	\$9.09	\$7.35	\$0.70	\$0.00	\$4.74	\$0.07	\$0.00	\$0.00	\$44.17	\$55.28
2nd year	79.98	\$25.39	\$9.09	\$7.35	\$0.70	\$0.00	\$4.74	\$0.07	\$0.00	\$0.00	\$47.34	\$60.03
3rd year	90.00	\$28.57	\$9.09	\$7.35	\$0.70	\$0.00	\$4.74	\$0.07	\$0.00	\$0.00	\$50.52	\$64.80
Plasterer Apprentice												
1st year	67.53	\$21.43	\$8.75	\$7.35	\$0.70	\$0.00	\$4.75	\$0.07	\$0.00	\$0.00	\$43.05	\$53.77
2nd year	77.17	\$24.49	\$8.75	\$7.35	\$0.70	\$0.00	\$4.75	\$0.07	\$0.00	\$0.00	\$46.11	\$58.36
3rd year	86.80	\$27.55	\$8.75	\$7.35	\$0.70	\$0.00	\$4.75	\$0.07	\$0.00	\$0.00	\$49.17	\$62.95

Special Calculation Note : Other is for International Training.

Ratio :

- 1 Journeymen to 1 Apprentice
- 5 Journeymen to 2 Apprentice
- 10 Journeyman to 3 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

- CARROLL, HOLMES, MEDINA, PORTAGE,
- STARK, SUMMIT, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

- Finishers when applying colorshake shall be paid an additional \$2.00 per DAY.
- Swing Scaffolds up to 50 feet shall be paid \$0.25 above the Journeymen rate.
- Swing Scaffolds over 50 feet shall be paid \$0.35 above the Journeymen rate.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 540 Inside

Change # : LCN01-2023ibLoc540in

Craft : Electrical Effective Date : 01/11/2023 Last Posted : 01/11/2023

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrician	\$36.28		\$6.60	\$10.50	\$1.12	\$3.63	\$3.99	\$1.20	\$0.00	\$0.00	\$63.32	\$81.46
Apprentice	Percent											
1st 1000 hrs	45.00	\$16.33	\$6.60	\$0.00	\$0.46	\$0.00	\$0.49	\$0.49	\$0.00	\$0.00	\$24.37	\$32.53
2nd 1000 hrs	47.00	\$17.05	\$6.60	\$0.00	\$0.48	\$0.00	\$0.51	\$0.51	\$0.00	\$0.00	\$25.15	\$33.68
3rd 1500 hrs	50.00	\$18.14	\$6.60	\$2.63	\$0.55	\$1.45	\$0.59	\$0.59	\$0.00	\$0.00	\$30.55	\$39.62
4th 1500 hrs	60.00	\$21.77	\$6.60	\$5.25	\$0.66	\$1.74	\$0.71	\$0.71	\$0.00	\$0.00	\$37.44	\$48.32
5th 1500 hrs	70.00	\$25.40	\$6.60	\$7.88	\$0.77	\$2.03	\$0.82	\$0.82	\$0.00	\$0.00	\$44.32	\$57.01
6th 1500 hrs	80.00	\$29.02	\$6.60	\$10.50	\$0.88	\$2.32	\$0.94	\$0.94	\$0.00	\$0.00	\$51.20	\$65.72

Special Calculation Note : OTHER = (NEBF) National Electrical Benefit Fund. Vacation contribution is equal to 8% of the gross weekly wages.

Ratio :

The first person assigned to any job site shall be a Journeyman Wireman. Ratio thereafter:

- 1-3 Journeymen to 2 Apprentices
- 4 to 6 Journeymen up to 4 Apprentices
- 7 to 9 Journeymen up to 6 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

CARROLL*, COLUMBIANA*, HOLMES, MAHONING*, STARK, TUSCARAWAS*, WAYNE*

Special Jurisdictional Note : Carroll County: North half including; Fox, Harrison, Rose and Washington Townships.

Columbiana County: Knox Township only.

Mahoning County: Smith Township only.

Tuscarawas County: That portion North of Auburn, Clay, Rush and York Townships.

Wayne County: That portion south of Baughman, Chester, Green and Wayne Townships.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 540 Inside Lt Commercial Northern

Change # : LCN01-2023ibLoc540in

Craft : Electrical Effective Date : 01/11/2023 Last Posted : 01/11/2023

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Electrician	\$36.28	\$6.60	\$10.50	\$1.12	\$3.63	\$3.99	\$1.20	\$0.00	\$0.00	\$63.32	\$81.46	
CE-3 12,001-14,000 Hrs	\$27.59	\$6.51	\$0.00	\$0.82	\$0.00	\$0.83	\$0.83	\$0.00	\$0.10	\$36.68	\$50.47	
CE-2 10,001-12,000 Hrs	\$21.68	\$6.51	\$0.00	\$0.82	\$0.00	\$0.65	\$0.65	\$0.00	\$0.10	\$30.41	\$41.25	
CE-1 8,001-10,000 Hrs	\$19.71	\$6.51	\$0.00	\$0.82	\$0.00	\$0.59	\$0.59	\$0.00	\$0.10	\$28.32	\$38.18	
CW-4 6,001-8,000 Hrs	\$17.74	\$6.51	\$0.00	\$0.82	\$0.00	\$0.53	\$0.53	\$0.00	\$0.10	\$26.23	\$35.10	
CW-3 4,001-6,000 Hrs	\$15.77	\$6.51	\$0.00	\$0.82	\$0.00	\$0.47	\$0.47	\$0.00	\$0.10	\$24.14	\$32.03	
CW-2 2,001-4,000 Hrs	\$14.78	\$6.51	\$0.00	\$0.82	\$0.00	\$0.44	\$0.44	\$0.00	\$0.10	\$23.09	\$30.48	
CW-1 0-2,000 Hrs	\$13.80	\$6.51	\$0.00	\$0.82	\$0.00	\$0.41	\$0.41	\$0.00	\$0.10	\$22.05	\$28.95	
Apprentice	Percent											
1st 1000 hrs	45.00	\$16.33	\$6.60	\$0.00	\$0.46	\$0.00	\$0.49	\$0.49	\$0.00	\$0.00	\$24.37	\$32.53
2nd 1000 hrs	47.00	\$17.05	\$6.60	\$0.00	\$0.48	\$0.00	\$0.51	\$0.51	\$0.00	\$0.00	\$25.15	\$33.68
3rd 1500 hrs	50.00	\$18.14	\$6.60	\$2.63	\$0.55	\$1.45	\$0.59	\$0.59	\$0.00	\$0.00	\$30.55	\$39.62
4th 1500 hrs	60.00	\$21.77	\$6.60	\$5.25	\$0.66	\$1.74	\$0.71	\$0.71	\$0.00	\$0.00	\$37.44	\$48.32
5th 1500 hrs	70.00	\$25.40	\$6.60	\$7.88	\$0.77	\$2.03	\$0.82	\$0.82	\$0.00	\$0.00	\$44.32	\$57.01
6th 1500 hrs	80.00	\$29.02	\$6.60	\$10.50	\$0.88	\$2.32	\$0.94	\$0.94	\$0.00	\$0.00	\$51.20	\$65.72

Special Calculation Note : OTHER = (NEBF) National Electrical Benefit Fund

Ratio :

1 to 3 Journeymen to 2 Apprentices
 4 to 6 Journeymen up to 4 Apprentices
 7 to 9 Journeymen up to 6 Apprentices

Jurisdiction (* denotes special jurisdictional note) :

CARROLL*, COLUMBIANA*, HOLMES,
 MAHONING*, STARK, TUSCARAWAS*, WAYNE*

Construction Electrician and Construction Wireman Ratio

There shall be a minimum ratio of one inside Journeyman Wireman to every (4) employees of different classifications per jobsite. An Inside Journeyman Wireman is required on the project as the fifth (5th) worker or when apprentices are used.

Special Jurisdictional Note : Carroll County: North half including; Fox, Harrison, Rose and Washington Townships.

Columbiana County: Knox Township only.

Mahoning County: Smith Township only.

Tuscarawas County: That portion North of Auburn, Clay, Rush and York Townships.

Wayne County: That portion south of Baughman, Chester, Green, Wayne and Wooster Townships.

The scope of work for the light commercial agreement shall apply to the following small medical clinics, stand-alone doctor and dentist offices with up to 600 amp service (not attached to a hospital), gas stations/convenience stores, fast food restaurants and franchised chain restaurants including independent bars and taverns, places of worship, funeral homes, nursing homes, assisted living facilities and day-care facilities under 15,000 sq ft, small office, retail/wholesale facilities under 15,000 sq ft with less than 10 units attached, storage units, car washes, express hotels and motels (4 stories or less) without conference or restaurants facilities, residential units (subject to Davis Bacon Rates) small stand-alone manufacturing facilities when free standing and not part of a larger facility (less than 15,000 sq ft) solar projects (500 panels or less) unless other wise covered under this agreement, lighting retrofits (when not associated with remodels involving branch re-circuiting) Lighting retrofits shall be defined as the changing of lamps and ballasts in existing light fixtures and shall also include the one for one replacement of existing fixtures.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 540 Voice Data Video

Change # : LCN01-2022sksLoc540VDV

Craft : Voice Data Video Effective Date : 08/29/2022 Last Posted : 08/26/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Electrical Installer Technician	\$23.26		\$6.50	\$4.79	\$0.58	\$2.33	\$2.07	\$0.77	\$0.00	\$0.00	\$40.30	\$51.93
Cable Puller	\$13.26		\$6.50	\$0.00	\$0.30	\$0.00	\$0.40	\$0.40	\$0.00	\$0.00	\$20.86	\$27.49
Apprentice Starting Prior to 08/01/2020												
6th Step 90%	\$20.93		\$6.50	\$4.79	\$0.51	\$1.67	\$2.07	\$0.68	\$0.00	\$0.00	\$37.15	\$47.61
Apprentice Starting After 08/01/2020	Percent											
1st Step	60.00	\$13.96	\$6.50	\$0.00	\$0.31	\$0.00	\$1.24	\$0.42	\$0.00	\$0.00	\$22.43	\$29.40
2nd Step	65.00	\$15.12	\$6.50	\$3.11	\$0.37	\$1.21	\$1.35	\$0.49	\$0.00	\$0.00	\$28.15	\$35.71
3rd Step	75.00	\$17.44	\$6.50	\$3.59	\$0.42	\$1.40	\$1.55	\$0.57	\$0.00	\$0.00	\$31.48	\$40.20
4th Step	85.00	\$19.77	\$6.50	\$4.07	\$0.48	\$1.58	\$1.76	\$0.64	\$0.00	\$0.00	\$34.80	\$44.69

Special Calculation Note : OTHER = (NEBF) National Electrical Benefit Fund.

VACATION PAY - For Journeymen is 10% of wages and 8% for Apprentices.

Ratio :

1-3 Journeyman to 2 Apprentice
4-6 Journeyman to 4 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL*, COLUMBIANA*, HOLMES,
MAHONING*, STARK, TUSCARAWAS*, WAYNE*

** Exception - When fire alarm falls within the scope of this addendum, Cable Pullers can be used to aid in test and be the 2nd Teledata employee on the job

Special Jurisdictional Note : Carroll County includes the following townships: North half including Fox, Harrison, Rose and Washington. Tuscarawas County includes the following townships: The

portion North of Auburn, Clay, Rush and York. Wayne County includes the following townships: The portion South of Baughman, Chester, Green, and Wayne. Columbiana County includes Knox township. Mahoning County includes Smith township.

Details :

CABLE PULLERS - are for the installation of cable from one termination point to another.

The following work is EXCLUDED from the Teledata Technician work scope:

- * - Installation of computer systems in industrial applications such as assembly lines, robotics, computer controller manufacturing systems.
- * - Installation of conduit and/ or raceways shall be installed by Inside Wireman . On sites where there is no Inside Wireman employed, the Teledata Technician may install raceway, or conduit not greater than 10 feet.
- * - Fire Alarm work on all new construction sites or wherever the fire alarm system is installed in conduit.
- * - All HVAC control work.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 71 High Tension Pipe Type Cable

Change # : LCN01-2022ibLoc7

Craft : Lineman Effective Date : 01/03/2023 Last Posted : 12/28/2022

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Electrical Lineman	\$47.21	\$7.00	\$1.42	\$0.47	\$0.00	\$11.33	\$0.60	\$0.00	\$0.00	\$68.03	\$91.63
Certified Lineman Welder	\$47.21	\$7.00	\$1.42	\$0.47	\$0.00	\$11.33	\$0.60	\$0.00	\$0.00	\$68.03	\$91.63
Certified Cable Splicer	\$47.21	\$7.00	\$1.42	\$0.47	\$0.00	\$11.33	\$0.60	\$0.00	\$0.00	\$68.03	\$91.63
Operator A	\$42.31	\$7.00	\$1.27	\$0.42	\$0.00	\$10.15	\$0.60	\$0.00	\$0.00	\$61.75	\$82.90
Operator B	\$37.47	\$7.00	\$1.12	\$0.37	\$0.00	\$8.99	\$0.60	\$0.00	\$0.00	\$55.55	\$74.28
Operator C	\$30.14	\$7.00	\$0.90	\$0.30	\$0.00	\$7.23	\$0.60	\$0.00	\$0.00	\$46.17	\$61.24
Groundman 0-12 months Exp	\$23.61	\$7.00	\$0.71	\$0.24	\$0.00	\$5.67	\$0.60	\$0.00	\$0.00	\$37.83	\$49.64
Groundman 0-12 months Exp w/CDL	\$25.97	\$7.00	\$0.78	\$0.26	\$0.00	\$6.23	\$0.60	\$0.00	\$0.00	\$40.84	\$53.82
Groundman 1 yr or more	\$25.97	\$7.00	\$0.78	\$0.26	\$0.00	\$6.23	\$0.60	\$0.00	\$0.00	\$40.84	\$53.82
Groundman 1 yr or more w/CDL	\$30.69	\$7.00	\$0.92	\$0.31	\$0.00	\$7.37	\$0.60	\$0.00	\$0.00	\$46.89	\$62.24
Equipment Mechanic A	\$37.47	\$7.00	\$1.12	\$0.37	\$0.00	\$8.99	\$0.60	\$0.00	\$0.00	\$55.55	\$74.28
Equipment Mechanic B	\$33.80	\$7.00	\$1.01	\$0.34	\$0.00	\$8.11	\$0.60	\$0.00	\$0.00	\$50.86	\$67.76
Equipment Mechanic C	\$30.14	\$7.00	\$0.90	\$0.30	\$0.00	\$7.23	\$0.60	\$0.00	\$0.00	\$46.17	\$61.24
X-Ray Technician	\$47.21	\$7.00	\$1.42	\$0.47	\$0.00	\$11.33	\$0.60	\$0.00	\$0.00	\$68.03	\$91.63

Apprentice	Percent											
1st 1000 hrs	60.00	\$28.33	\$7.00	\$0.85	\$0.28	\$0.00	\$6.80	\$0.60	\$0.00	\$0.00	\$43.86	\$58.02
2nd 1000 hrs	65.00	\$30.69	\$7.00	\$0.92	\$0.31	\$0.00	\$7.37	\$0.60	\$0.00	\$0.00	\$46.89	\$62.23
3rd 1000 hrs	70.00	\$33.05	\$7.00	\$0.99	\$0.33	\$0.00	\$7.93	\$0.60	\$0.00	\$0.00	\$49.90	\$66.42
4th 1000 hrs	75.00	\$35.41	\$7.00	\$1.06	\$0.35	\$0.00	\$8.50	\$0.60	\$0.00	\$0.00	\$52.92	\$70.62
5th 1000 hrs	80.00	\$37.77	\$7.00	\$1.13	\$0.38	\$0.00	\$9.06	\$0.60	\$0.00	\$0.00	\$55.94	\$74.82
6th 1000 hrs	85.00	\$40.13	\$7.00	\$1.20	\$0.40	\$0.00	\$9.63	\$0.60	\$0.00	\$0.00	\$58.96	\$79.02
7th 1000 hrs	90.00	\$42.49	\$7.00	\$1.27	\$0.42	\$0.00	\$10.20	\$0.60	\$0.00	\$0.00	\$61.98	\$83.22

Special Calculation Note : Other is Health Retirement Account

Operator "A"

John Henry Rock Drill, D-6 (or equivalent) and above, Trackhoe Digger, (320 Track excavator), Cranes (greater then 25 tons and less than 45 tons).

Operator "B"

Cranes (greater than 6 tons and up to 25 tons), Backhoes, Road Tractor, Dozer up to D-5, Pressure Digger- wheeled or tracked, all Tension wire Stringing equipment.

Operator "C"

Trench, Backhoe, Riding type vibratory Compactor, Ground Rod Driver, Boom Truck (6 ton & below), Skid Steer Loaders, Material Handler.

*All Operators of cranes 45 ton or larger shall be paid the journeyman rate of pay. \$0.30 is for Health Retirement Account.

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DARKE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GEAUGA, GREENE, GUERNSEY, HAMILTON, HARRISON, HIGHLAND, HOCKING, HOLMES, JACKSON, JEFFERSON, KNOX, LAKE, LAWRENCE, LICKING, LOGAN, LORAIN, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, RICHLAND, ROSS, SCIOTO, SHELBY, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, UNION, VINTON,

WARREN, WASHINGTON, WAYNE

Special Jurisdictional Note :

Details :

Heli - Arc Welding will be paid \$.30 above Journeyman rate. Additional compensation of 10% over the Journeyman Lineman and Journeyman Technician for performing work on structures outside of buildings such as water towers, smoke stacks, radio and television towers, more than 75' above the ground.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 71 Outside Utility Power

Change # : LCN01-2022ibLoc7

Craft : Lineman Effective Date : 01/03/2023 Last Posted : 12/28/2022

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Electrical Lineman	\$44.73	\$7.00	\$1.34	\$0.45	\$0.00	\$10.74	\$0.60	\$0.00	\$0.00	\$64.86	\$87.22
Substation Technician	\$44.73	\$7.00	\$1.34	\$0.45	\$0.00	\$10.74	\$0.60	\$0.00	\$0.00	\$64.86	\$87.22
Cable Splicer	\$46.84	\$7.00	\$1.41	\$0.47	\$0.00	\$11.24	\$0.60	\$0.00	\$0.00	\$67.56	\$90.98
Operator A	\$40.11	\$7.00	\$1.20	\$0.40	\$0.00	\$9.63	\$0.60	\$0.00	\$0.00	\$58.94	\$78.99
Operator B	\$35.47	\$7.00	\$1.06	\$0.35	\$0.00	\$8.51	\$0.60	\$0.00	\$0.00	\$52.99	\$70.72
Operator C	\$28.50	\$7.00	\$0.86	\$0.29	\$0.00	\$6.84	\$0.60	\$0.00	\$0.00	\$44.09	\$58.34
Groundman 0-12 months Exp	\$22.37	\$7.00	\$0.67	\$0.22	\$0.00	\$5.37	\$0.60	\$0.00	\$0.00	\$36.23	\$47.42
Groundman 0-12 months Exp w/CDL	\$24.60	\$7.00	\$0.74	\$0.25	\$0.00	\$5.90	\$0.60	\$0.00	\$0.00	\$39.09	\$51.39
Groundman 1 yr or more	\$24.60	\$7.00	\$0.74	\$0.25	\$0.00	\$5.90	\$0.60	\$0.00	\$0.00	\$39.09	\$51.39
Groundman 1 yr or more w/CDL	\$29.07	\$7.00	\$0.87	\$0.29	\$0.00	\$6.98	\$0.60	\$0.00	\$0.00	\$44.81	\$59.35
Equipment Mechanic A	\$35.47	\$7.00	\$1.06	\$0.35	\$0.00	\$8.51	\$0.60	\$0.00	\$0.00	\$52.99	\$70.72
Equipment Mechanic B	\$31.99	\$7.00	\$0.96	\$0.32	\$0.00	\$7.68	\$0.60	\$0.00	\$0.00	\$48.55	\$64.54
Equipment Mechanic C	\$28.50	\$7.00	\$0.86	\$0.29	\$0.00	\$6.84	\$0.60	\$0.00	\$0.00	\$44.09	\$58.34
Line Truck w/uuger	\$31.51	\$7.00	\$0.95	\$0.32	\$0.00	\$7.56	\$0.60	\$0.00	\$0.00	\$47.94	\$63.70
Apprentice	Percent										

1st 1000 hrs	60.00	\$26.84	\$7.00	\$0.81	\$0.27	\$0.00	\$6.44	\$0.60	\$0.00	\$0.00	\$41.96	\$55.38
2nd 1000 hrs	65.00	\$29.07	\$7.00	\$0.87	\$0.29	\$0.00	\$6.98	\$0.60	\$0.00	\$0.00	\$44.81	\$59.35
3rd 1000 hrs	70.00	\$31.31	\$7.00	\$0.94	\$0.31	\$0.00	\$7.51	\$0.60	\$0.00	\$0.00	\$47.67	\$63.33
4th 1000 hrs	75.00	\$33.55	\$7.00	\$1.01	\$0.34	\$0.00	\$8.05	\$0.60	\$0.00	\$0.00	\$50.55	\$67.32
5th 1000 hrs	80.00	\$35.78	\$7.00	\$1.17	\$0.36	\$0.00	\$8.59	\$0.60	\$0.00	\$0.00	\$53.50	\$71.40
6th 1000 hrs	85.00	\$38.02	\$7.00	\$1.14	\$0.38	\$0.00	\$9.12	\$0.60	\$0.00	\$0.00	\$56.26	\$75.27
7th 1000 hrs	90.00	\$40.26	\$7.00	\$1.21	\$0.40	\$0.00	\$9.66	\$0.60	\$0.00	\$0.00	\$59.13	\$79.26

Special Calculation Note : Other is Health Retirement Account

Operator "A"

John Henry Rock Drill, D-6 (or equivalent) and above, Trackhoe Digger, (320 Track excavator), Cranes (greater then 25 tons and less than 45 tons).

Operator "B"

Cranes (greater than 6 tons and up to 25 tons), Backhoes, Road Tractor, Dozer up to D-5, Pressure Digger- wheeled or tracked, all Tension wire Stringing equipment.

Operator "C"

Trench, Backhoe, Riding type vibratory Compactor, Ground Rod Driver, Boom Truck (6 ton & below), Skid Steer Loaders, Material Handler.

Ratio :

(1) Journeyman Lineman to (1) Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DARKE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GEAUGA, GREENE, GUERNSEY, HAMILTON, HARRISON, HIGHLAND, HOCKING, HOLMES, JACKSON, JEFFERSON, KNOX, LAKE, LAWRENCE, LICKING, LOGAN, LORAIN, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, RICHLAND, ROSS, SCIOTO, SHELBY, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, UNION, VINTON, WARREN, WASHINGTON, WAYNE

Special Jurisdictional Note : 0.30 is for Health Retirement Account.

Details :

Heli - Arc Welding will be paid \$.30 above Journeyman rate. Additional compensation of 10% over the

Journeyman Lineman and Journeyman Technician for performing work on structures outside of buildings such as water towers, smoke stacks, radio and television towers, more than 75' above the ground.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 71 Outside (North Central Ohio)

Change # : LCN01-2022sksLoc71CentralOhio

Craft : Lineman Effective Date : 08/04/2022 Last Posted : 08/04/2022

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Electrical Lineman	\$41.52	\$7.00	\$1.25	\$0.42	\$0.00	\$7.89	\$0.06	\$0.00	\$0.00	\$58.14	\$78.90
Traffic Signal & Lighting Journeyman	\$39.93	\$7.00	\$1.20	\$0.40	\$0.00	\$7.59	\$0.06	\$0.00	\$0.00	\$56.18	\$76.15
Equipment Operator	\$36.47	\$7.00	\$1.09	\$0.36	\$0.00	\$6.93	\$0.06	\$0.00	\$0.00	\$51.91	\$70.15
Groundman 0-12 months (W/O CDL)	\$22.11	\$7.00	\$0.66	\$0.22	\$0.00	\$4.20	\$0.06	\$0.00	\$0.00	\$34.25	\$45.31
Groundman 0-12 months (W/CDL) plus	\$24.16	\$7.00	\$0.72	\$0.24	\$0.00	\$4.59	\$0.06	\$0.00	\$0.00	\$36.77	\$48.85
Groundsman greater than 1 Year (W/CDL)	\$26.21	\$7.00	\$0.79	\$0.26	\$0.00	\$4.98	\$0.06	\$0.00	\$0.00	\$39.30	\$52.41
Traffic Signal Apprentices											
1st 1,000 hours	\$23.96	\$7.00	\$0.72	\$0.24	\$0.00	\$4.55	\$0.06	\$0.00	\$0.00	\$36.53	\$48.51
2nd 1,000 hours	\$25.95	\$7.00	\$0.78	\$0.26	\$0.00	\$4.93	\$0.06	\$0.00	\$0.00	\$38.98	\$51.96
3rd 1,000 hours	\$27.95	\$7.00	\$0.84	\$0.28	\$0.00	\$5.31	\$0.06	\$0.00	\$0.00	\$41.44	\$55.42
4th 1,000 hours	\$29.95	\$7.00	\$0.90	\$0.30	\$0.00	\$5.69	\$0.06	\$0.00	\$0.00	\$43.90	\$58.87
5th 1,000 hours	\$31.94	\$7.00	\$0.96	\$0.32	\$0.00	\$6.07	\$0.06	\$0.00	\$0.00	\$46.35	\$62.32
6th 1,000 hours	\$35.94	\$7.00	\$1.08	\$0.36	\$0.00	\$6.83	\$0.06	\$0.00	\$0.00	\$51.27	\$69.24
Apprentice Lineman	Percent										

1st 1,000 Hours	60.00	\$24.91	\$7.00	\$0.75	\$0.25	\$0.00	\$4.73	\$0.06	\$0.00	\$0.00	\$37.70	\$50.16
2nd 1,000 Hours	65.00	\$26.99	\$7.00	\$0.81	\$0.27	\$0.00	\$5.13	\$0.06	\$0.00	\$0.00	\$40.26	\$53.75
3rd 1,000 Hours	70.00	\$29.06	\$7.00	\$0.87	\$0.29	\$0.00	\$5.52	\$0.06	\$0.00	\$0.00	\$42.80	\$57.34
4th 1,000 Hours	75.00	\$31.14	\$7.00	\$0.93	\$0.31	\$0.00	\$5.92	\$0.06	\$0.00	\$0.00	\$45.36	\$60.93
5th 1,000 Hours	80.00	\$33.22	\$7.00	\$1.00	\$0.33	\$0.00	\$6.31	\$0.06	\$0.00	\$0.00	\$47.92	\$64.52
6th 1,000 Hours	85.00	\$35.29	\$7.00	\$1.06	\$0.35	\$0.00	\$6.71	\$0.06	\$0.00	\$0.00	\$50.47	\$68.12
7th 1,000 Hours	90.00	\$37.37	\$7.00	\$1.12	\$0.37	\$0.00	\$7.10	\$0.06	\$0.00	\$0.00	\$53.02	\$71.70

Special Calculation Note : Other is Safety & Education Fund.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

BELMONT, CARROLL, HARRISON, HOLMES, JEFFERSON, MEDINA, PORTAGE, STARK, SUMMIT, WAYNE

Special Jurisdictional Note :

Details :

A groundman when directed shall assist a Journeyman in the performance of his/her work on the ground, including the use of hand tools. A Groundman under no circumstances shall climb poles, towers, ladders, or work from an elevated platform or bucket truck.

No more than three (3) Groundmen shall work alone. Jobs with more than three Groundmen shall be supervised by a Groundcrew Foreman, Journeyman Lineman, Journeyman Traffic Signal Technician or an Equipment Operator.

Scope of Work: installation and maintenance of highway and street lighting, highway and street sign lighting, electronic message boards and traffic control systems, camera systems, traffic signal work, substation and line construction including overhead and underground projects for private and industrial work as in accordance with the IBEW Constitution. This Agreement includes the operation of all tools and equipment necessary for the installation of the above projects.

Prevailing Wage Rate Skilled Crafts

Name of Union: Electrical Local 71 Voice Data Video Outside

Change # : LCR01-2017fbLoc71VDV

Craft : Voice Data Video Effective Date : 10/18/2017 Last Posted : 10/18/2017

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Electrical Installer Technician I	\$23.46	\$5.50	\$0.70	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$29.96	\$41.69
Installer Technician II	\$22.37	\$5.50	\$0.67	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$28.84	\$40.03
Equipment Operator I	\$22.37	\$5.50	\$0.67	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$28.84	\$40.03
Equipment Operator II	\$18.43	\$5.50	\$0.55	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$24.78	\$33.99
Installer Repair Outside	\$22.37	\$5.50	\$0.67	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$28.84	\$40.03
Ground Driver V.CDL	\$15.83	\$5.50	\$0.47	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$22.10	\$30.01
Groundman	\$13.24	\$5.50	\$0.40	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$19.44	\$26.06
Cable Splicer	\$23.46	\$5.50	\$0.70	\$0.00	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00	\$29.96	\$41.69

Special Calculation Note :

Ratio :

Jurisdiction (* denotes special jurisdictional note) :
 ADAMS, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DARKE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GEauga, GREENE, GUERNSEY, HAMILTON, HARRISON, HIGHLAND, HOCKING, HOLMES, JACKSON, JEFFERSON, KNOX, LAKE, LAWRENCE, LICKING, LOGAN, LORAIN, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE, RICHLAND, ROSS, SCIOTO, SHELBY, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, UNION, VINTON, WARREN, WASHINGTON, WAYNE

Special Jurisdictional Note :

Details :

Cable Splicer: Inspect and test lines or cables, analyze results, and evaluate transmission characteristics. Cover conductors with insulation or seal splices with moisture-proof covering. Install, splice, test, and repair cables using tools or mechanical equipment. This will include the splicing of

fiber.

Journeyman Technician I: Must know all aspects of telephone and cable work. This is to include aerial, underground, and manhole work. Must know how to climb and run bucket. Must have all the tools required to perform these tasks. Must be able to be responsible for the safety of the crew at all times. Must also have CDL license and have at least 5 years experience.

Installer/Repairman: Perform tasks of repairing, installing, and testing phone and CATV services.

Technician II: Have at least three years of telephone and CATV experience. Must have the knowledge of underground, aerial, and manhole work. Must be able to climb and operate bucket. Must have CDL. Must have all tools needed to perform these tasks.

Equipment Operator I: Able to operate a digger derrick or bucket truck. Have at least 5 years of experience and must have a valid CDL license.

Equipment Operator II: Able to operate a digger derrick or bucket truck. Have at least 3 years of experience and must have a valid CDL license.

Groundman W/CDL: Must have a valid CDL license and be able to perform tasks such as: climbing poles, pulling downguys, making up material, and getting appropriate tools for the job. Must have at least 5 year's experience.

Groundman: Perform tasks such as: climbing poles, pulling downguys, making up material, and getting appropriate tools for the job. Experience 0-5 years.

Prevailing Wage Rate Skilled Crafts

Name of Union: Elevator Local 45

Change # : LCN01-2022sksLoc45

Craft : Elevator Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Elevator Mechanic	\$53.30		\$16.03	\$10.71	\$0.65	\$4.26	\$9.50	\$2.01	\$0.00	\$0.00	\$96.46	\$123.11
Assistant Mechanic	\$42.64		\$16.03	\$10.71	\$0.65	\$3.41	\$9.50	\$1.61	\$0.00	\$0.00	\$84.55	\$105.87
Helper	\$37.31		\$16.03	\$10.71	\$0.65	\$2.98	\$9.50	\$1.61	\$0.00	\$0.00	\$78.79	\$97.45
Apprentice	Percent											
Apprentice												
0-6 months Probation	50.00	\$26.65	\$0.00	\$0.00	\$0.00	\$1.60	\$0.00	\$0.00	\$0.00	\$0.00	\$28.25	\$41.57
1st year	55.00	\$29.32	\$16.03	\$10.71	\$0.65	\$1.76	\$9.50	\$1.10	\$0.00	\$0.00	\$69.06	\$83.72
2nd year	65.01	\$34.65	\$16.03	\$10.71	\$0.65	\$2.08	\$9.50	\$1.30	\$0.00	\$0.00	\$74.92	\$92.25
3rd year	70.00	\$37.31	\$16.03	\$10.71	\$0.65	\$2.24	\$9.50	\$1.40	\$0.00	\$0.00	\$77.84	\$96.49
4th year	80.00	\$42.64	\$16.03	\$10.71	\$0.65	\$2.56	\$9.50	\$1.61	\$0.00	\$0.00	\$83.70	\$105.02

Special Calculation Note : *Other is Holiday Pay

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

The total number of Helpers & Apprentices employed shall not exceed the number of Mechanics on any one job, except on jobs where (2) teams or more are working, (1) extra Helper or Apprentice may be employed for the first (2) teams and an extra Helper or Apprentice for each additional (3) teams.

Special Jurisdictional Note :

Details :

Vacation 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.

Prevailing Wage Rate Skilled Crafts

Name of Union: Glazier Local 1162

Change # : LCN01-2022sksLoc1162

Craft : Glazier Effective Date : 07/08/2022 Last Posted : 07/08/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Glazier	\$29.02		\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$43.04	\$57.55
Apprentice	Percent											
1st 6 months	55.00	\$15.96	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$29.98	\$37.96
2nd 6 months	60.00	\$17.41	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.43	\$40.14
3rd 6 months	65.00	\$18.86	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$32.88	\$42.31
4th 6 months	70.00	\$20.31	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.33	\$44.49
5th 6 months	75.02	\$21.77	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.79	\$46.68
6th 6 months	80.00	\$23.22	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.24	\$48.84
7th 6 months	85.00	\$24.67	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$38.69	\$51.02
8th 6 months	90.00	\$26.12	\$6.88	\$6.79	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40.14	\$53.20

Special Calculation Note :

Ratio :

1 Journeyman to 1 Apprentice
2 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ASHLAND, CARROLL, COSHOCTON, HOLMES, MEDINA, PORTAGE, RICHLAND, STARK, SUMMIT, TUSCARAWAS, WAYNE

Special Jurisdictional Note :

Details :

Add \$1.25 per hour for High Pay which is all work that requires the employee be supported by equipment which hangs or suspends from the roof of a building or structure including all repelling .

Prevailing Wage Rate Skilled Crafts

Name of Union: Ironworker Local 550

Change # : LCN01-2022sksLoc550

Craft : Ironworker Effective Date : 05/01/2022 Last Posted : 04/27/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Ironworker	\$30.97		\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$52.87	\$68.35
Apprentice	Percent											
1st 6 months	65.00	\$20.13	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$42.03	\$52.10
2nd 6 months	69.00	\$21.37	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$43.27	\$53.95
3rd 6 months	73.00	\$22.61	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$44.51	\$55.81
4th 6 months	77.00	\$23.85	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$45.75	\$57.67
5th 6 months	81.00	\$25.09	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$46.99	\$59.53
6th 6 months	85.03	\$26.33	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$48.23	\$61.40
7th 6 months	90.00	\$27.87	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$49.77	\$63.71
8th 6 months	95.00	\$29.42	\$8.98	\$9.02	\$0.76	\$0.00	\$2.73	\$0.41	\$0.00	\$0.00	\$51.32	\$66.03

Special Calculation Note : OTHER IS: JOURNEYMAN UPGRADE AND WELLNESS FUND.

Ratio :

- 4 Journeymen to 1 Apprentice
- 1 Journeymen to 1 Apprentice, spinning of cable for suspension bridge
- 1 Journeymen to 1 Apprentice, ornamental work
- 2 Journeymen to 1 Apprentice, reinforcing work
- 1 Journeymen to 2 Apprentice, roadway

Jurisdiction (* denotes special jurisdictional note) :

- ASHLAND, CARROLL, COLUMBIANA*,
- COSHOCTON, HOLMES*, HURON,
- MAHONING*, MEDINA*, PORTAGE*,
- RICHLAND, STARK, SUMMIT*, TUSCARAWAS,
- WAYNE

Special Jurisdictional Note : The jurisdictional line between Local 17 and Local 550 is determined as follows: All territory North of Old Route 224 line to be within the jurisdiction of Local 17. All territory South of Old Route 224 line is to be the jurisdiction of Local 550, except for everything within the City limits of Barberton which shall be under the jurisdiction of Local 17.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Ironworker Local 550 Glass & Curtain Wall

Change # : LCN01-2017fbLoc550

Craft : Ironworker Effective Date : 07/01/2017 Last Posted : 06/28/2017

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Ironworker Glass & Curtain Wall	\$22.00		\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$36.89	\$47.89
Apprentice	Percent											
1st 6 months	60.00	\$13.20	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$28.09	\$34.69
2nd 6 months	65.00	\$14.30	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$29.19	\$36.34
3rd 6 months	70.00	\$15.40	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$30.29	\$37.99
4th 6 months	75.00	\$16.50	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$31.39	\$39.64
5th 6 months	80.00	\$17.60	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$32.49	\$41.29
6th 6 months	85.00	\$18.70	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$33.59	\$42.94
7th 6 months	90.00	\$19.80	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$34.69	\$44.59
8th 6 months	95.00	\$20.90	\$7.00	\$7.47	\$0.09	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$35.79	\$46.24

Special Calculation Note :

Ratio :

Apprentice to 1 Journeymen

Jurisdiction (* denotes special jurisdictional note) :

- ASHLAND, CARROLL, COLUMBIANA*,
- COSHOCTON, HOLMES, HURON*, MAHONING*,
- MEDINA*, PORTAGE*, RICHLAND, STARK,
- SUMMIT*, TUSCARAWAS, WAYNE

Special Jurisdictional Note : The jurisdictional line between Locals 17 and 550 is determined as follows: All territory North of Old Route 224 line is to be within the jurisdiction of Local 17. All territory South of Old Route 224 line is to be the jurisdiction of Local 550, except for everything within the City limits of Barberton which shall be under the jurisdiction of Local 17.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Hwy 2

Change # : LCN01-2022sksLaborHwy2

Craft : Laborer Group 1 Effective Date : 06/01/2022 Last Posted : 06/01/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Laborer Group 1	\$34.95		\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$47.15	\$64.62
Group 2	\$35.12		\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$47.32	\$64.88
Group 3	\$35.45		\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$47.65	\$65.37
Group 4	\$35.90		\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$48.10	\$66.05
Watch Person	\$27.25		\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$39.45	\$53.08
Apprentice	Percent											
0-1000 hrs	60.00	\$20.97	\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$33.17	\$43.66
1001-2000 hrs	70.02	\$24.47	\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$36.67	\$48.91
2001-3000 hrs	80.00	\$27.96	\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$40.16	\$54.14
3001-4000 hrs	90.00	\$31.46	\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$43.66	\$59.38
More Than 4000 hrs	100.00	\$34.95	\$7.70	\$3.95	\$0.45	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$47.15	\$64.62

Special Calculation Note : Watchman has no Apprentices. Tunnel Laborer rate with air-pressurized add \$1.00 to the above wage rate.

Ratio :

1 Journeymen to 1 Apprentice
3 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL, WOOD

Special Jurisdictional Note : Hod Carriers and Common Laborers - Heavy, Highway, Sewer, Waterworks, Utility, Airport, Railroad, Industrial and Building Site, Sewer Plant, Waste Water Treatment Facilities Construction

Details :

Group 1

Laborer (Construction); Plant Laborer or Yardman, Right-of-way Laborer, Landscape Laborer, Highway Lighting Worker, Signalization Worker, (Swimming) Pool Construction Laborer, Utility Man, *Bridge Man, Handyman, Joint Setter, Flagperson, Carpenter Helper, Waterproofing Laborer, Slurry Seal, Seal Coating, Surface Treatment or Road Mix Laborer, Riprap Laborer & Grouter, Asphalt Laborer, Dump Man (batch trucks), Guardrail & Fence Installer, Mesh Handler & Placer, Concrete Curing Applicator, Scaffold Erector, Sign Installer, Hazardous Waste (level D), Diver Helper, Zone Person and Traffic Control.

*Bridge Man will perform work as per the October 31, 1949, memorandum on concrete forms, by and between the United Brotherhood of Carpenters and Joiners of America and the Laborers' International Union of North America, which states in; "the moving, cleaning, oiling and carrying to the next point of erection, and the stripping of forms which are not to be re-used, and forms on all flat arch work shall be done by members of the Laborers' International Union of North America."

Group 2

Asphalt Raker, Screwman or Paver, Concrete Puddler, Kettle Man (pipeline), All Machine-Driven Tools (Gas, Electric, Air), Mason Tender, Brick Paver, Mortar Mixer, Skid Steer, Sheeting & Shoring Person, Surface Grinder Person, Screedperson, Water Blast, Hand Held Wand, Power Buggy or Power Wheelbarrow, Paint Striper, Plastic fusing Machine Operator, Rodding Machine Operator, Pug Mill Operator, Operator of All Vacuum Devices Wet or Dry, Handling of all Pumps 4 inches and under (gas, air or electric), Diver, Form Setter, Bottom Person, Welder Helper (pipeline), Concrete Saw Person, Cutting with Burning Torch, Pipe Layer, Hand Spiker (railroad), Underground Person (working in sewer and waterline, cleaning, repairing and reconditioning). Tunnel Laborer (without air), Caisson, Cofferdam (below 25 feet deep), Air Track and Wagon Drill, Sandblaster Nozzle Person, Hazardous Waste (level B), ***Lead Abatement, Hazardous Waste (level C)

***Includes the erecting of structures for the removal, including the encapsulation and containment of Lead abatement process.

Group 3

Blast and Powder Person, Muckers will be defined as shovel men working directly with the miners, Wrencher (mechanical joints & utility pipeline), Yarnier, Top Lander, Hazardous Waste (level A), Concrete Specialist, Curb Setter and Cutter, Grade Checker, Concrete Crew in Tunnels. Utility pipeline Tappers, Waterline, Caulker, Signal Person will receive the rate equal to the rate paid the Laborer classification for which the Laborer is signaling.

Group 4

Miner, Welder, Guniting Nozzle Person

A.) The Watchperson shall be responsible to patrol and maintain a safe traffic zone including but not limited to barrels, cones, signs, arrow boards, message boards etc.

The responsibility of a watchperson is to see that the equipment, job and office trailer etc. are secure.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 1015 Building

Change # : LCN01-2022sksLoc1015

Craft : Laborer Effective Date : 09/08/2022 Last Posted : 09/28/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Laborer Group 1	\$30.72		\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$42.87	\$58.23
Group 2	\$31.72		\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$43.87	\$59.73
Group 3	\$32.72		\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$44.87	\$61.23
Group 4	\$32.67		\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$44.82	\$61.16
Group 5	\$23.76		\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$35.91	\$47.79
Apprentice	Percent											
0-1000 hrs	60.00	\$18.43	\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$30.58	\$39.80
1001-2000 hrs	70.00	\$21.50	\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$33.65	\$44.41
2001-3000 hrs	80.00	\$24.58	\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$36.73	\$49.01
3001-4000 hrs	90.00	\$27.65	\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$39.80	\$53.62
More than 4000 hrs	100.00	\$30.72	\$7.70	\$3.95	\$0.40	\$0.00	\$0.00	\$0.00	\$0.10	\$0.00	\$42.87	\$58.23

Special Calculation Note : No special calculations for this skilled craft wage rate are required at this time.

Ratio :

1 Journeyman to 1 Apprentice
4 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, STARK, WAYNE

Special Jurisdictional Note :

Details :

Group 1

Building & Construction Laborer, Signalman, Flagman, Tool Cribman, Carpenter Tender, Finisher Tender, Concrete Handler, Utility Construction Laborer, Guard Rail Erectors, Hazardous Waste (Level D)

Group 2

Bottom Man, Scaffold Builder, Tunnel laborer, Pipe Layer, Air and Power Driven Tools, Burner on Demolition Work, Swinging Scaffold, Mucker, Caisson Worker, Cofferdam Worker, Powder Men and

Dynamite Blaster, Creosote Worker, Form Setter, Plasterer Tender, Hod Carrier Laser Beam Set-up Man, All confined space work, furnaces, pickel tubs, acid-pits, and Hazardous Waste Level (C)

Group 3

Mason Tender, Mortar Mixer, Stonemason Tender, skid-loader, Hazardous Waste Level (B)

Group 4

Gunnite Operator, Hazardous Waste Level (A)

Group 5

Watchman

Prevailing Wage Rate Skilled Crafts

Name of Union: Operating Engineers - Building Local 18 - Zone III

Change # : LCN01-2022sksLoc18zone3

Craft : Operating Engineer Effective Date : 05/25/2022 Last Posted : 05/25/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Operator Group A	\$40.19		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.44	\$76.53
Operator Group B	\$40.07		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.32	\$76.35
Operator Group C	\$39.03		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$55.28	\$74.79
Operator Group D	\$37.85		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$54.10	\$73.03
Operator Group E	\$32.39		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$48.64	\$64.83
Master Mechanic	\$40.44		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.69	\$76.91
Cranes & Mobile Concrete Pumps 150'-180'	\$40.69		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.94	\$77.28
Cranes & Mobile Concrete Pumps 180'-249'	\$41.19		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$57.44	\$78.03
Cranes & Mobile Concrete Pumps 249' and over	\$41.44		\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$57.69	\$78.41
Apprentice	Percent											
1st Year	50.00	\$20.09	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$36.35	\$46.39
2nd Year	60.00	\$24.11	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$40.36	\$52.42
3rd Year	70.00	\$28.13	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$44.38	\$58.45
4th Year	80.00	\$32.15	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$48.40	\$64.48
Field Mechanic Trainee												
1st Year	50.00	\$20.09	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$36.35	\$46.39
2nd Year	60.00	\$24.11	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$40.36	\$52.42

3rd Year	70.00	\$28.13	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$44.38	\$58.45
4th Year	80.00	\$32.15	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$48.40	\$64.48

Special Calculation Note : Other: Education & Safety \$0.09; *Misc is National Training

Ratio :

For every (3) Operating Engineer Journeymen employed by the company there may be employed (1) Registered Apprentice or trainee Engineer through the referral when they are available. An apprentice, while employed as part of a crew per Article VIII, paragraph 78, will not be subject to the apprenticeship ratios in this collective bargaining agreement

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, JACKSON, JEFFERSON, KNOX, LAWRENCE, LICKING, LOGAN, MADISON, MARION, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PREBLE, PUTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WYANDOT

Special Jurisdictional Note :

Details :

Note: There will be a 10% increase for the apprentices on top of the percentages listed above provided they are operating mobile equipment. Mechanic Trainees will receive 10% increase if required to have CDL

Group A- Barrier Moving Machines; Boiler Operators or Compressor Operators, when compressor or boiler is mounted on crane (Piggyback Operation); Boom Trucks (all types); Cableways Cherry Pickers; Combination - Concrete Mixers & Towers; All Concrete Pumps with Booms; Cranes (all types); Compact Cranes, track or rubber over 4,000 pounds capacity; Cranes self-erecting, stationary, track or truck (all configurations); Derricks (all types); Draglines; Dredges (dipper, clam or suction) 3-man crew; Elevating Graders or Euclid Loaders; Floating Equipment; Forklift (rough terrain with winch/hoist); Gradalls; Helicopter Operators, hoisting building materials; Helicopter Winch Operators, Hoisting building materials; Hoes (All types); Hoists (with two or more drums in use); Horizontal Directional Drill; Hydraulic Gantry (lift system); Laser Finishing Machines; Laser Screed and like equipment; Lift Slab or Panel Jack Operators; Locomotives (all types); Maintenance Operator/Technician(Mechanic Operator/Technician and/or Welder); Mixers, paving (multiple drum); Mobile Concrete Pumps, with booms; Panelboards, (all types on site); Pile Drivers; Power Shovels; Prentice Loader; Rail Tamper (with automatic lifting and aligning device); Rotary Drills (all), used on caissons for foundations and sub-structure; Side Booms; Slip Form Pavers; Straddle Carriers (Building Construction on site); Trench Machines (over 24" wide); Tug Boats.

Group B - Articulating/end dumps (minus \$4.00/hour from Group B rate); Asphalt Pavers; Bobcat-type and/or skid steer loader with hoe attachment greater than 7000 lbs.; Bulldozers; CMI type Equipment; Concrete Saw, Vermeer-type; Endloaders; Hydro Milling Machine; Kolman-type Loaders (Dirt Loading); Lead Greasemen; Mucking Machines; Pettibone-Rail Equipment; Power Graders; Power Scoops; Power Scrapers; Push Cats;, Rotomills (all), grinders and planers of all types.

Group C - A-Frames; Air Compressors, Pressurizing Shafts or Tunnels; All Asphalt Rollers; Bobcat-type and/or Skid Steer Loader with or without attachments; Boilers (15 lbs. pressure and over); All Concrete Pumps (without booms with 5 inch system); Fork Lifts (except masonry); Highway Drills - all types (with integral power); Hoists (with one drum); House Elevators (except those automatic call button controlled), Buck Hoists, Transport Platforms, Construction Elevators; Hydro Vac/Excavator (when a second person is needed, the rate of pay will be "Class E"); Man Lifts; Material hoist/elevators; Mud Jacks; Pressure Grouting; Pump Operators (installing or operating Well Points or other types of Dewatering Systems); Pumps (4 inches and over discharge); Railroad Tie (Inserter/Remover); Rotovator (Lime-Soil Stabilizer); Submersible Pumps (4" and over discharge); Switch & Tie Tampers (without lifting and aligning device); Trench Machines (24" and under); Utility Operators.

Group D - Backfillers and Tampers; Ballast Re-locator; Batch Plant Operators; Bar and Joint Installing Machines; Bull Floats; Burlap and Curing Machines; Clefplanes; Compressors, on building construction; Concrete Mixers, more than one bag capacity; Concrete Mixers, one bag capacity (side loaders); All Concrete Pumps (without boom with 4" or smaller system); Concrete Spreader; Conveyors, used for handling building materials; Crushers; Deckhands; Drum Fireman (in asphalt plants); Farm type tractors pulling attachments; Finishing Machines; Form Trenchers; Generators: Gunitite Machines; Hydro-seeders; Pavement Breakers (hydraulic or cable); Post Drivers; Post Hole Diggers; Pressure Pumps (over 1/2") discharge); Road Widening Trenchers; Rollers (except asphalt); Self-propelled sub-graders; Shotcrete Machines; Tire Repairmen; Tractors, pulling sheepsfoot post roller or grader; VAC/ALLS; Vibratory Compactors, with integral power; Welders.

Group E – Allen Screed Paver (concrete); Boilers (less than 15 lbs. pressure); Cranes-Compact, track or rubber (under 4,000 pounds capacity); Directional Drill "Locator"; Fueling and greasing +\$3.00; Inboard/outboard Motor Boat Launches; Light Plant Operators; Masonry Fork Lifts; Oilers/Helpers; Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Signalperson, Submersible Pumps (under 4" discharge).

Master Mechanics - Master Mechanic

Cranes 150' – 180' - Boom & Jib 150 - 180 feet

Cranes 180' – 249' - Boom & Jib 180 - 249 feet

Cranes 250' and over - Boom & Jib 250-feet or over

Prevailing Wage Rate Skilled Crafts

Name of Union: Operating Engineers - HevHwy Zone II

Change # : LCN01-2022sksLoc18hevhwyl

Craft : Operating Engineer Effective Date : 05/25/2022 Last Posted : 05/25/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)		
Classification											
Operator Class A	\$40.19	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.44	\$76.53
Operator Class B	\$40.07	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.32	\$76.35
Operator Class C	\$39.03	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$55.28	\$74.79
Operator Class D	\$37.85	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$54.10	\$73.03
Operator Class E	\$32.39	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$48.64	\$64.83
Master Mechanic	\$40.44	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.00	\$0.05	\$56.69	\$76.91
Apprentice	Percent										
1st Year	50.00	\$20.09	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$36.35	\$46.39
2nd Year	60.00	\$24.11	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$40.36	\$52.42
3rd Year	70.00	\$28.13	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$44.38	\$58.45
4th Year	80.00	\$32.15	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$48.40	\$64.48
Field Mech Trainee Class 2											
1st year	50.00	\$20.09	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$36.35	\$46.39
2nd year	60.00	\$24.11	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$40.36	\$52.42
3rd year	70.00	\$28.13	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$44.38	\$58.45
4th year	80.00	\$32.15	\$9.01	\$6.25	\$0.85	\$0.00	\$0.00	\$0.09	\$0.05	\$48.40	\$64.48

Special Calculation Note : Other: Education & Safety Fund is \$0.09 per hour. *Misc is National Training

Ratio :

For every (3) Operating Engineer Journeymen employed by the company, there may be employed (1) Registered Apprentice or Trainee Engineer through the referral when they are available. An Apprentice, while employed as part of a crew per Article VIII,

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, FAIRFIELD, FAYETTE,

paragraph 65 will not be subject to the apprenticeship ratios in this collective bargaining agreement

FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAWRENCE, LICKING, LOGAN, LUCAS, MADISON, MARION, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PREBLE, PUTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note :

Details :

**Apprentices will receive a 10% increase on top of the percentages listed above provided they are operating mobile equipment. Mechanic Trainees will receive 10% increase if they are required to have CDL.

Class A - Air Compressors on Steel Erection; Asphalt Plant Engineers (Cleveland District Only); Barrier Moving Machine; Boiler Operators, Compressor Operators, or Generators, when mounted on a rig; Boom Trucks (all types); Cableways; Cherry Pickers; Combination- Concrete Mixers & Towers; Concrete Plants (over 4 yd capacity); Concrete Pumps; Cranes (all types); Compact Cranes track or rubber over 4,000 pounds capacity; Cranes self-erecting stationary, track or truck; Derricks (all types); Draglines; Dredges dipper, clam or suction; Elevating Graders or Euclid Loaders; Floating Equipment (all types); Gradalls; Helicopter Crew (Operator- hoist or winch); Hoes (all types); Hoisting Engines; Hoisting Engines, on shaft or tunnel work; Hydraulic Gantry (lifting system); Industrial-type Tractors; Jet Engine Dryer (D8 or D9) diesel Tractors; Locomotives (standard gauge); Maintenance Operators/Technicians (class A); Mixers, paving (single or double drum); Mucking Machines; Multiple Scrapers; Piledriving Machines (all types); Power Shovels, Prentice Loader; Quad 9 (double pusher); Rail Tamper (with automatic lifting and aligning device); Refrigerating Machines (freezer operation); Rotary Drills, on caisson work; Rough Terrain Fork Lift with winch/hoist; Side Booms; Slip Form Pavers; Survey Crew Party Chiefs; Tower Derricks; Tree Shredders; Trench Machines (over 24" wide); Truck Mounted Concrete Pumps; Tug Boats; Tunnel Machines and /or Mining Machines; Wheel Excavators.

Class B - Asphalt Pavers; Automatic Subgrade Machines, self-propelled (CMI-type); Bobcat-type and /or Skid Steer Loader with hoe attachment greater than 7000 lbs.; Boring Machine Operators (more than 48 inches); Bulldozers; Concrete Saws, Vermeer type; Endloaders; Horizontal Directional Drill (50,000 ft. lbs. thrust and over); Hydro Milling Machine; Kolman-type Loaders (production type-dirt); Lead Greasemen; Lighting and Traffic Signal Installation Equipment includes all groups or classifications; Maintenance Operators/Technicians, Class B; Material Transfer Equipment (shuttle buggy) Asphalt; Pettibone-Rail Equipment; Power Graders; Power Scrapers; Push Cats; Rotomills (all), Grinders and Planners of all types, Groovers (excluding walk-behinds); Trench Machines (24 inch wide and under).

Class C - A-Frames; Air Compressors, on tunnel work (low Pressure); Articulating/straight bed end dumps if assigned (minus \$4.00 per hour); Asphalt Plant Engineers (Portage and Summit Counties only); Bobcat-type and/or skid steer loader with or without attachments; Drones; Highway Drills (all types); Hydro Vac/Excavator (when a second person is needed, the rate of pay will be "Class E"); Locomotives (narrow gauge); Material Hoist/Elevators; Mixers, concrete (more than one bag capacity); Mixers, one bag

capacity (side loader); Power Boilers (over 15 lbs. pressure); Pump Operators (installing or operating well Points); Pumps (4 inch and over discharge); Railroad Tie Inserter/Remover; Rollers, Asphalt; Rotovator (lime-soil Stabilizer); Switch & Tie Tampers (without lifting and aligning device); Utilities Operators, (small equipment); Welding Machines and Generators.

Class D – Backfillers and Tampers; Ballast Re-locator; Bar and Joint Installing Machines; Batch Plant Operators; Boring Machine Operators (48 inch or less); Bull Floats; Burlap and Curing Machines; Concrete Plants (capacity 4 yds. and under); Concrete Saws (multiple); Conveyors (highway); Crushers; Deckhands; Farm type tractors, with attachments (highway); Finishing Machines; Firemen, Floating Equipment (all types); Fork Lifts (highway), except masonry; Form Trenchers; Hydro Hammers; Hydro Seeders; Pavement Breakers (hydraulic or cable); Plant Mixers; Post Drivers; Post Hole Diggers; Power Brush Burners; Power Form Handling Equipment; Road Widening Trenchers; Rollers (brick, grade, macadam); Self-Propelled Power Spreaders; Self-Propelled Sub-Graders; Steam Firemen; Survey Instrument men; Tractors, pulling sheepsfoot rollers or graders; Vibratory Compactors, with integral power.

Class E - Compressors (portable, Sewer, Heavy and Highway); Cranes-Compact, track or rubber under 4,000 pound capacity; Drum Firemen (asphalt plant); Fueling and greasing (Primary Operator with Specialized CDL Endorsement Add \$3.00/hr); Generators; Inboard-Outboard Motor Boat Launches; Masonry Fork Lifts; Oil Heaters (asphalt plant); Oilers/Helpers; Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Signalperson; Survey Rodmen or Chairmen; Tire Repairmen; VAC/ALLS.

Master Mechanic - Master Mechanic

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 841

Change # : LCN01-2021sksLoc841

Craft : Painter Effective Date : 11/17/2021 Last Posted : 11/17/2021

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Painter Brush Roll	\$28.18		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$43.53	\$57.62
Paperhanger	\$28.18		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$43.53	\$57.62
Painter Spray Gun Operator Any and Al Coatings)	\$29.03		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.38	\$58.90
Swing Scaffold, Bosum Chair, & Window Jacks	\$28.93		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.28	\$58.75
Sandblast, Painting of Standpipes, etc. from Scaffolds Open Structural Steel, Standpipes and Water Towers	\$29.43		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.78	\$59.50
Epoxy Application	\$28.83		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.18	\$58.60
Synthetic Exterior, Lead Abatement, Asbestos Removal	\$29.43		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.78	\$59.50
Apprentice	Percent											
1st Year	53.24	\$15.00	\$6.85	\$2.72	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$25.57	\$33.07
2nd Year	60.00	\$16.91	\$6.85	\$3.14	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$27.90	\$36.35
3rd Year	70.00	\$19.73	\$6.85	\$3.57	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$31.15	\$41.01
4th Year	80.00	\$22.54	\$6.85	\$4.34	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$34.73	\$46.01

Special Calculation Note : Apprentice pay based on percentage of above appropriate classification.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, COSHOCTON, HOLMES, MEDINA, PORTAGE*, STARK, SUMMIT*, TUSCARAWAS, WAYNE

Special Jurisdictional Note : Summit Cnty: South of and including the Ohio Turnpike, Portage Cnty: North to and including the Ohio Turnpike

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 841 (Finisher/Taper)

Change # : LCN01-2021sksLoc841

Craft : Drywall Finisher Effective Date : 11/17/2021 Last Posted : 11/17/2021

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Painter Drywall Finisher/PainterTaper	\$29.43		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$44.78	\$59.50
Apprentice	Percent											
1st Year	50.98	\$15.00	\$6.85	\$2.72	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$25.57	\$33.08
2nd Year	65.00	\$19.13	\$6.85	\$3.52	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$30.50	\$40.06
3rd Year	80.00	\$23.54	\$6.85	\$4.34	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$35.73	\$47.51

Special Calculation Note : Apprentice pay based on percentage of above appropriate classification.

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, COSHOCTON, HOLMES, MEDINA, PORTAGE*, STARK, SUMMIT*, TUSCARAWAS, WAYNE

Special Jurisdictional Note : Summit County South of and including the Ohio Turnpike, Portage Cnty: North of and including the Ohio Turnpike

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 841 Bridge Painter

Change # : LCN01-2021sksLoc841

Craft : Painter Effective Date : 11/17/2021 Last Posted : 11/17/2021

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Painter Bridge Blaster Class 1	\$37.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$53.20	\$72.12
Class 2 Bridge Painter, Rigger, Containment Builder, Spot Blaster	\$34.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$50.20	\$67.62
Class 3 Equipment Operator/Field Mechanic, Grit Reclamation, Paint Mixer, Traffic Control, Boat Person, Dive (0-5 Years Exp)	\$27.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$43.20	\$57.13
Class 3 Equipment Operator/Field Mechanic, Grit Reclamation, Paint Mixer, Traffic Control, Boat Person, Dive (5 plus Years Exp).	\$30.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$46.20	\$61.63
Class 4 Concrete Sealing, Concrete Blasting/Power Washing/Etc.	\$30.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$46.20	\$61.63
Class 5 Quality Control/Quality Assurance Traffic Safety, Competent Person.	\$30.85		\$6.85	\$7.50	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$46.20	\$61.63
Apprentice	Percent											
1st Year	50.01	\$18.93	\$6.85	\$2.72	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$29.50	\$38.96
2nd Year	60.00	\$22.71	\$6.85	\$3.14	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$33.70	\$45.06
3rd year	70.00	\$26.50	\$6.85	\$3.57	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$37.92	\$51.16
4th Year	80.00	\$30.28	\$6.85	\$4.34	\$0.35	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$42.47	\$57.61

Special Calculation Note : Apprentice pay based on percentage of above appropriate classification.

Ratio :

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

CARROLL, COSHOCTON, HOLMES, MEDINA, PORTAGE*, STARK, SUMMIT*, TUSCARAWAS, WAYNE

Special Jurisdictional Note : Summit County: South of and including the Ohio Turnpike, Portage County: North to and including the Ohio Turnpike

Details :

Class 1 – Abrasive blasting of any kind

Class 2 – Bridge painting, coating applications of any kind. All steel surface preparation other than abrasive blasting. All necessary rigging and containment building and all remedial/ spot blasting.

Class 3 – Tend to all equipment including but not limited to abrasive blasting, power washing, spray painting, forklifts, hoists, truck, etc. Load and unloading trucks, handle materials, man safety boats, handle traffic control, clean up/ vacuum abrasive blast materials and related tasks.

Class 4 – All aspects of concrete coating/ sealing including but not limited to preparation, containment, etc.

Class 5 – Verify and record that all work is completed according to job specifications. Assure that all health and safety standards are adhered to. Assure all traffic is safely handled.

VAN WERT, VINTON, WARREN, WASHINGTON,
WAYNE, WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note :

Details :

Top Helper: Shall perform the responsibilities of a Helper and be responsible for the setup, break down, safety and quality of the company's product.

Helper : Shall be responsible for performing tasks in refinishing, compliance with safety procedures, setting up and breaking down job sites, scaffolding and swing stages and preparing surfaces for refinishing including but not limited to, masking and stripping and cleaning, oxidizing, polishing and scratch removal on various surfaces

Class A Workers: Less than 1 Year of Service.

Class B Workers: More than 1 and less than 8 Years of Service.

Class C Workers: More than 8 Years of Service.

Metal Polisher Scope of Work: Polishing, buffing, stripping, coloring, lacquering, spraying, cleaning and maintenance of ornamental and architectural metals, iron, bronze, nickel, aluminum and stainless steel and in mental specialty work, various stone finishes, stone specialty work and any other work pertaining to the finishing of metal, stones, woods, and any window washing/cleaning done in conjunction with this work, using chemicals, solvents, coatings and hand applied lacquer thinner, removing scratches from mirror finished metals, burnishing of bronze, statuary finishes on exterior and interior surfaces and the use of all tools required to perform such work, including but not limited to polishes, spray equipment and scaffolding.

Swing State Rate: All work on scaffold 4 sections or higher, including any boom lifts and swing stage scaffolds including the rigging and derigging of hanging/suspended swing stage systems and rappelling/bolson chair work, ADD \$1.50 per hour.

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 639 Zone 2 Sign

Change # : LCN01-2016fbLoc639

Craft : Painter Effective Date : 08/03/2016 Last Posted : 08/03/2016

	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification											
Painter Sign Journeyman Tech/Team Leader Class A	\$21.25	\$1.33	\$0.14	\$0.00	\$0.00	\$0.00	\$0.57	\$0.00	\$0.00	\$23.29	\$33.92
Painter Sign Journeyman Tech/Team Leader Class B	\$21.25	\$1.33	\$0.14	\$0.00	\$0.41	\$0.00	\$0.57	\$0.00	\$0.00	\$23.70	\$34.32
Painter Sign Journeyman Tech/Team Leader Class C	\$21.25	\$1.33	\$0.14	\$0.00	\$0.82	\$0.00	\$0.57	\$0.00	\$0.00	\$24.11	\$34.74
Painter Sign Journeyman Tech/Team Leader Class D	\$21.25	\$1.33	\$0.14	\$0.00	\$1.23	\$0.00	\$0.57	\$0.00	\$0.00	\$24.52	\$35.14
Sign Journeyman Class A	\$20.98	\$1.33	\$0.14	\$0.00	\$0.00	\$0.00	\$0.56	\$0.00	\$0.00	\$23.01	\$33.50
Sign Journeyman Class B	\$20.98	\$1.33	\$0.14	\$0.00	\$0.40	\$0.00	\$0.56	\$0.00	\$0.00	\$23.41	\$33.90
Sign Journeyman Class C	\$20.98	\$1.33	\$0.14	\$0.00	\$0.81	\$0.00	\$0.56	\$0.00	\$0.00	\$23.82	\$34.31
Sign Journeyman Class D	\$20.98	\$1.33	\$0.14	\$0.00	\$1.21	\$0.00	\$0.56	\$0.00	\$0.00	\$24.22	\$34.71
Tech Sign Fabrication/Erector Class A	\$15.90	\$1.33	\$0.14	\$0.00	\$0.00	\$0.00	\$0.43	\$0.00	\$0.00	\$17.80	\$25.75
Tech Sign Fabrication/Erector Class B	\$15.90	\$1.33	\$0.14	\$0.00	\$0.31	\$0.00	\$0.43	\$0.00	\$0.00	\$18.11	\$26.06
Tech Sign Fabrication/Erector Class C	\$15.90	\$1.33	\$0.14	\$0.00	\$0.61	\$0.00	\$0.43	\$0.00	\$0.00	\$18.41	\$26.36
Tech Sign Fabrication/Erector	\$15.90	\$1.33	\$0.14	\$0.00	\$0.92	\$0.00	\$0.43	\$0.00	\$0.00	\$18.72	\$26.67

Prevailing Wage Rate Skilled Crafts

Name of Union: **Plumber Pipefitter Local 94**

Change # : LCN01-2021sksLoc94

Craft : Plumber/Pipefitter Effective Date : 11/24/2021 Last Posted : 11/24/2021

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Plumber Pipefitter	\$36.33	\$8.83	\$6.19	\$0.77	\$0.00	\$6.30	\$0.10	\$0.00	\$0.00	\$58.52	\$76.68	
Apprentice Hired After 05-01-2017												
1st Year	\$14.53	\$8.83	\$0.00	\$0.77	\$0.00	\$3.15	\$0.10	\$0.00	\$0.00	\$27.38	\$34.65	
2nd Year	\$18.17	\$8.83	\$0.50	\$0.77	\$0.00	\$3.15	\$0.10	\$0.00	\$0.00	\$31.52	\$40.61	
3rd Year	\$21.80	\$8.83	\$0.50	\$0.77	\$0.00	\$3.15	\$0.10	\$0.00	\$0.00	\$35.15	\$46.05	
4th Year	\$25.43	\$8.83	\$0.50	\$0.77	\$0.00	\$4.73	\$0.10	\$0.00	\$0.00	\$40.36	\$53.07	
5th Year	\$29.06	\$8.83	\$0.50	\$0.77	\$0.00	\$4.55	\$0.10	\$0.00	\$0.00	\$43.81	\$58.34	
Apprentice If Hired Before 5-01-2017	Percent											
5th yr 1st 6mos	85.00	\$30.88	\$8.83	\$0.50	\$0.77	\$0.00	\$1.82	\$0.10	\$0.00	\$0.00	\$42.90	\$58.34
5th yr 2nd 6 months	90.00	\$32.70	\$8.83	\$0.50	\$0.77	\$0.00	\$1.82	\$0.10	\$0.00	\$0.00	\$44.72	\$61.07

Special Calculation Note : Other is International Training Fund.

Ratio :

- 1 Journeymen to 2 Apprentice
- 4 Journeymen to 3 Apprentice
- 6 Journeymen to 4 Apprentice
- 9 Journeymen to 5 Apprentice
- 11 Journeyman to 6 Apprentice

3 Journeyman to 1 Apprentice Thereafter

Jurisdiction (* denotes special jurisdictional note) :

CARROLL*, STARK, WAYNE

Special Jurisdictional Note : In Carroll County the following townships are included: Ross, Monroe, Union, Lee, Orange, Perry and London.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Roofer Local 88

Change # : LCN01-2022sksLoc88

Craft : Roofer Effective Date : 06/01/2022 Last Posted : 06/01/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Roofer	\$29.07		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$49.85	\$64.39
HELPERS												
Helper -500 Hrs. 1st 6 months	\$16.27		\$2.25	\$0.00	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$20.60	\$28.73
Helper - 500 Hrs. 2nd 6 months	\$18.02		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$38.80	\$47.81
2nd year Helper	\$19.76		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$40.54	\$50.42
3rd year Helper	\$21.51		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$42.29	\$53.05
4th year Helper	\$23.25		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$44.03	\$55.66
5th year Helper	\$25.00		\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$45.78	\$58.28
Apprentice	Percent											
1st 6 months w/500 hrs	55.97	\$16.27	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$37.05	\$45.19
2nd 6 months w/500 hrs	62.00	\$18.02	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$38.80	\$47.82
3rd 6 months w/500 hrs	67.97	\$19.76	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$40.54	\$50.42
4th 6 months w/500 hrs	74.00	\$21.51	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$42.29	\$53.05
5th 6 months w/500 hrs	79.98	\$23.25	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$44.03	\$55.66
6th 6 months w/500 hrs	86.00	\$25.00	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$45.78	\$58.28

7th 6 months w/500 hrs	92.00	\$26.74	\$8.90	\$9.80	\$0.40	\$0.00	\$1.50	\$0.18	\$0.00	\$0.00	\$47.52	\$60.90
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Special Calculation Note : Roofers working in any form of coal tar pitch, whether hot or cold, installing and/or removing will be paid \$.25 more per hour.
Other \$0.18 is for C.I.D.B.

Ratio :

No helper shall be used on any one job unless 1 Journeymen, and 1 Apprentices are working on said job .One
(1) Journeymen to One (1) Apprentice to One (1) Helper

Jurisdiction (* denotes special jurisdictional note) :

ASHLAND, CARROLL, COSHOCTON, CRAWFORD, HOLMES, HURON, LORAIN*, MEDINA, PORTAGE, RICHLAND, STARK, SUMMIT, TUSCARAWAS, WAYNE

Special Jurisdictional Note : In Lorain County (South of the Turnpike)

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Sheet Metal Local 33 (Akron)

Change # : LCN01-2022sksLoc33Akron

Craft : Sheet Metal Worker Effective Date : 06/01/2022 Last Posted : 06/01/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Sheet Metal Worker	\$33.89		\$9.35	\$13.20	\$0.93	\$0.00	\$7.20	\$0.00	\$0.00	\$0.00	\$64.57	\$81.52
Apprentice	Percent											
Apprentice												
1st year	60.00	\$20.33	\$9.35	\$4.81	\$0.17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.66	\$44.83
2nd year	65.00	\$22.03	\$9.35	\$5.97	\$0.93	\$0.00	\$3.60	\$0.00	\$0.00	\$0.00	\$41.88	\$52.89
3rd year	70.00	\$23.72	\$9.35	\$6.37	\$0.93	\$0.00	\$3.60	\$0.00	\$0.00	\$0.00	\$43.97	\$55.83
4th year	80.00	\$27.11	\$9.35	\$7.18	\$0.93	\$0.00	\$3.60	\$0.00	\$0.00	\$0.00	\$48.17	\$61.73
5th year as of May 1, 2022 until completion of apprenticeship	80.00	\$27.11	\$9.35	\$7.18	\$0.93	\$0.00	\$3.60	\$0.00	\$0.00	\$0.00	\$48.17	\$61.73

Special Calculation Note : No special calculations for this skilled craft wage rate are required at this time.

Ratio :

- 1 Journeymen to 1 Apprentice
 - 2 Journeymen to 1 Apprentice
 - 3 Journeymen to 2 Apprentice
 - 4 Journeymen to 2 Apprentice
 - 5-7 Journeymen to 3 Apprentice
 - 8-10 Journeymen to 4 Apprentice
 - 11-13 Journeymen to 5 Apprentice
 - 14, 15 Journeymen to 6 Apprentice
- and maintaining a three to one apprentice ratio thereafter.

Jurisdiction (* denotes special jurisdictional note) :

- ASHLAND, CARROLL, COSHOCTON,
- CRAWFORD, HOLMES, MEDINA, PORTAGE,
- RICHLAND, STARK, SUMMIT, TUSCARAWAS,
- WAYNE

Special Jurisdictional Note :

Details :

Scope of Work: This Agreement covers the rates of pay and conditions of employment of all employees of the Employer engaged in, but not limited to, the a) manufacture, fabrication, assembling, handling, erection,

installation, dismantling, conditioning, adjustment, alteration, repairing and servicing of all ferrous or non-ferrous metal work and all other materials used in lieu thereof and of all HVAC systems, air-veyor systems, exhaust systems, and air handling systems regardless of material used, including the setting of all equipment and all reinforcements in connection therewith; (b) all lagging over insulation and all duct-lining; (c) testing, servicing, and balancing of all air-handling equipment and duct work; (d) the preparation of all shop and field sketches, whether manually drawn or computer assisted, used in fabrication and erection, including those taken from original architectural and engineering drawings or sketches, and (e) metal roofing; and (f) all other work included in the jurisdictional claims of Sheet Metal Worker's International Association. Industrial Door-Installation and service of overhead doors roll up doors, docks and dock leveling.

Prevailing Wage Rate Skilled Crafts

Name of Union: Sheet Metal Local 33 Industrial Door

Change # : LCN01-2022sksLoc33Industrial DoorClev

Craft : Sheet Metal Worker Effective Date : 08/01/2022 Last Posted : 07/27/2022

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Sheet Metal Worker	\$23.92		\$8.66	\$5.55	\$0.17	\$0.00	\$2.15	\$0.00	\$0.00	\$0.00	\$40.45	\$52.41
Trainees	Percent											
1st 60 days Probationary Perios	52.00	\$12.44	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12.44	\$18.66
61st day-12 months	58.00	\$13.87	\$8.66	\$1.92	\$0.17	\$0.00	\$1.41	\$0.00	\$0.00	\$0.00	\$26.03	\$32.97
2nd yr	68.00	\$16.27	\$8.66	\$1.92	\$0.17	\$0.00	\$1.59	\$0.00	\$0.00	\$0.00	\$28.61	\$36.74
3rd yr	73.00	\$17.46	\$8.66	\$1.92	\$0.17	\$0.00	\$1.69	\$0.00	\$0.00	\$0.00	\$29.90	\$38.63
4th yr	80.00	\$19.14	\$8.66	\$1.92	\$0.17	\$0.00	\$1.80	\$0.00	\$0.00	\$0.00	\$31.69	\$41.25
5th yr	86.00	\$20.57	\$8.66	\$1.92	\$0.17	\$0.00	\$1.91	\$0.00	\$0.00	\$0.00	\$33.23	\$43.52

Special Calculation Note :

Ratio :

Jurisdiction (* denotes special jurisdictional note) :

ASHLAND, ASHTABULA, CARROLL, COLUMBIANA, COSHOCTON, CRAWFORD, CUYAHOGA, DEFIANCE, ERIE, FULTON, GEAUGA, HANCOCK, HENRY, HOLMES, HURON, LAKE, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PAULDING, PORTAGE, PUTNAM, RICHLAND, SANDUSKY, SENECA, STARK, SUMMIT, TRUMBULL, TUSCARAWAS, WAYNE, WILLIAMS, WOOD

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Sprinkler Fitter Local 669

Change # : LCN01-2022sksLoc669

Craft : Sprinkler Fitter Effective Date : 04/06/2022 Last Posted : 04/06/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Sprinkler Fitter	\$43.75		\$10.99	\$7.10	\$0.52	\$0.00	\$5.12	\$0.00	\$0.00	\$0.00	\$67.48	\$89.35
Apprentice Indentured after April 1, 2013	Percent											
CILASS 1	45.00	\$19.69	\$7.85	\$0.00	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28.06	\$37.90
CLASS 2	50.02	\$21.88	\$7.85	\$0.00	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30.25	\$41.20
CLASS 3	54.43	\$23.81	\$10.99	\$7.10	\$0.52	\$0.00	\$1.15	\$0.00	\$0.00	\$0.00	\$43.57	\$55.48
CLASS 4	59.43	\$26.00	\$10.99	\$7.10	\$0.52	\$0.00	\$1.15	\$0.00	\$0.00	\$0.00	\$45.76	\$58.76
CLASS 5	64.43	\$28.19	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$48.20	\$62.29
CLASS 6	69.43	\$30.38	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$50.39	\$65.57
CLASS 7	74.43	\$32.56	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$52.57	\$68.85
CLASS 8	79.42	\$34.75	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$54.76	\$72.13
CLASS 9	84.43	\$36.94	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$56.95	\$75.42
CLASS 10	89.44	\$39.13	\$10.99	\$7.10	\$0.52	\$0.00	\$1.40	\$0.00	\$0.00	\$0.00	\$59.14	\$78.70

Special Calculation Note :

Ratio :

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, ERIE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAWRENCE, LICKING, LOGAN, LUCAS, MADISON, MAHONING, MARION, MEDINA, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW,

MUSKINGUM, NOBLE, OTTAWA, PAULDING,
PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE,
PUTNAM, RICHLAND, ROSS, SANDUSKY,
SCIOTO, SENECA, SHELBY, STARK, SUMMIT,
TRUMBULL, TUSCARAWAS, UNION, VAN
WERT, VINTON, WARREN, WASHINGTON,
WAYNE, WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note :

Details :

Sprinkler Fitter work shall consist of the installation, dismantling, maintenance, repairs, adjustments, and corrections of all fire protection and fire control systems including the unloading, handling by hand, power equipment and installation of all piping or tubing, appurtenances and equipment pertaining thereto, including both overhead and underground water mains, fire hydrants and hydrant mains, standpipes and hose connections to sprinkler systems used in connection with sprinkler and alarm systems. Also all tanks and pumps connected thereto, also included shall be CO-2 and Cardox Systems, Dry Chemical Systems, Foam Systems and all other fire protection systems.

Prevailing Wage Rate Skilled Crafts

**Name of Union: Truck Driver Bldg & HevHwy Class 1
Locals 20,40,92,92b,100,175,284,438,377,637,908,957**

Change # : LCRO1-2021fbBldgHevHwy

Craft : Truck Driver Effective Date : 05/21/2021 Last Posted : 05/21/2021

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Truck Driver CLASS 1 4 wheel service, dump, and batch trucks, Oil Distributor - Asphalt Distributor-Tandems	\$29.24		\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.44	\$60.06
Apprentice	Percent											
First 6 months	80.00	\$23.39	\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39.59	\$51.29
7-12 months	85.00	\$24.85	\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.05	\$53.48
13-18 months	90.00	\$26.32	\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.52	\$55.67
19-24 months	95.00	\$27.78	\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$43.98	\$57.87
25-30 months	100.00	\$29.24	\$7.50	\$8.50	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.44	\$60.06

Special Calculation Note : No special calculations for this skilled craft wage rate are required at this time.

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ASHTABULA, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COLUMBIANA, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, ERIE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN,

HARRISON, HENRY, HIGHLAND, HOCKING,
HOLMES, HURON, JACKSON, JEFFERSON,
KNOX, LAWRENCE, LICKING, LOGAN, LORAIN,
LUCAS, MADISON, MAHONING, MARION,
MEDINA, MEIGS, MERCER, MIAMI, MONROE,
MONTGOMERY, MORGAN, MORROW,
MUSKINGUM, NOBLE, OTTAWA, PAULDING,
PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE,
PUTNAM, RICHLAND, ROSS, SANDUSKY,
SCIOTO, SENECA, SHELBY, STARK, SUMMIT,
TRUMBULL, TUSCARAWAS, UNION, VAN
WERT, VINTON, WARREN, WASHINGTON,
WAYNE, WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note :

Details :

** Asphalt - Oil spray bar man when operating from cab shall receive \$0.20 cents per hour above their Basic Hourly Rate.

Prevailing Wage Rate Skilled Crafts

**Name of Union: Truck Driver Bldg & HevHwy Class 2
Locals 20,40,92,92b,100,175,284,438,377,637,908,957**

Change # : LCNO1-2022sksBldgHevHwy

Craft : Truck Driver Effective Date : 06/08/2022 Last Posted : 06/08/2022

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Truck Driver CLASS 2 Tractor Trailer-Semi Tractor Trucks-Pole Trailers-Ready Mix Trucks-Fuel Trucks- Asphalt-Oil Spray bar men- 5 Axle & Over -Belly Dumps-End Dumps-Articulated Dump Trucks- Low boys-Heavy duty Equipment(irrespective of load carried) when used exclusively for transportation-Truck Mechanics (when needed)	\$30.81		\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.31	\$62.72
Apprentice	Percent											
First 6 months	79.98	\$24.64	\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.14	\$53.46
7-12 months	87.25	\$26.88	\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$43.38	\$56.82
13-18 months	90.00	\$27.73	\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$44.23	\$58.09
19-24 months	94.98	\$29.26	\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.76	\$60.40
25-30 months	100.00	\$30.81	\$7.50	\$8.80	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.31	\$62.72

Special Calculation Note : No special calculations for this skilled craft wage rate are required at this time.

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

ADAMS, ALLEN, ASHLAND, ASHTABULA,
ATHENS, AUGLAIZE, BELMONT, BROWN,
BUTLER, CARROLL, CHAMPAIGN, CLARK,
CLERMONT, CLINTON, COLUMBIANA,
COSHOCKTON, CRAWFORD, DARKE, DEFIANCE,
DELAWARE, ERIE, FAIRFIELD, FAYETTE,
FRANKLIN, FULTON, GALLIA, GREENE,
GUERNSEY, HAMILTON, HANCOCK, HARDIN,

HARRISON, HENRY, HIGHLAND, HOCKING,
HOLMES, HURON, JACKSON, JEFFERSON,
KNOX, LAWRENCE, LICKING, LOGAN, LORAIN,
LUCAS, MADISON, MAHONING, MARION,
MEDINA, MEIGS, MERCER, MIAMI, MONROE,
MONTGOMERY, MORGAN, MORROW,
MUSKINGUM, NOBLE, OTTAWA, PAULDING,
PERRY, PICKAWAY, PIKE, PORTAGE, PREBLE,
PUTNAM, RICHLAND, ROSS, SANDUSKY,
SCIOTO, SENECA, SHELBY, STARK, SUMMIT,
TRUMBULL, TUSCARAWAS, UNION, VAN
WERT, VINTON, WARREN, WASHINGTON,
WAYNE, WILLIAMS, WOOD, WYANDOT

Special Jurisdictional Note :

Details :

** Asphalt - Oil spray bar man when operating from cab shall receive \$0.20 cents per hour above their Basic Hourly Rate.

CITY OF CANTON - 2022 SERVICE CENTER UPGRADE AND RECONFIGURATION PROJECT - GP 1331

2436 30TH STREET N.E.
 CANTON, OH 44705

VICINITY MAP
 MAP DATA ©2022 GOOGLE

Appendix C



SITE MAP

IMAGERY ©2022 GOOGLE CNES / AIRBUS, MAXAR TECHNOLOGIES, STATE OF OHIO / OSIP, USDA/FAC/IGEO, MAP DATA ©2022



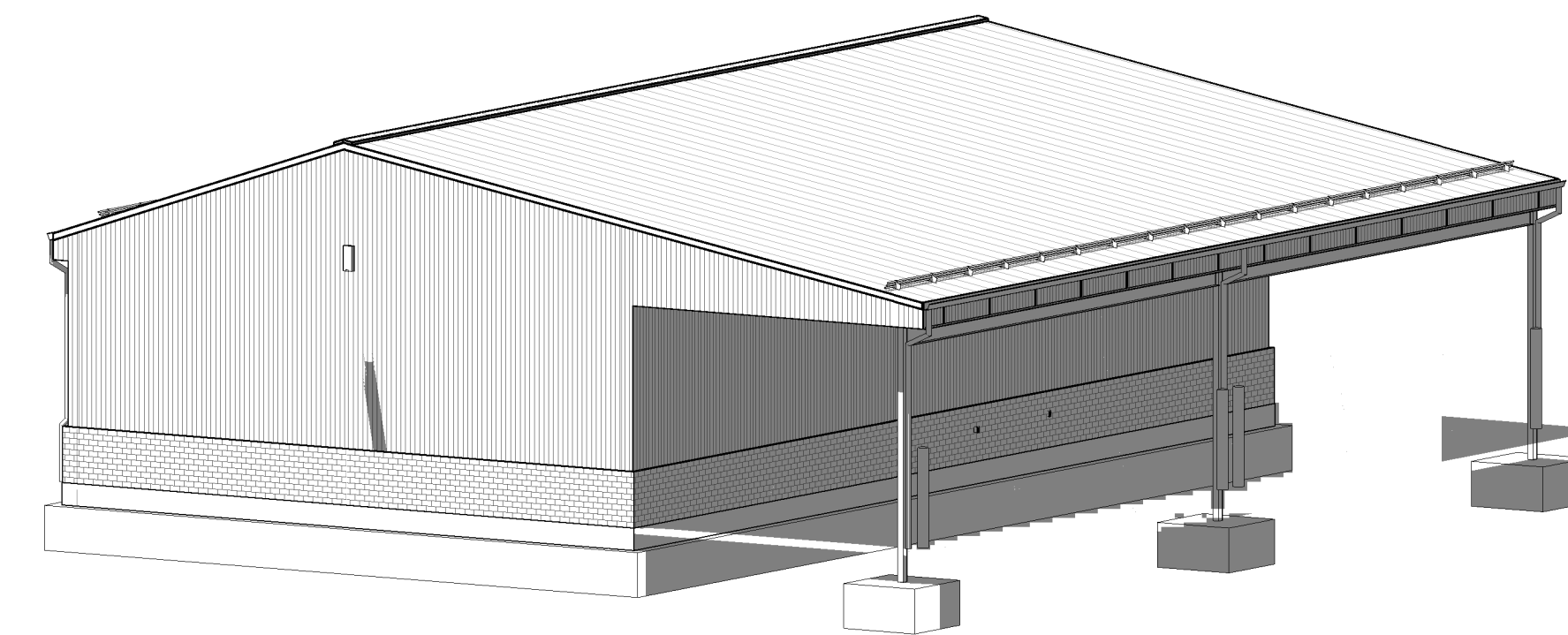
PROJECT CONTACTS

OWNER: CITY OF CANTON
 JOHN H. HIGHMAN, JR.
 DIRECTOR OF PUBLIC SERVICE
 OFFICE OF THE MAYOR
 218 CLEVELAND AVE. SW
 CANTON, OH 44702

ARCHITECT AND ENGINEERS
 GPD GROUP
 330 SOUTH MAIN STREET, SUITE 2531
 AKRON, OH 44311
 PHONE: 330.572.2100
 FAX: 330.572.2101

DRAWING INDEX

TS-001	TITLE SHEET
G-101	LIFE SAFETY PLANS AND CODE REVIEW
C-001	GENERAL NOTES
C-010	SWPP NOTES
C-011	SWPP PLAN
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C-101	DEMOLITION PLAN NORTH
C-102	DEMOLITION PLAN SOUTH
C-111	SITE PLAN NORTH
C-112	SITE PLAN SOUTH
C-121	GRADING PLAN NORTH
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S-002	SPECIAL INSPECTIONS
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A-301	BUILDING & WALL SECTIONS
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E-602	ALTERNATE #3 DETAILS AND SCHEDULES



GENERAL SHEET NOTE INSTRUCTIONS

GENERAL SHEET NOTES ARE USED TO COMMUNICATE SHEET SPECIFIC INFORMATION OR INSTRUCTIONS. THESE NOTES APPLY TO THE ENTIRE SHEET.

EXAMPLE: 1. REFER TO A-606 FOR WALL PARTITION TYPES.

REFERENCE KEYNOTE INSTRUCTIONS

REFERENCE KEYNOTES ARE USED TO IDENTIFY GRAPHIC REPRESENTATIONS OF ITEMS IN THE DRAWING AND DIRECTLY REFERENCE THEM TO SPECIFICATIONS. A LEGEND ON THE RIGHT HAND SIDE OF THE PAGE LISTS THE REFERENCE KEYNOTES ON THE DRAWING AREA AND THE MATERIAL THEY REPRESENT.

ROOT - SAME NUMBER AS THE SPECIFICATION BEING REFERENCED
 DECIMAL POINT - SEPARATES ROOT FROM SUFFIX - REPRESENTATION OF THE MATERIAL BEING REFERENCED. THIS NUMBER DOES NOT CORRESPOND TO A PARTICULAR SECTION WITHIN THE SPECIFICATION

EXAMPLE: 05 12 00.01 FACE BRICK - SOLDIER COURSE

DESCRIPTOR - MATERIAL DESCRIPTION

SHEET KEYNOTE INSTRUCTIONS

SHEET KEYNOTES ARE NOTED WITHIN THE GRAPHIC AREA OF THE DRAWING. THESE ARE REPRESENTED BY A NUMBER SURROUNDED BY A HEXAGON, WITH OR WITHOUT A LEADER. A LEGEND ON THE RIGHT SIDE OF THE PAGE LISTS THE NOTES IN NUMERICAL ORDER.

EXAMPLE: 1. ALIGN NEW CONSTRUCTION WITH THE FACE OF EXISTING CONSTRUCTION.

SYMBOL AND MATERIAL LEGEND

XXXXXXXXXX	ROOM NAME	AFB	ABOVE FINISH FLOOR
###	ROOM NUMBER	BRK	BRICK VENEER
#### SF	ACTUAL S.F.	CMB	CERAMIC MOSAIC BASE
---	MATCH LINE	CMT	CERAMIC MOSAIC TILE
---	BREAK MARK	CMU	CONCRETE MASONRY UNIT
CP1	CONTROL POINT	CPT	CARPET TILE
---	DATUM MARK	CT	CERAMIC TILE
TO MASONRY 12'-0"		CTB	CERAMIC TILE BASE
A	WALL TAG REFER TO A-501.	DWGS	DRAWINGS
AW12	WINDOW TAG REFER TO A-602.	EFS	EXTERIOR INSULATION FINISH SYSTEM
101	DOOR TAG REFER TO A-601.	EP	EPoxy PAINT
A1	WALL SECTION MARK	FF	FACTORY FINISH
A1 A-101	BUILDING SECTION MARK	GF	GROUND FACE CMU
A1 A-101		HLB	HORIZONTAL LOUVER BLIND
A1 A-101		LS	LINOLEUM SHEET
A1 A-101		LVT	LUXURY VINYL TILE
A1 A-101		MFR	MANUFACTURER
A1 A-101		MTP	METAL WALL PANEL
A1 A-101		P	PAINT
A1 A-101		PDE	PENAL, DRY ERASE
A1 A-101		PL	PLASTIC LAMINATE
A1 A-101		PT	PORCELAIN TILE
A1 A-101		PTB	PORCELAIN TILE BASE
A1 A-101		QB	QUARRY BASE
A1 A-101		QT	QUARRY TILE
A1 A-101		RAF	RESILIENT ATHLETIC FLOORING
A1 A-101		RB	RUBBER BASE
A1 A-101		RS	ROLLER SHADE
A1 A-101		RST	RUBBER STAIR TREAD
A1 A-101		RU	RUBBER FLOOR TILE
A1 A-101		SC	SEALED CONCRETE
A1 A-101		SDG	SIDING MATERIAL
A1 A-101		SDT	STATIC DISSIPATIVE TILE
A1 A-101		SIM	SIMILAR
A1 A-101		SSM	SOLID SURFACE MATERIAL
A1 A-101		STN	STONE VENEER
A1 A-101		TYP	TYPICAL
A1 A-101		UNO	UNLESS NOTED OTHERWISE
A1 A-101		VCT	VINYL COMPOSITION TILE
A1 A-101		VIF	VERIFY IN FIELD
A1 A-101		VRB	VENTILATED RESILIENT BASE
A1 A-101		WAF	WOOD ATHLETIC FLOORING
A1 A-101		WC	WALL COVERING
A1 A-101		WOC	WALK-OFF CARPET TILE
#	COLUMN DESIGNATION		

REV. DATE DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

TITLE SHEET

ISSUED FOR:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	--/--/----
RECORD	--/--/----

PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
 2020377.06

TS-001

2017 OHIO BUILDING CODE REVIEW
 NEW SINGLE STORY ACCESSORY BUILDING FOR THE CITY OF CANTON

CHAPTER 3 USE GROUP AND OCCUPANCY
 USE GROUP U - UTILITY AND MISCELLANEOUS

CHAPTER 5 GENERAL BUILDING HEIGHTS AND AREAS
 - TYPE SB CONSTRUCTION, NOT SPRINKLERED

(504.3) ALLOWABLE HEIGHT:
 ACTUAL HEIGHT: **21' 8" FT** U = 40 FT.

(504.4) ALLOWABLE NUMBER OF STORIES: U = 1
 ACTUAL NUMBER OF STORIES: 1

(506.2) ALLOWABLE AREA: U = 5,500 SF
 ACTUAL AREA: **4,184 SF**

TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)

TYPE SB CONSTRUCTION		EXISTING TYPE 2B CONSTRUCTION	
PRIMARY STRUCTURAL FRAME	0	0	0
BEARING WALLS (EXTERIOR)	0	0	0
BEARING WALLS (INTERIOR)	0	0	0
NONBEARING WALLS (EXTERIOR)	SEE TABLE 602	0	0
NONBEARING WALLS (INTERIOR)	0	0	0
FLOOR CONSTRUCTION	0	0	0
ROOF CONSTRUCTION	0	0	0

TABLE 602 FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS (HOURS)

TYPE SB CONSTRUCTION		EXISTING TYPE 2B CONSTRUCTION	
U - OCCUPANCY	B - OCCUPANCY	0-5'	0-5'
0-5'	1 HR	5-10'	1 HR
5-10'	1 HR	10-30'	0 HR
10-30'	0 HR	30'+	0 HR

CHAPTER 9 FIRE PROTECTION SYSTEMS
 AUTOMATIC FIRE SUPPRESSION IS NOT REQUIRED

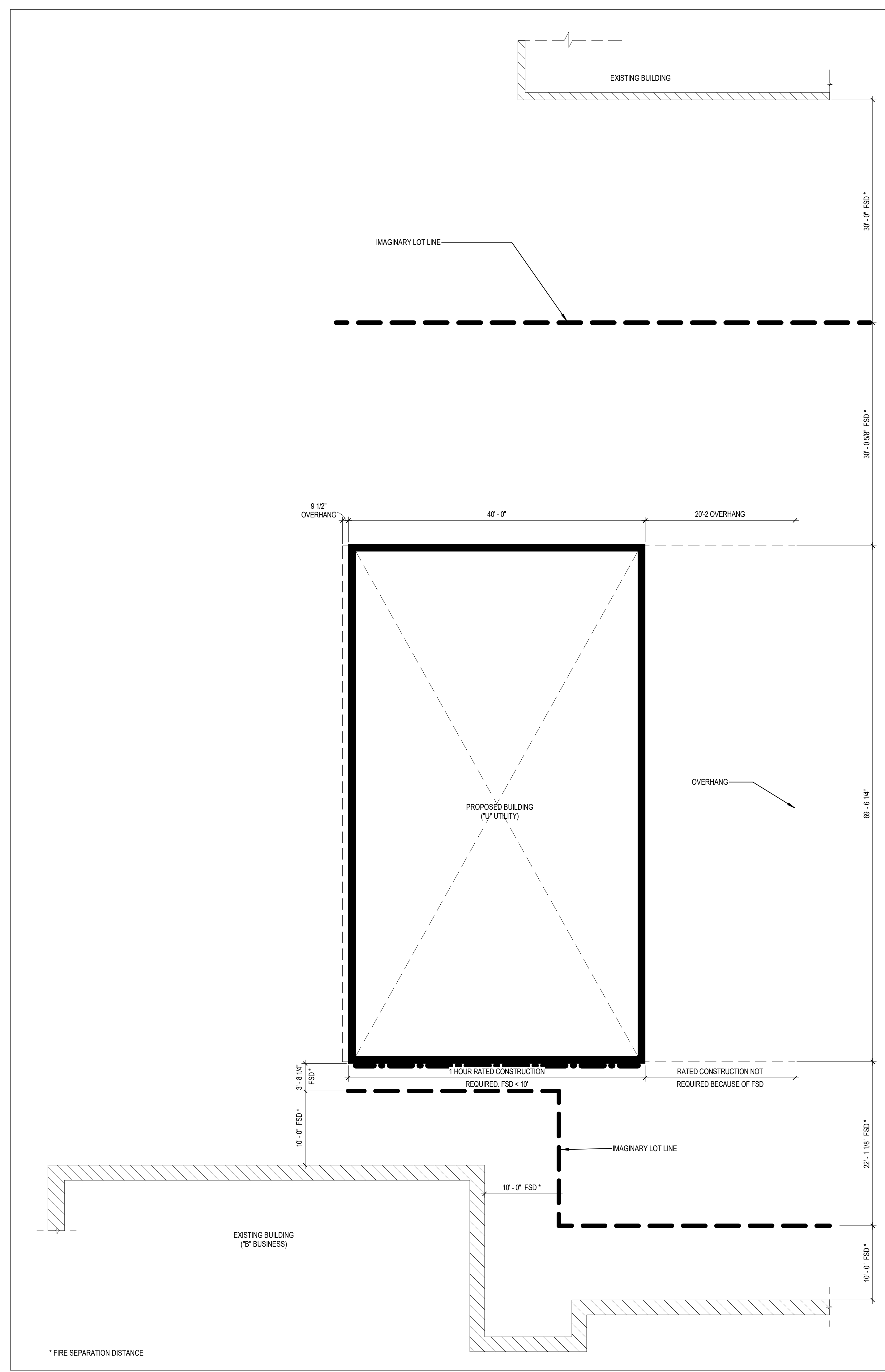
1004 OCCUPANT LOAD
 REFER TO LIFE SAFETY PLANS FOR OCCUPANT LOAD.
 9 TOTAL OCCUPANTS

1006.2.1 COMMON PATH OF EGRESS TRAVEL (NOT SPRINKLERED)
 U: 100' x 30 OCCUPANTS 75' x 30 OCCUPANTS

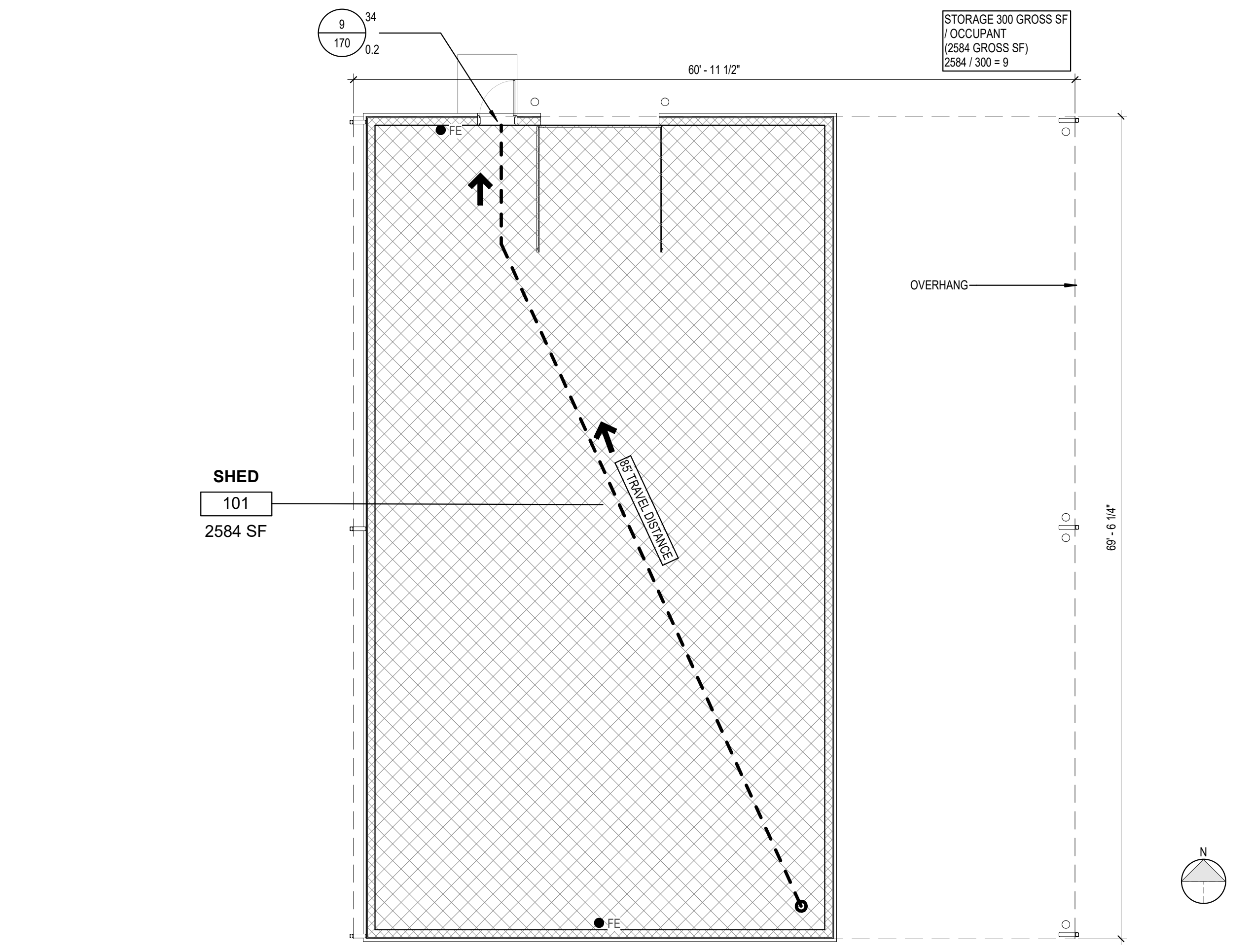
1017.2 EXIT ACCESS TRAVEL DISTANCE (NOT SPRINKLERED)
 U: 300'

TABLE 1006.3.1 MINIMUM NUMBER OF EXITS PER STORY
 9 TOTAL OCCUPANTS: MINIMUM 2 EXITS REQUIRED (1-500 OCCUPANTS)
 EXCEPTION 1: SPACES COMPLYING WITH 1006.2.1

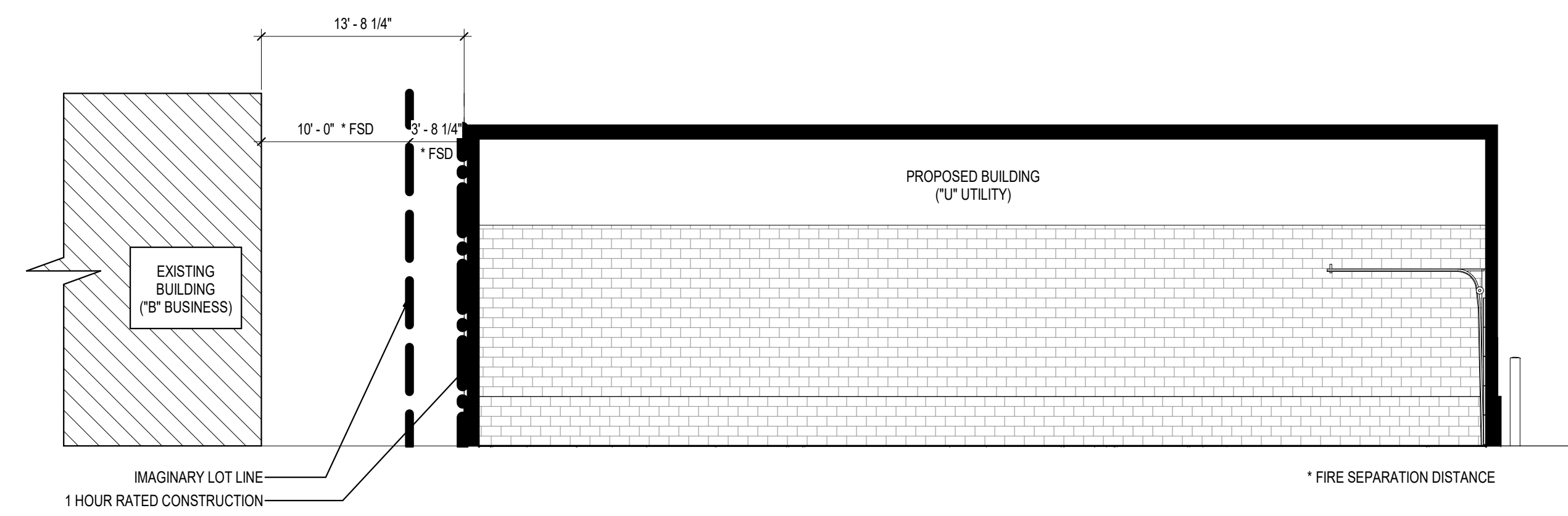
2902.1 PLUMBING FIXTURES NOT REQUIRED FOR USE GROUP U'



A1 FIRE SEPARATION DISTANCE PLAN
 1/8" = 1'-0"



C4 LIFE SAFETY PLAN
 1/8" = 1'-0"



A2 FIRE SEPARATION DISTANCE - SECTION
 1/8" = 1'-0"

LIFE SAFETY LEGEND

NOTE: CONTRACTOR IS REQUIRED TO COORDINATE FINAL LOCATION AND QUANTITY OF FIRE EXTINGUISHERS WITH AUTHORITY HAVING JURISDICTION. FIRE EXTINGUISHERS AND BRACKETS ARE PROVIDED AND INSTALLED BY CONTRACTOR.

● FE	FIRE EXTINGUISHER (BRACKET MOUNTED)	▨	U - UTILITY
X	W - ACTUAL CLEAR WIDTH OF LIMITING COMPONENT (INCHES)		
Y	X - OCCUPANTS USING EXIT		
Z	Y - EXIT CAPACITY		
→	Z - EGRESS WIDTH PER OCCUPANT (INCHES/OCCUPANT)		
→	PATH OF TRAVEL TO EGRESS		
▬	1 HOUR RATED WALL CONSTRUCTION		
- - -	IMAGINARY LOT LINE, PER [705.3]		
○	STARTING POINT		
→	PATH OF TRAVEL		

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

LIFE SAFETY PLANS AND CODE REVIEW

DATE:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
2020377.06

G-101

DEMOLITION NOTES

- 1. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO ANY DEMOLITION PROCESS. CERTAIN ACTIVITIES ASSOCIATED WITH CONSTRUCTION WILL REQUIRE AIR PERMITS INCLUDING BUT NOT LIMITED TO: MOBILE CONCRETE BATCH PLANTS, MOBILE ASPHALT PLANTS, CONCRETE CRUSHERS, LARGE GENERATORS, ETC. THESE ACTIVITIES WILL REQUIRE SPECIFIC OHIO EPA OR LOCAL GOVERNING AUTHORITIES AIR PERMITS FOR INSTALLATION AND OPERATION. CONTRACTORS MUST SEEK AUTHORIZATION FROM THE CORRESPONDING GOVERNING BODIES. FOR DEMOLITION OF ALL COMMERCIAL SITES, A NOTIFICATION FOR RESTORATION AND DEMOLITION MUST BE SUBMITTED TO THE CURRENT STATE'S EPA AND LOCAL GOVERNING AUTHORITIES TO DETERMINE ANY CORRECTIVE ACTIONS THAT MAY BE REQUIRED.

GENERAL PLAN AND SURVEY NOTES

- 1. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.

CONCRETE NOTES AND SPECIFICATIONS

- 1. ALL EXTERIOR SITE SPECIFIC PORTLAND CEMENT CONCRETE (PCC) (I.E. SIDEWALK, PAVEMENT OR CURBING) SHALL MEET THE MINIMUM REQUIREMENTS OF THE LATEST EDITIONS OF THE STATE DEPARTMENT OF TRANSPORTATION (DOT) AND THE AMERICAN CONCRETE INSTITUTE (ACI) SPECIFICATIONS USING THE RESPECTIVE ASTM STANDARDS FOR MATERIALS USED, MIXING, TRANSPORTATION, FORMING, PLACEMENT, CURING, AND SEALING. THE MINIMUM STRENGTH FOR NORMAL WEIGHT CONCRETE IS 4000 PSI AT 28 DAY STRENGTH. CONTRACTOR SHALL REFER TO NORMAL WEIGHT CONCRETE IS 4000 PSI AT 28 DAY STRENGTH. CONTRACTOR SHALL REFER TO NORMAL WEIGHT CONCRETE IS 4000 PSI AT 28 DAY STRENGTH.

GRADING PLAN NOTES

- 1. A GEOTECHNICAL ENGINEERING REPORT HAS BEEN PREPARED BY GPD GROUP INC., DATED SEPTEMBER 7TH, 2022 AND SHALL BE CONSIDERED TO BE A PART OF THIS PLAN SET.

SANITARY SEWER NOTES

- 1. SANITARY SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STARK COUNTY SANITARY ENGINEERING DEPARTMENT SPECIFICATIONS AND DETAILS IN EFFECT AT THE TIME OF CONSTRUCTION.

ALLOWANCES

A \$50,000 OWNER ALLOWANCE IS TO BE ADDED TO THE CONTRACT AND WILL BE USED AT THE OWNERS DISCRETION. THE UNIT PRICES PROVIDED BELOW WILL BE USED TO DEDUCT WORK FROM THE FORM OF A DEDUCT CHANGE ORDER. THIS ALLOWANCE IS NOT GUARANTEED TO THE CONTRACTOR.

UNIT PRICES

UNIT PRICE 1: SUBGRADE STABILIZATION
UNIT PRICE 2: FULL DEPTH ASPHALT PAVEMENT REPLACEMENT

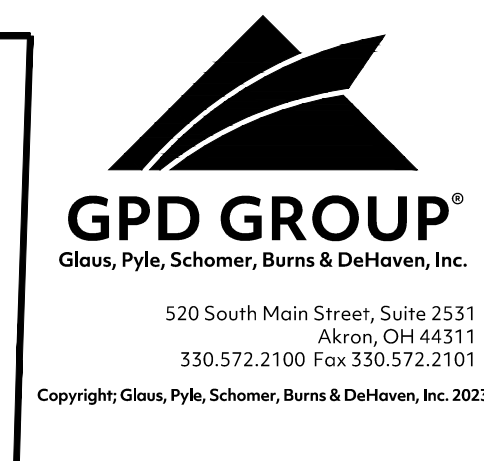
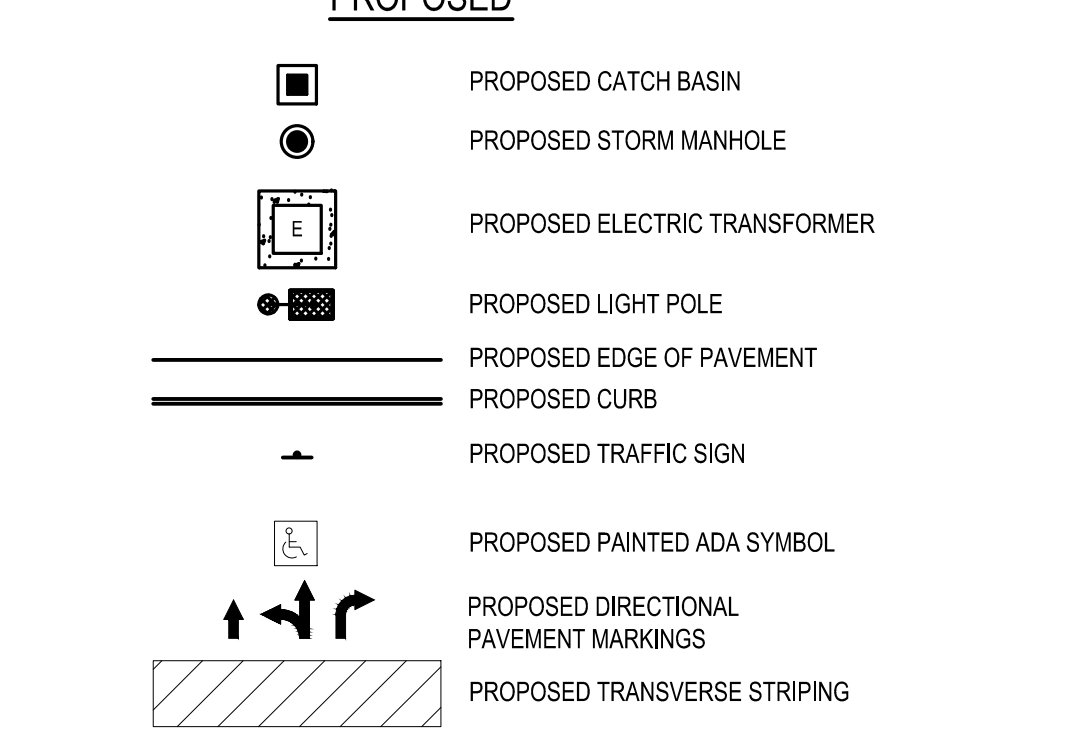
ALTERNATE BID ITEMS

ALTERNATE BID ITEM #1: PROPOSED ASPHALT PARKING LOT ADDITION TO IMPOUND CAR LOT.
ALTERNATE BID ITEM #2: PROPOSED ASPHALT PARKING LOT ADDITION TO PROPOSED BUILDING.

EXISTING



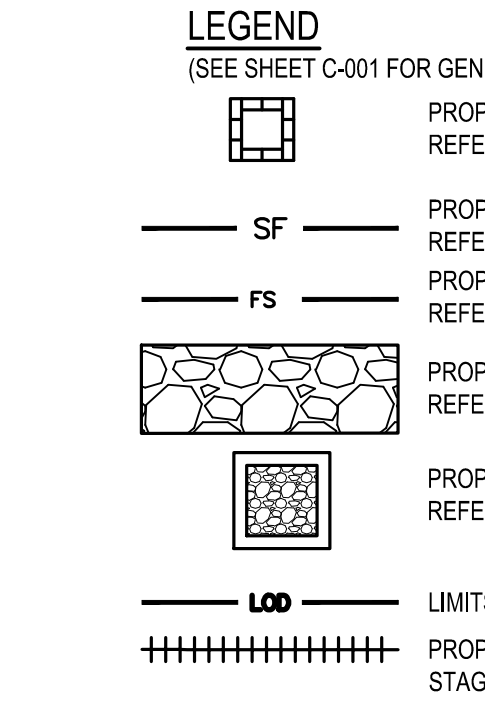
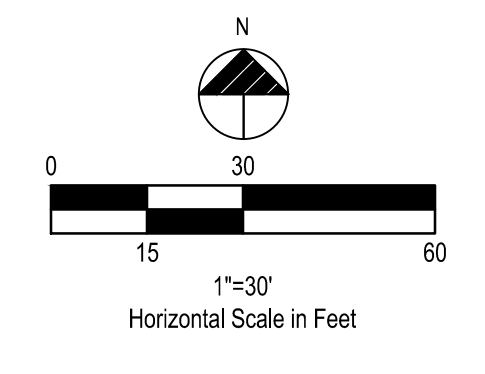
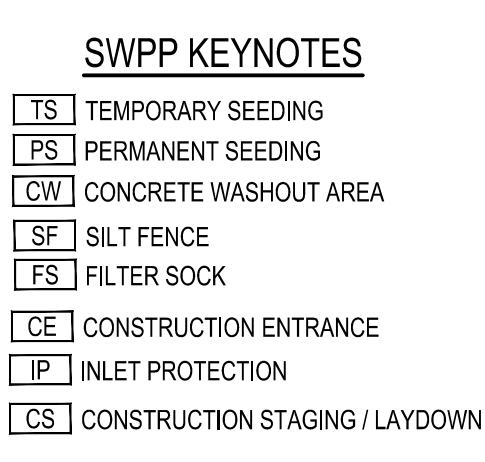
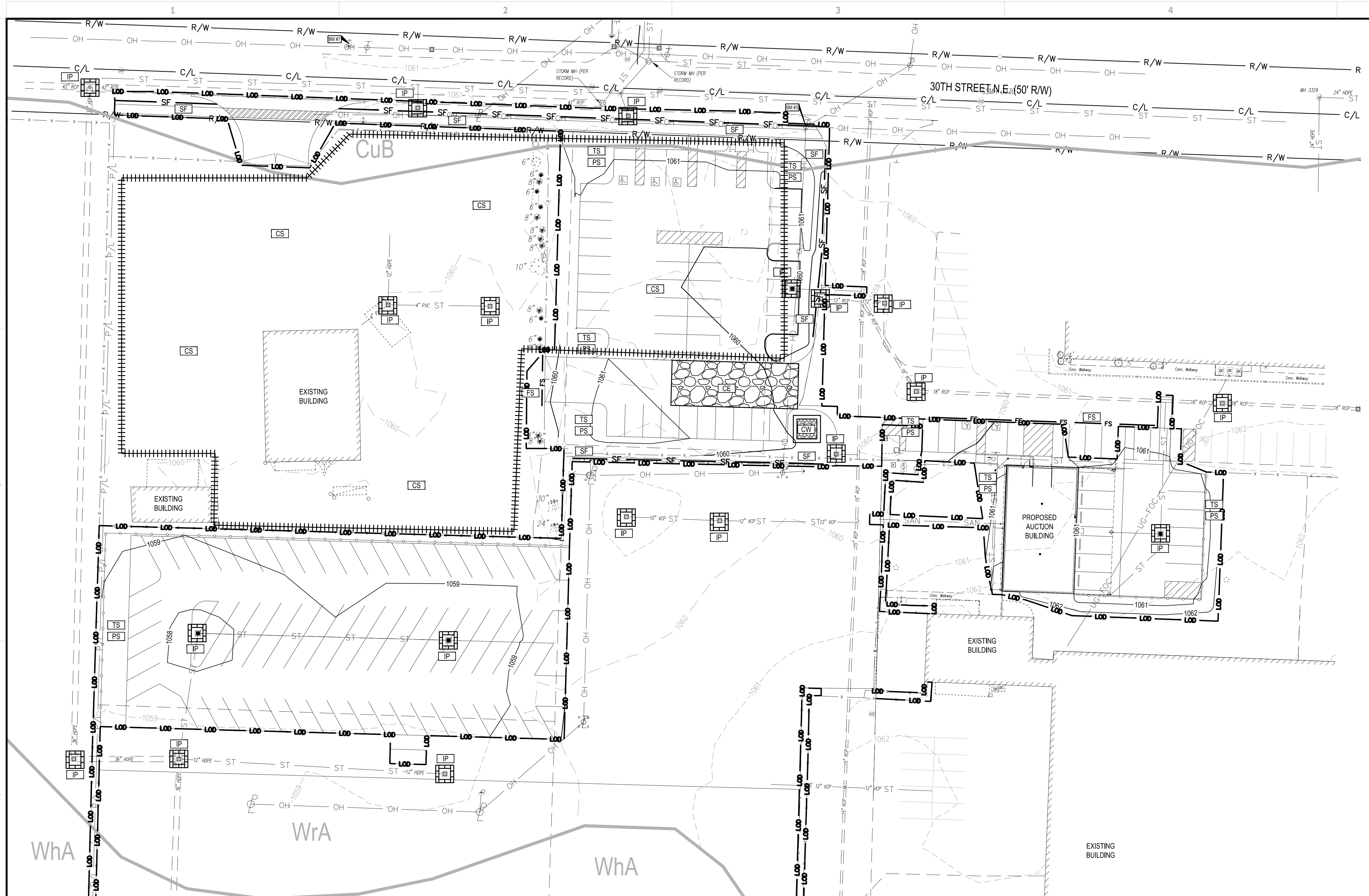
PROPOSED



CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET NE, CANTON, OHIO 44705

ISSUED FOR: PERMIT 01/08/2023
BID 01/08/2023
CONSTRUCTION
RECORD
PROJECT MANAGER: MLH DESIGNER: TJW
JOB NO. 2020377.06
C-001

Drawing Name: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demol_ Working
Revision: C:\2020\2020377\06 Notes And Details.dwg
January 11, 2023 10:58 AM - 0:00 AM



- CONSTRUCTION SEQUENCE**
1. DURING PRECONSTRUCTION MEETING ALL EROSION & SEDIMENT CONTROL FACILITIES & PROCEDURES SHALL BE DISCUSSED. A GENERAL CONSTRUCTION SEQUENCE FOLLOWS AND MAY NEED TO BE UPDATED BY THE CONTRACTOR TO SUIT THE SPECIFICS OF THE SITE AND INTENDED CONTRACTOR SPECIFIC SEQUENCING.
 - 1.1. INSTALL CONSTRUCTION ENTRANCE AS DETAILED ON PLANS. TEMPORARY CONSTRUCTION FENCING SHALL BE INSTALLED AROUND PERIMETER OF CONSTRUCTION SITE. WHERE THERE IS EXISTING FENCING ALONG THE PERIMETER OF THE SITE, IT CAN BE UTILIZED. FENCING SHALL BE USED TO RESTRICT OUTSIDE TRAFFIC TO SITE.
 - 1.2. DELIVER CONSTRUCTION TRAILER TO SITE AND INSTALL TEMPORARY POWER AND TELEPHONE. IF REQUIRED, TEMPORARY UTILITY SERVICES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 - 1.3. STAKE AND/OR FLAG LIMITS OF CLEARING.
 - 1.4. CLEAR & GRUB, AS NECESSARY, FOR INSTALLATION OF PERIMETER CONTROLS. INSTALL SILT PERIMETER CONTROLS AS SHOWN ON PLANS. SILT PERIMETER CONTROLS SHALL BE INSTALLED LEVEL, ALONG THE CONTOURS, WITH ENDS TURNED UPSLOPE TO PREVENT CONCENTRATED FLOW AT THE SILT PERIMETER CONTROLS.
 - 1.5. INSTALL TEMPORARY SILT INLET PROTECTION ON ALL EXISTING CATCH BASINS AND INLETS. AS DESIGNATED IN THE PLANS. REMOVAL OF SILT INLET PROTECTION FROM DESIGNATED INLETS CAN ONLY OCCUR WHEN A STRUCTURE IS REMOVED, AND AS REQUIRED BY THE PROGRESSION OF THE DEMOLITION AND CONSTRUCTION.
 - 1.6. CLEAR & GRUB, AS NECESSARY, FOR INSTALLATION OF TEMPORARY SEDIMENT TRAP BASIN. INSTALL TEMPORARY SEDIMENT TRAP BASIN, IF REQUIRED, AS DETAILED IN THE PLANS. CONSTRUCT AND MAINTAIN TEMPORARY DIVERSION SWALE AND /OR DIVERSION BERM DURING FILLING & GRADING ACTIVITIES.
 - 1.7. CLEAR & GRUB THE REMAINING SITE AS NECESSARY. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR REUSE, OR REMOVED TO AN APPROVED OFFSITE SPILL AREA.
 - 1.8. UTILIZE DUST CONTROL MEASURES AS REQUIRED TO MINIMIZE AIR-BORNE POLLUTION BY METHODS APPROVED BY THE AUTHORIZING EPA OFFICE.
 - 1.9. BEGIN FILLING & GRADING AS REQUIRED TO REACH SUBGRADE.
 - 1.10. ONCE PAVEMENT GRADES HAVE BEEN ESTABLISHED, AS DESIGNATED ON THE PLANS, THE CONTRACTOR SHALL UTILIZE THESE AREAS FOR STRUCTURE CONSTRUCTION.
 - 1.11. CONSTRUCT UNDERGROUND UTILITY WORK INCLUDING STORM DRAINAGE FACILITIES. UPON INSTALLATION OF STORM DRAINAGE CATCH BASINS, YARD DRAINS AND INLETS, INSTALL REQUIRED INLET PROTECTION.
 - 1.12. DO NOT REPLACE ANY TOPSOIL, SEED OR INSTALL FINAL PAVEMENT PRIOR TO COMPLETION OF BUILDING SHELL. SHOULD SITEWORK BE COMPLETED PRIOR TO THIS DATE, MULCH DISTURBED AREAS TO BE PLANTED AND INSTALL STONE SUBBASE IN DISTURBED AREAS TO BE PAVED.
 - 1.13. FOLLOWING COMPLETION OF BUILDING SHELL AND PAVEMENT INSTALLATION, BEGIN LANDSCAPE INSTALLATION.
 - 1.14. COMPLETE SITEWORK, PAVEMENT MARKINGS AND FINAL CLEAN-UP. RESEED ANY AREAS THAT MAY REQUIRE ATTENTION IMMEDIATELY. NOTE THAT LAWN AREAS WILL NOT BE DEEMED STABLE UNTIL A MINIMUM 80% VEGETATIVE DENSITY HAS BEEN ACHIEVED.
 - 1.15. MAINTAIN EROSION & SEDIMENTATION CONTROL MEASURES UNTIL THE SITE HAS BEEN COMPLETELY STABILIZED. ALL AREAS OF VEGETATIVE SURFACE, WHETHER PERMANENT OR TEMPORARY, SHALL BE CONSIDERED TO BE IN PLACE AND FUNCTIONAL WHEN THE REQUIRED UNIFORM RATE OF COVERAGE (90%) IS OBTAINED.
 - 1.16. REMOVE SEDIMENT CONTROLS.

PROJECT DESCRIPTION
THIS SITE IS HOME TO A RESIDENTIAL HOUSE WITH DRIVE, EXISTING BUILDINGS WITH ASSOCIATED ASPHALT PARKING AND FENCING. THE RESIDENTIAL HOUSE WITH DRIVE AND LIMITED ASPHALT PAVEMENT AND FENCING WILL BE DEMOLISHED AND REMOVED. A PROPOSED BUILDING WILL BE BUILT ALONG WITH ASPHALT PARKING LOTS AROUND THE PROPERTY.

PROJECT COMPLETION STATISTICS

PARCEL SIZE:	32.67 ACRES (TOTAL CAMPUS)
TOTAL DISTURBED AREA:	8.39 ACRES

* WATER QUALITY WILL BE OF THE ENTIRE CAMPUS IMPROVEMENTS, WHICH INCLUDES A SEPARATE PROJECT. ALL WATER QUALITY REQUIRED FOR THIS CAMPUS WILL BE DESIGNED AND ACCOUNTED UNDER SEPARATE PROJECT "SANITATION BUILDING PROJECT - GP 1376 DESIGNED BY GPD GROUP, INC. DATED".

EXISTING LAND USE FOR THE SITE IS EXISTING BUILDINGS AND PAVEMENT.

ESTIMATED PRE-CONSTRUCTION IMPERVIOUS AREA:	**22.65 ACRES
ESTIMATED PRE-CONSTRUCTION IMPERVIOUS PERCENT:	**69.4%
PRE-CONSTRUCTION RUN-OFF COEFFICIENT:	**0.77

PROPOSED LAND USE WILL BE BUILDINGS WITH ASPHALT PARKING

ESTIMATED POST-CONSTRUCTION IMPERVIOUS AREA:	**23.67 ACRES
ESTIMATED POST-CONSTRUCTION IMPERVIOUS PERCENT:	**72.5%
POST-CONSTRUCTION RUN-OFF COEFFICIENT:	**0.79

** NUMBERS BASED ON ENTIRE CAMPUS IMPROVEMENTS.

PROJECT LOCATION

LATITUDE	40° 49' 46" N
LONGITUDE	81° 20' 26" W

EXISTING SITE SOIL TYPES:
 WhA: WEINBACH SILT LOAM, 0 TO 2 PERCENT SLOPES, HSG = CD
 Ge: GNAT SILT LOAM, HSG = CD
 CuB: CHILURBAN LAND COMPLEX UNDULATING, HSG = A
 REFERENCE: USDA NATIONAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY.

WETLAND INFORMATION:
THERE ARE NO WETLANDS ON THIS SITE.

FIRST AND SUBSEQUENT RECEIVING STREAM:
INITIAL RECEIVING WATER AN EXISTING SEWER SYSTEM AND THE SUBSEQUENT RECEIVING WATER IS THE MIDDLE BRANCH NIMMISHLEEN CREEK.

OWNER CONTACT:
 JIM BENEKOS, PE, PS
 CANTON CITY ENGINEER
 2436 30TH STREET NE
 CANTON, OHIO 44705
 330.489.3381
 JAMES.BENEKOS@CANTONOHIO.GOV

ANTICIPATED TIMING:
 CONSTRUCTION BEGIN: TBD, 2023
 CONSTRUCTION COMPLETE: TBD, 2023

CONTRACTOR: T.B.D.
CONTACT: _____
PHONE NUMBER: _____

CONTRACTOR SHALL MAINTAIN A CONSTRUCTION LOG DOCUMENTING ALL GRADING AND STABILIZATION ACTIVITIES.

BENCHMARKS:
 STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE. ELEVATIONS ARE NAVD 88, GEOID 18, TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE	N 425323, E 2289043 ELEVATION = 1059.74
BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE	N 426026, E 2289235 ELEVATION = 1061.54
BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA	N 426072, E 2289681 ELEVATION = 1063.05



UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY DUPS REQUEST #A207700537 AND #A207700538.

DESCRIPTION	
DATE	
REV.	

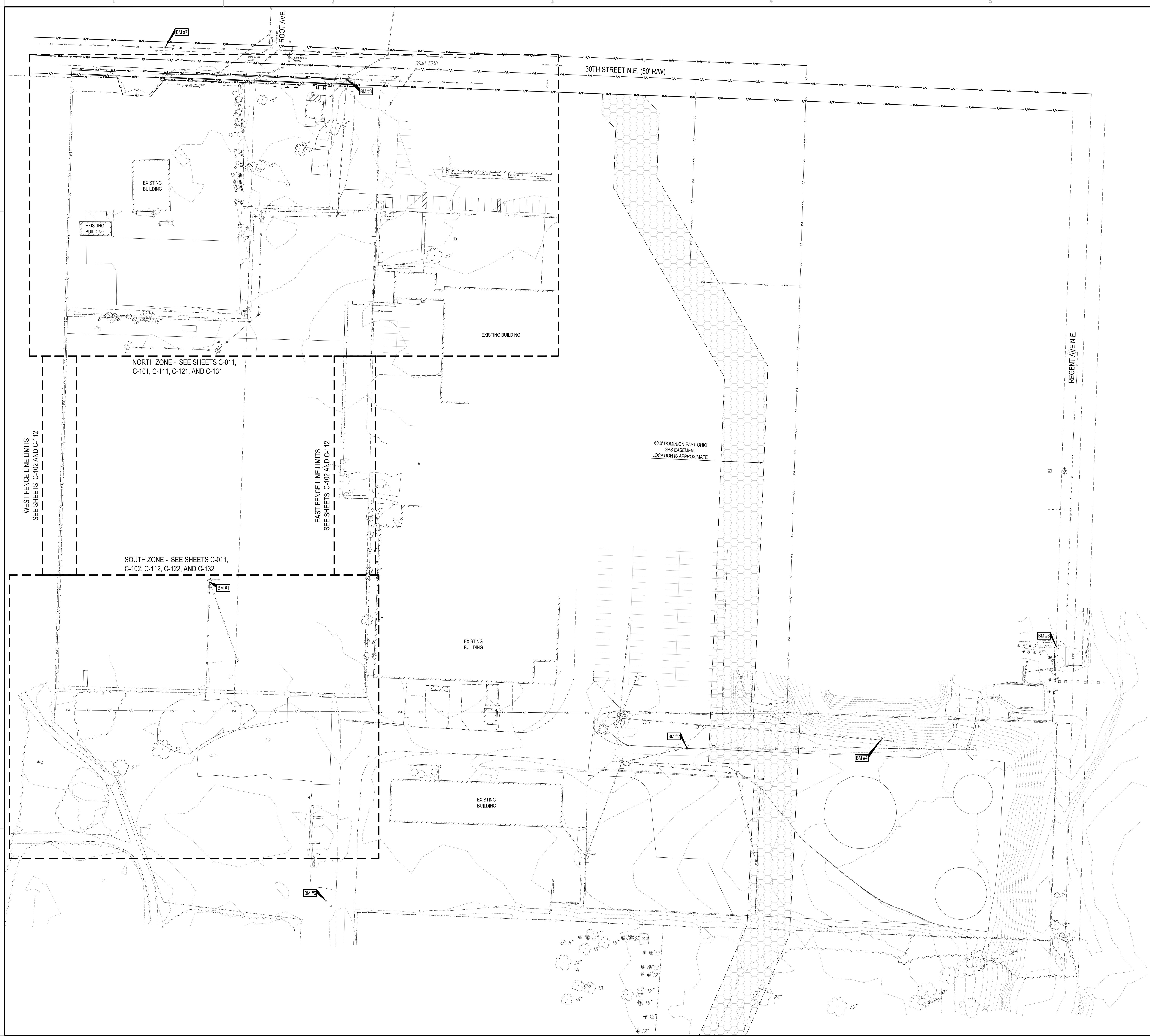
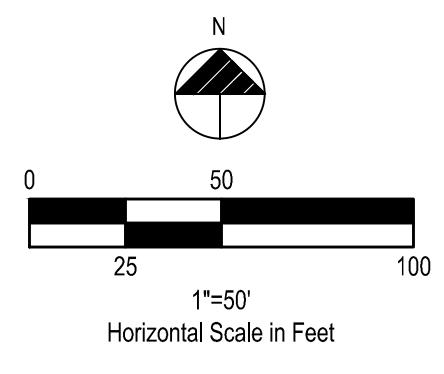
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET NE,
 CANTON, OHIO 44705

SWPP PLAN

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-011



NORTH ZONE - SEE SHEETS C-011, C-101, C-111, C-121, AND C-131

SOUTH ZONE - SEE SHEETS C-011, C-102, C-112, C-122, AND C-132

WEST FENCE LINE LIMITS
SEE SHEETS C-102 AND C-112

EAST FENCE LINE LIMITS
SEE SHEETS C-102 AND C-112

60.0' DOMINION EAST OHIO
GAS BASEMENT
LOCATION IS APPROXIMATE

BENCHMARKS:
 STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE. ELEVATIONS ARE NAVD 88, GEOD 18, TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE N 425323, E 228943 ELEVATION = 1059.74
BENCHMARK #2 - MAG SPIKE ON SOUTH SIDE OF UTILITY POLE N 425092, E 228670 ELEVATION = 1060.85
BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE N 426026, E 228625 ELEVATION = 1061.54
BENCHMARK #4 - MAG SPIKE ON WEST SIDE OF UTILITY POLE N 425103, E 228980 ELEVATION = 1066.51
BENCHMARK #5 - NORTH EAST BONNET BOLT BETWEEN VILLE & ALA N 425232, E 229027 ELEVATION = 1077.30
BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA N 426072, E 228981 ELEVATION = 1063.05



UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY OUPS REQUEST #420770537 AND #420770538.

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OHIO 44705

KEY PLAN

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

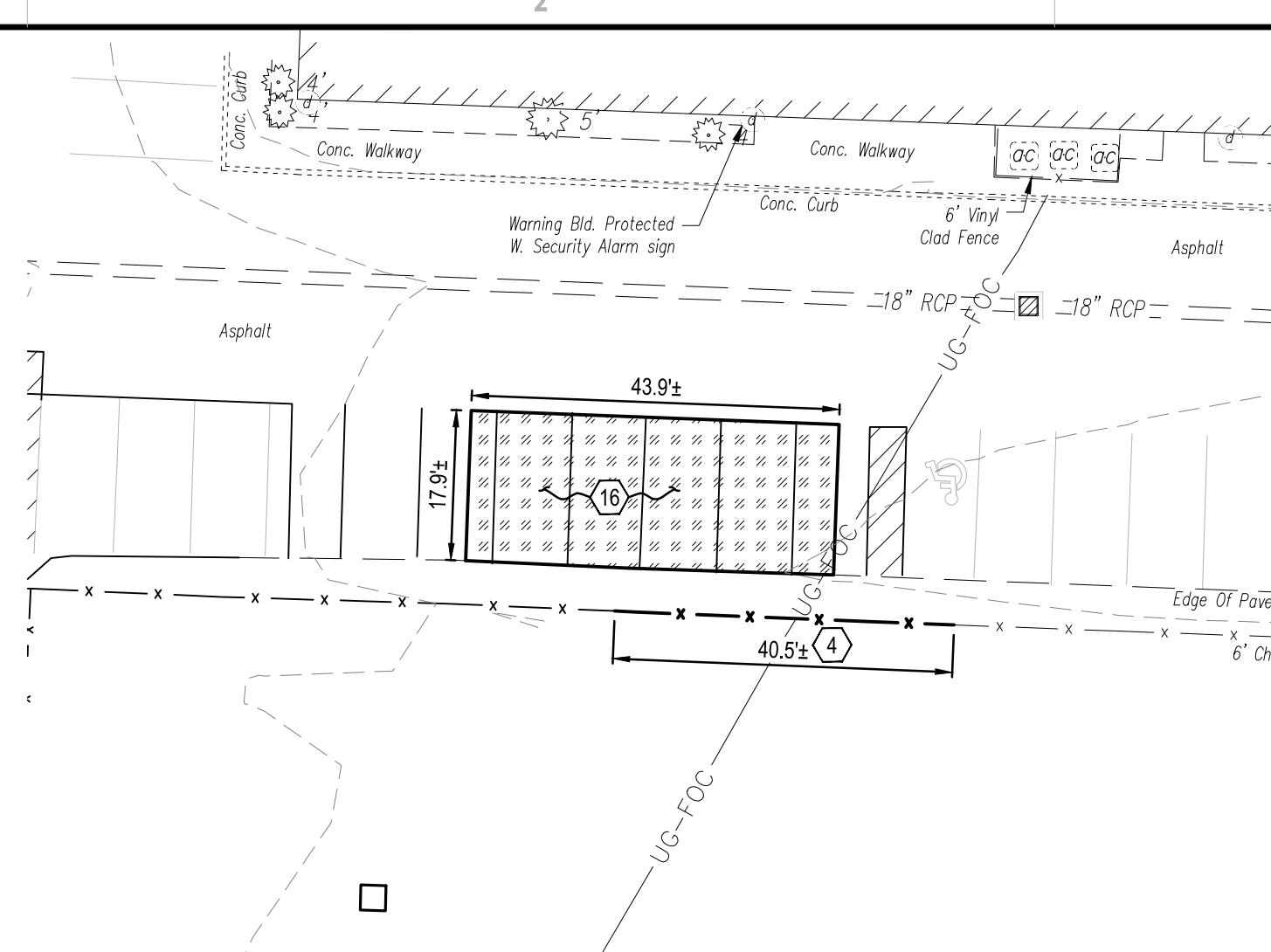
JOB NO.
2020377.06

C-100

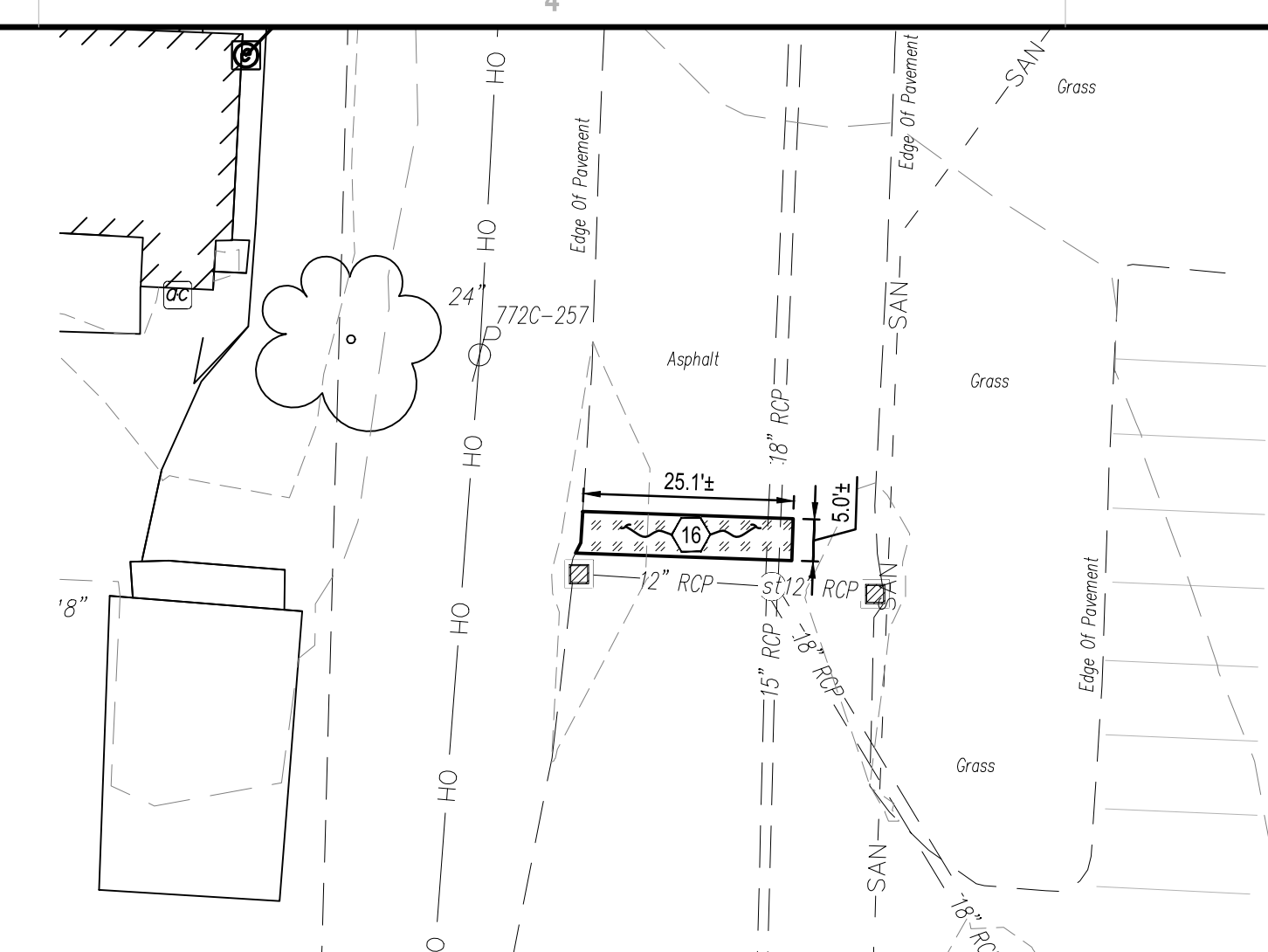
BENCHMARKS
 STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE.
 ELEVATIONS ARE NAVD 88, GEOID 18, TIED BY GPS TO THE O.D.O.T. VRS.
 BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
 N 425323, E 2289043
 ELEVATION = 1059.74
 BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
 N 426026, E 2289235
 ELEVATION = 1061.54
 BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
 N 426072, E 2288981
 ELEVATION = 1063.05



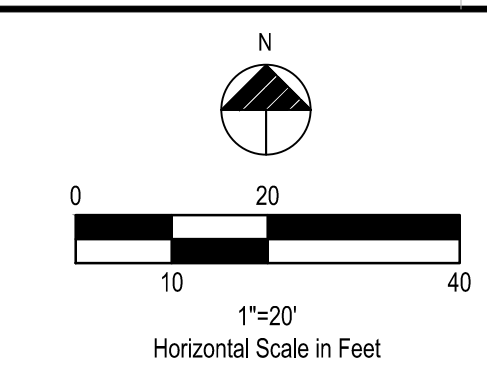
UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY OUPS REQUEST #A207700537 AND #A207700538.



E2 ALTERNATE BID ITEM #2 WORK
 1" = 20'



E2 ALTERNATE BID ITEM #3 WORK
 1" = 20'

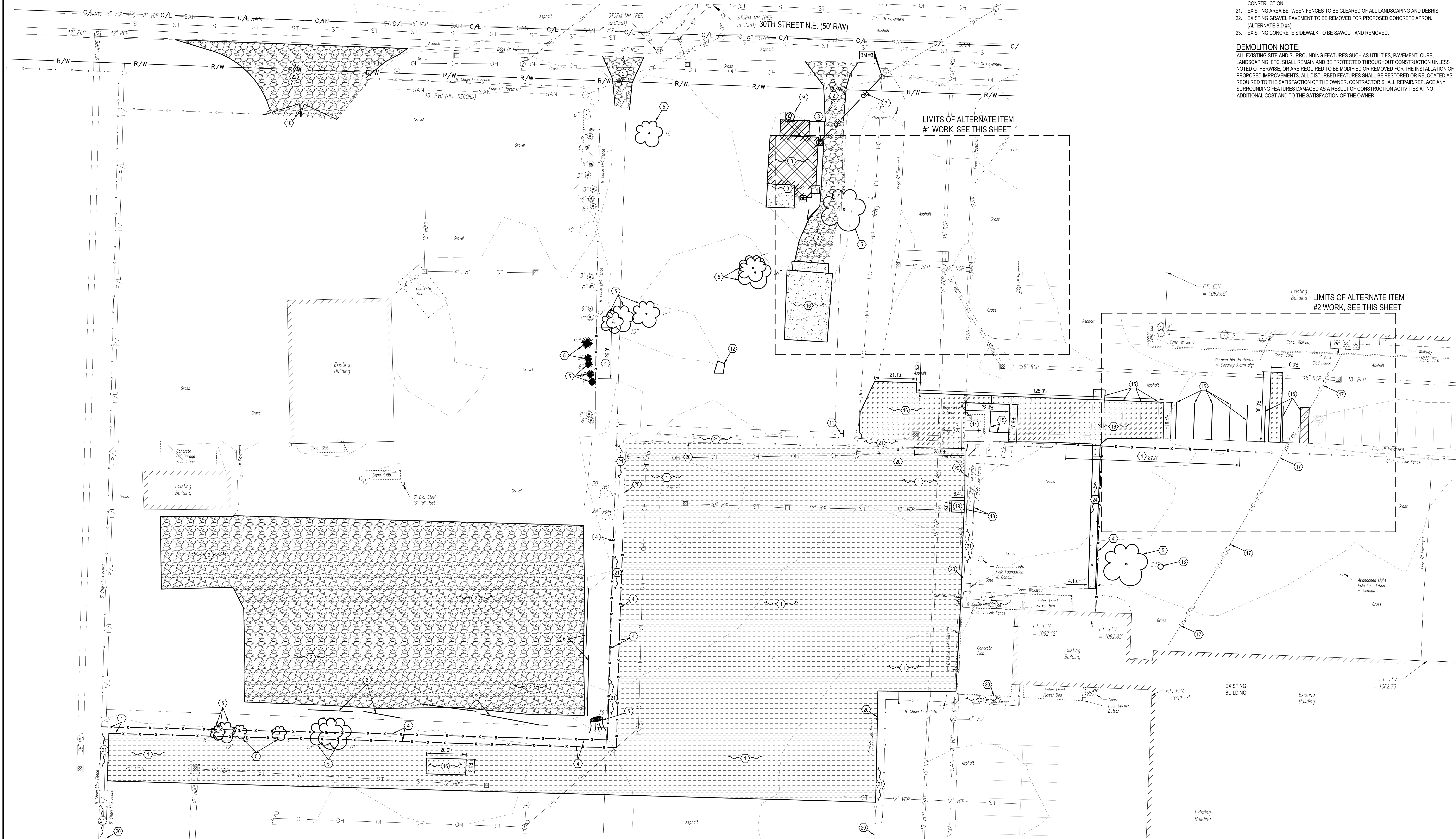


LEGEND
 (SEE SHEET C-100 FOR GENERAL LEGEND)

[Pattern]	EXISTING ASPHALT TO BE REMOVED
[Pattern]	EXISTING 1.5" ASPHALT MILLED SURFACE
[Pattern]	EXISTING CONCRETE TO BE REMOVED
[Pattern]	EXISTING BUILDING/STRUCTURE TO BE REMOVED
[Pattern]	EXISTING GRAVEL PAVEMENT TO BE REMOVED
[Pattern]	DENOTES LIMITS OF SAWCUT
[Symbol]	DEMOLITION KEYNOTE

- PLAN KEYNOTES**
- EXISTING ASPHALT PAVEMENT TO BE MILLED 1-1/4".
 - EXISTING GRAVEL PAVEMENT TO BE REMOVED.
 - EXISTING HOUSE, CONCRETE PORCH, FOUNDATION, AND APPURTENANCES TO BE REMOVED.
 - EXISTING CHAINLINK FENCE TO BE REMOVED.
 - EXISTING TREE/BUSINESS STUMP TO BE REMOVED.
 - EXISTING WOODEN POLE ON GROUND TO BE REMOVED.
 - EXISTING OVERHEAD POWER LINE TO BE REMOVED.
 - EXISTING ELECTRIC METER TO BE REMOVED.
 - EXISTING GAS METER TO BE REMOVED.
 - EXISTING GATE TO BE REMOVED. (ALTERNATE BID #4)
 - EXISTING "NOTICE CITY ORDINANCE PRIVATE PARKING" SIGN TO BE RELOCATED.
 - EXISTING FIRE PIT TO BE REMOVED.
 - EXISTING ABANDONED LIGHT POLE, AND ASSOCIATED FOUNDATION, TO BE REMOVED.
 - EXISTING CONCRETE PAD WITH GATE APPURTENANCES TO REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION.
 - EXISTING PAVEMENT MARKINGS TO BE REMOVED. CONTRACTOR SHALL REMOVE MARKINGS WITH SMALL HANDHELD GRINDERS OR SCARIFIERS OR OTHER METHODS, WITH THE APPROVAL OF THE ENGINEER. TAKE CARE DURING MARKING REMOVAL NOT TO SCAR, DISCOLOR, OR OTHERWISE DAMAGE THE PAVEMENT SURFACE. DO NOT OVER PAINT OR USE OTHER METHODS OF COVERING MARKINGS INSTEAD OF REMOVAL.
 - EXISTING PAVEMENT TO BE SAWCUT AND REMOVED.
 - EXISTING UNDERGROUND FIBER OPTICS LINE, CONTRACTOR SHALL COORDINATE WITH OWNER FOR STATUS OF LINE BEING RELOCATED AND POSSIBLE ROUTING OF LINE.
 - CONTRACTOR SHALL TEMPORARILY REMOVE FENCING AS NEEDED FOR INSTALLATION OF PROPOSED SANITARY LINE. CONTRACTOR SHALL REPLACE FENCING AFTER INSTALLATION IS COMPLETE.
 - EXISTING ASPHALT PAVEMENT TO BE SAWCUT AND REMOVED FOR THE INSTALLATION OF PROPOSED SANITARY CONNECTION.
 - EXISTING 6" INTERIOR FENCE MESH, 3 STRAND BARBED WIRE, AND OBSTACLE WIRE BETWEEN FENCES TO BE CAREFULLY REMOVED AND STORED DURING CONSTRUCTION. CONTRACTOR SHALL LEAVE ALL POSTS IN PLACE. CONTRACTOR SHALL REPLACE FENCE MESH, 3 STRAND BARBED WIRE, AND OBSTACLE WIRE UPON COMPLETION OF CONSTRUCTION.
 - EXISTING AREA BETWEEN FENCES TO BE CLEARED OF ALL LANDSCAPING AND DEBRIS.
 - EXISTING GRAVEL PAVEMENT TO BE REMOVED FOR PROPOSED CONCRETE APRON. (ALTERNATE BID #4).
 - EXISTING CONCRETE SIDEWALK TO BE SAWCUT AND REMOVED.

DEMOLITION NOTE:
 ALL EXISTING SITE AND SURROUNDING FEATURES SUCH AS UTILITIES, PAVEMENT, CURB, LANDSCAPING, ETC. SHALL REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION UNLESS NOTED OTHERWISE. OR ARE REQUIRED TO BE MODIFIED OR REMOVED FOR THE INSTALLATION OF PROPOSED IMPROVEMENTS. ALL DISTURBED FEATURES SHALL BE RESTORED OR RELOCATED AS REQUIRED TO THE SATISFACTION OF THE OWNER. CONTRACTOR SHALL REPAIR/REPLACE ANY SURROUNDING FEATURES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.



A1 FENCE MATCHLINE A, SEE SHEET C-102
 BASE BID
 1" = 20'

FENCE MATCHLINE B, SEE SHEET C-102

REV.	DATE	DESCRIPTION

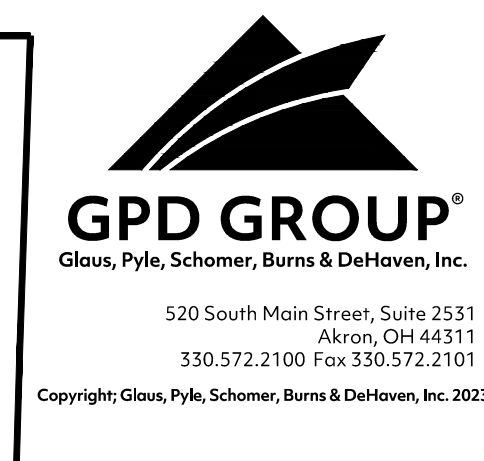
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OHIO 44705

DEMOLITION PLAN
NORTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-101



Drawing Name: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demo\4_Working
 FileID: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demo\4_Working
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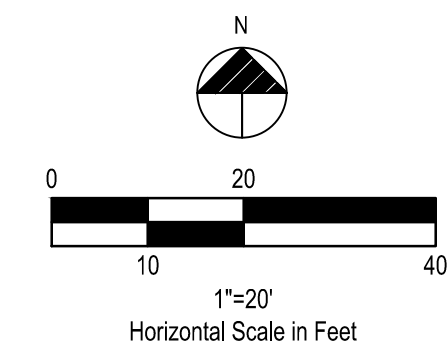
BENCHMARKS
 STATE PLANE GRID NORTH, NAD 83 (2011),
 OHIO NORTH ZONE.
 ELEVATIONS ARE NAVD 88, GEOID 18,
 TIED BY GPS TO THE O.D.O.T. VRS.
 BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
 N 425323, E 2289043
 ELEVATION = 1059.74
 BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
 N 426026, E 2289235
 ELEVATION = 1061.54
 BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
 N 426072, E 2288981
 ELEVATION = 1063.05



UTILITIES SHOWN ON SURVEY WERE LOCATED
 BASED ON FIELD MARKING PROVIDED BY OUPS
 REQUEST #A207700537 AND #A207700538.

LEGEND
 (SEE SHEET C-100 FOR GENERAL LEGEND)

- EXISTING CONSTRUCTION DEBRIS TO BE REMOVED
- EXISTING GRAVEL PAVEMENT TO BE REMOVED
- EXISTING ASPHALT TO BE REMOVED
- DENOTES LIMITS OF SAWCUT
- DEMOLITION KEYNOTE



PLAN KEYNOTES

1. EXISTING CHAINLINK FENCE TO BE REMOVED.
2. EXISTING GRAVEL PAVEMENT TO BE REMOVED.
3. EXISTING TREES/BUSHES TO BE REMOVED.
4. EXISTING PILE OF CONSTRUCTION DEBRIS TO BE REMOVED.
5. EXISTING PAVEMENT TO BE SAWCUT AND REMOVED.
6. EXISTING 6' INTERIOR FENCE MESH, 3 STRAND BARBED WIRE, AND OBSTACLE WIRE BETWEEN FENCES TO BE CAREFULLY REMOVED AND STORED DURING CONSTRUCTION. CONTRACTOR SHALL LEAVE ALL POSTS IN PLACE. CONTRACTOR SHALL REPLACE FENCE MESH, 3 STRAND BARBED WIRE AND OBSTACLE WIRE UPON COMPLETION OF CONSTRUCTION.
7. EXISTING AREA BETWEEN FENCES TO BE CLEARED OF ALL LANDSCAPING AND DEBRIS.

DEMOLITION NOTE:
 ALL EXISTING SITE AND SURROUNDING FEATURES SUCH AS UTILITIES, PAVEMENT, CURB, LANDSCAPING, ETC. SHALL REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION UNLESS NOTED OTHERWISE. OR ARE REQUIRED TO BE MODIFIED OR REMOVED FOR THE INSTALLATION OF PROPOSED IMPROVEMENTS. ALL DISTURBED FEATURES SHALL BE RESTORED OR RELOCATED AS REQUIRED TO THE SATISFACTION OF THE OWNER. CONTRACTOR SHALL REPAIR/REPLACE ANY SURROUNDING FEATURES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.



530 South Main Street, Suite 2551
 Akron, OH 44311
 330.572.2100 Fax 330.572.2103
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FENCE MATCHLINE C, SEE THIS SHEET

FENCE MATCHLINE D, SEE THIS SHEET

FENCE MATCHLINE A, SEE SHEET C-101

FENCE MATCHLINE B, SEE SHEET C-101



REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET NE,
 CANTON, OHIO 44705

DEMOLITION PLAN
SOUTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-102

Drawing Name: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demo\4_Working
 File:00_C:\2020\2020377\06 Plan Demo Area And Site.dwg
 January 11, 2023 09:13 AM - mngn

A1 BASE BID
 1" = 20'

A5 WEST FENCE LINE, BASE BID
 1" = 20'

A6 EAST FENCE LINE, BASE BID
 1" = 20'

BENCHMARKS:
STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE.
ELEVATIONS ARE NAVD 88, GEOID 18, TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
N 425323, E 2289043
ELEVATION = 1099.74

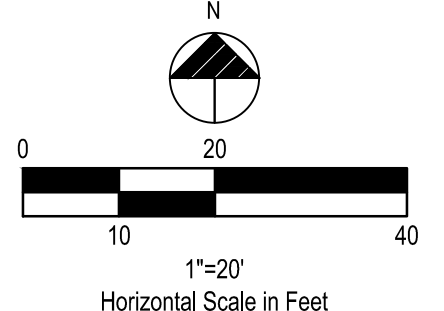
BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
N 426025, E 2289235
ELEVATION = 1081.54

BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
N 426072, E 2289881
ELEVATION = 1083.05



UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY OUPS REQUEST #A207700537 AND #A207700538

- LEGEND**
(SEE SHEET C-011 FOR GENERAL LEGEND)
- PROPOSED STANDARD DUTY ASPHALT, SEE SHEET C-501.
 - PROPOSED CONCRETE.
 - PROPOSED ASPHALT RESURFACING SEE SHEET C-501
 - PROPOSED FENCE GRAVEL, SEE SHEET C-501.
 - PROPOSED CITY OF CANTON SIDEWALK, ALTERNATE BID ITEM #3
 - CONSTRUCTION KEYNOTE
 - PROPOSED PARKING SPACE NUMBER
 - PROPOSED AUCTION LOT PARKING SPACE NUMBER



PLAN KEYNOTES

1. PROPOSED CONCRETE CURB, SEE SHEET C-501.
2. PROPOSED CONCRETE WALK, SEE SHEET C-501.
3. PROPOSED CONCRETE WALK, SEE SHEET C-501.
4. PROPOSED HANDICAP PARKING SIGN, SEE SHEET C-501.
5. PROPOSED LANDSCAPING AREA, CONTRACTOR SHALL SEED ALL DISTURBED AREAS, SEE SHEET C-501 FOR SEEDING NOTES.
6. PROPOSED PAINTED TRANSVERSE STRIPING, SEE SHEET C-501.
7. PROPOSED PAINTED 4" WIDE SOLID STRIPE, WHITE ON ASPHALT, YELLOW ON CONCRETE.
8. PROPOSED PAINTED INTERNATIONAL ADA SYMBOL PER ADA SPECIFICATIONS AND SHEET C-501.
9. PROPOSED ADA ACCESSIBLE RAMP PER ADA SPECIFICATIONS AND SHEET C-501.
10. PROPOSED 5' X 5' FROST SLAB AT DOOR, SEE STRUCTURAL DRAWINGS FOR DETAIL.
11. PROPOSED 6" CHAIN LINK FENCE WITH BARBED WIRE, SEE SHEET C-501. CONTRACTOR SHALL REMOVE EXISTING PAVEMENT AS NECESSARY FOR INSTALLATION OF PROPOSED FENCE POLES AND FOUNDATIONS.
12. PROPOSED 28" CHAIN LINK SWING GATE, SEE SHEET C-501.
13. PROPOSED 36" CHAIN LINK SWING GATE, SEE SHEET C-501.
14. PROPOSED 4" MAN GATE, SEE SHEET C-501.
15. PROPOSED UTILITY STRUCTURE, SEE SHEET C-431.
16. PROPOSED 6" CURB TAPER, SEE SHEET C-501.
17. PROPOSED CONCRETE APRON, SEE SHEET C-501 AND STRUCTURAL SHEETS FOR CONNECTION TO BUILDING.
18. PROPOSED DETERRENT BOLLARD, SEE SHEET C-501. CONTRACTOR SHALL MAINTAIN 1'-0" MINIMUM DISTANCE BETWEEN FACE OF COLUMN AND FACE OF BOLLARD.
19. PROPOSED CONCRETE WHEELSTOP, SEE SHEET C-501.
20. PROPOSED CURB PAVEMENT TAPER, SEE SHEET C-501 FOR DETAIL AND C-121 FOR GRADES.
21. PROPOSED CONCRETE DRIVE APRON PER CITY OF CANTON STD DRAWING NO. 27, SEE SHEET C-503.
22. PROPOSED CONCRETE WALK PER CITY OF CANTON STD DRAWING NO. 32, SEE SHEET C-503. CONTRACTOR SHALL ADJUST ALL UTILITIES AS NEEDED AND SEED ALL DISTURBED AREA FOR INSTALLATION OF PROPOSED WALK, (ALTERNATE BID ITEM #4).
23. PROPOSED RESURFACED ASPHALT PAVEMENT, SEE SHEET C-501. CONTRACTOR TO SINGLE GHP SEAL, TYPE B PER ODOT ITEM 422 PRIOR TO RESURFACING ASPHALT.
24. PROPOSED 5' WIDE CROSSWALK STRIPING, SEE SHEET C-501, (ALTERNATE BID ITEM #4).
25. ELECTRIC VEHICLE CHARGING STATION, SEE ELECTRICAL DRAWING FOR SPECIFICATIONS.
26. PROPOSED GANTRY COLUMN AND WINING, SEE ARCHITECTURAL PLANS.
27. PROPOSED FENCE GRAVEL, SEE SHEET C-501. CONTRACTOR SHALL PLACE FINISH GRADE OF STONE AT EXISTING ELEVATION. IF IMPERVIOUS PAVEMENT IS FOUND WITHIN THE LIMITS OF FENCE GRAVEL CONTRACTOR CAN OMIT PROPOSED GRAVEL WITHIN THESE IMPERVIOUS LIMITS.
28. CONTRACTOR SHALL REINSTALL EXISTING 6" FENCE MESH, 3 STRAND BARBED WIRE AND OBSTACLE WIRE UPON COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL REPLACE ANY BROKEN COMPONENTS AND USE FOR NEW HARDWARE FOR ATTACHING MATERIAL.
29. PROPOSED 8" CHAIN LINK FENCE WITH BARBED WIRE AND OBSTACLE WIRE BETWEEN THE FENCES, SEE SHEET C-501. CONTRACTOR SHALL REMOVE EXISTING PAVEMENT AS NECESSARY FOR INSTALLATION OF PROPOSED FENCE POLES AND FOUNDATIONS.

E1 ALTERNATE BID ITEM #2
1" = 20'

D6 ALTERNATE BID ITEM #3
1" = 20'

A1 FENCE MATCHLINE A, SEE SHEET C-112
BASE BID
1" = 20'

FENCE MATCHLINE B, SEE SHEET C-112

REV	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OHIO 44705

SITE PLAN
NORTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-111

Drawing Name: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demo\4_Working
 File:00_C:\2020\2020377\06 Plan Demo And Site.dwg
 January 11, 2023 9:13 AM - rmgm

BENCHMARKS:
STATE PLANE GRID NORTH, NAD 83 (2011),
OHIO NORTH ZONE.
ELEVATIONS ARE NAVD 88, GEOID 18,
TIED BY GPS TO THE O.D.O.T. VRS.

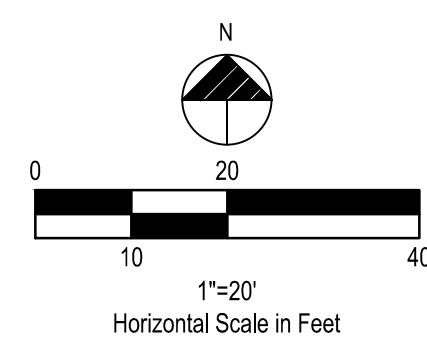
BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
N 425323; E 228940
ELEVATION = 1059.74

BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
N 426205; E 228925
ELEVATION = 1061.54

BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
N 426072; E 228881
ELEVATION = 1063.05



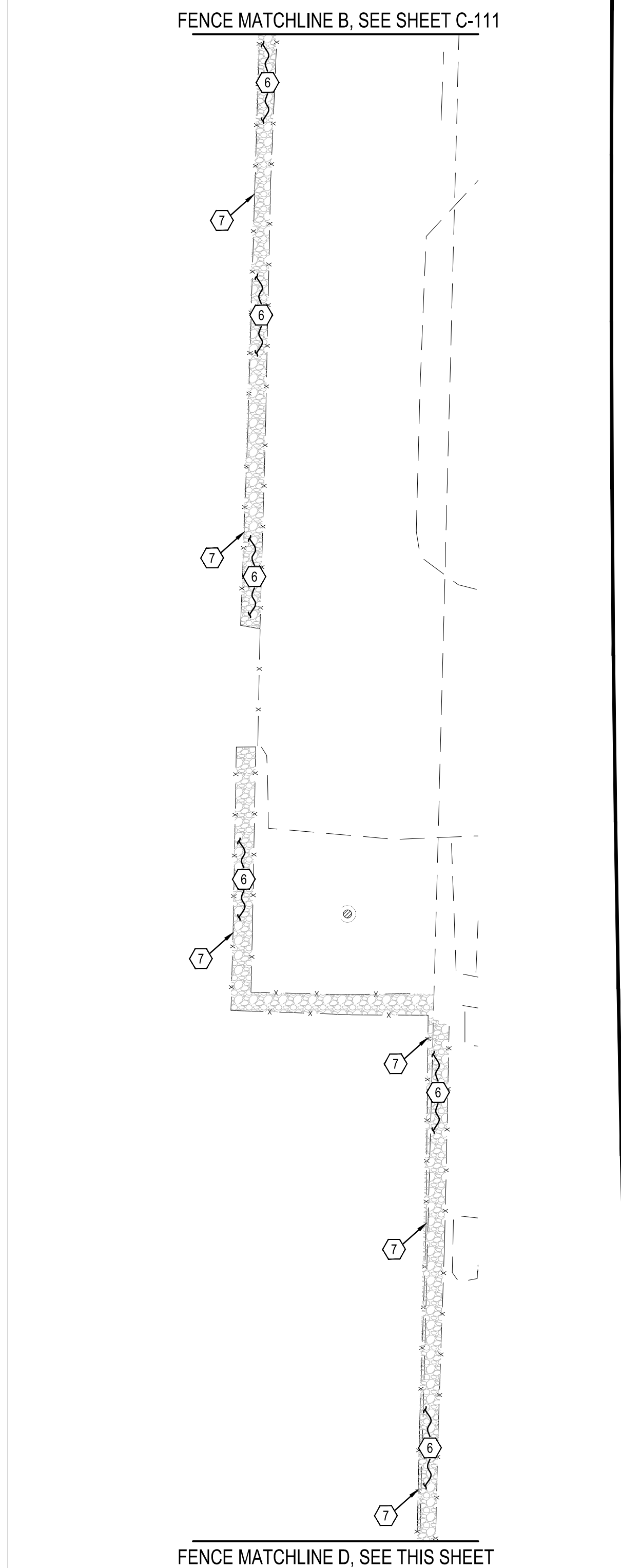
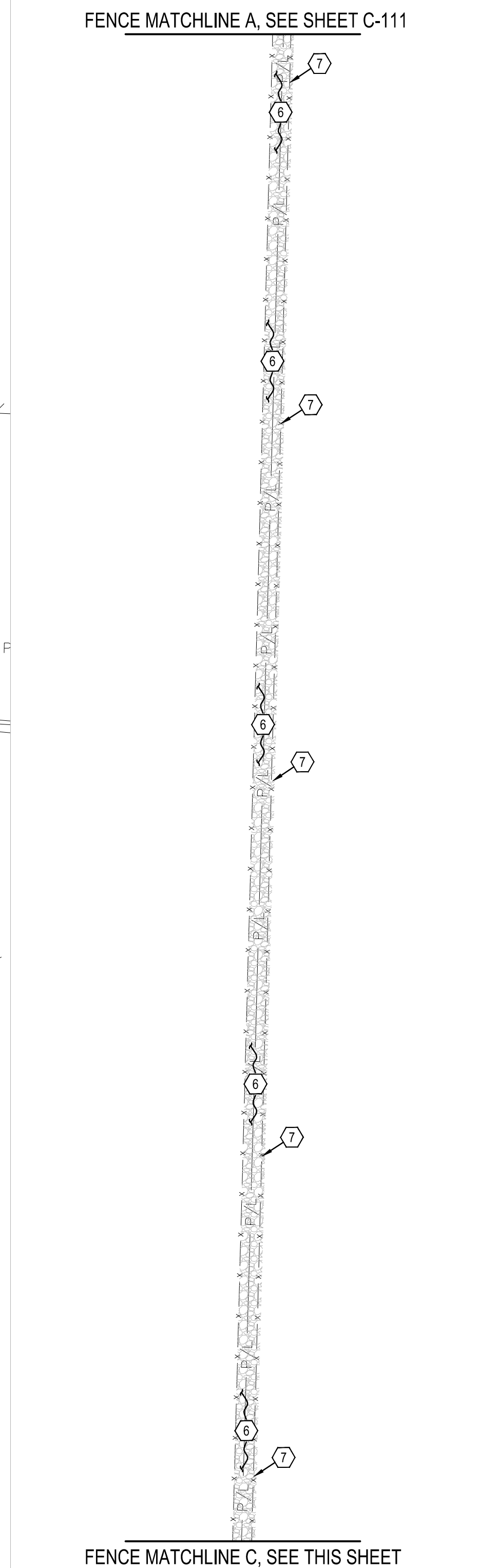
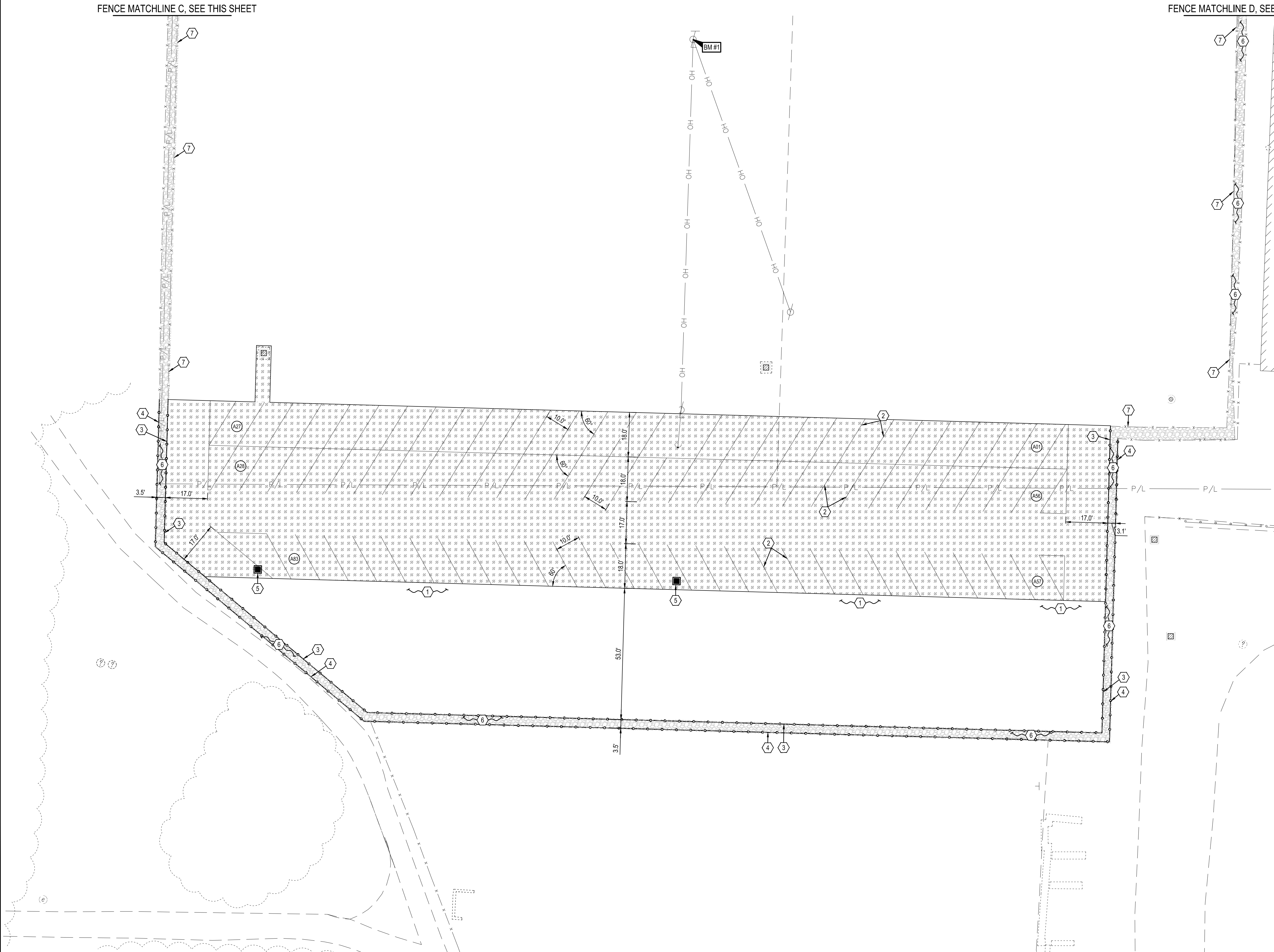
UTILITIES SHOWN ON SURVEY WERE LOCATED
BASED ON FIELD MARKING PROVIDED BY OUPS
REQUEST #A20770537 AND #A20770539.



- LEGEND**
(SEE SHEET C-001 FOR GENERAL LEGEND)
- PROPOSED STANDARD DUTY ASPHALT, SEE SHEET C-501.
 - PROPOSED FENCE GRAVEL, SEE SHEET C-501.
 - CONSTRUCTION KEYNOTE
 - PROPOSED AUCTION LOT PARKING SPACE NUMBER

- PLAN KEYNOTES**
1. PROPOSED LANDSCAPING AREA. CONTRACTOR SHALL SEED ALL DISTURBED AREAS, SEE SHEET C-010 FOR SEEDING NOTES.
 2. PROPOSED PAINTED 4" WIDE SOLID STRIPE - WHITE ON ASPHALT, YELLOW ON CONCRETE.
 3. PROPOSED 6" CHAIN LINK FENCE WITH BARBED WIRE. SEE SHEET C-501.
 4. PROPOSED 6" CHAIN LINK FENCE WITH BARBED WIRE AND OBSTACLE WIRE BETWEEN THE FENCES. SEE SHEET C-501. CONTRACTOR SHALL REMOVE EXISTING PAVEMENT AS NECESSARY FOR INSTALLATION OF PROPOSED FENCE POLES AND FOUNDATIONS.
 5. PROPOSED UTILITY STRUCTURE. SEE SHEET C-131.
 6. PROPOSED PROPOSED FENCE GRAVEL. SEE SHEET C-501. CONTRACTOR SHALL PLACE FINISH GRADE OF STONE AT EXISTING ELEVATION. IF IMPERVIOUS PAVEMENT IS FOUND WITHIN THE LIMITS OF FENCE GRAVEL CONTRACTOR CAN OMIT PROPOSED GRAVEL WITHIN THESE IMPERVIOUS LIMITS. CONTRACTOR SHALL REINSTALL EXISTING 6" FENCE MESH, 3 STRAND BARBED WIRE AND OBSTACLE WIRE UPON COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL REPLACE ANY BROKEN COMPONENTS AND USE FOR NEW HARDWARE FOR ATTACHING MATERIAL.
 - 7.

D1 ALTERNATE BID ITEM #1
1" = 20'



REV.	DATE	DESCRIPTION

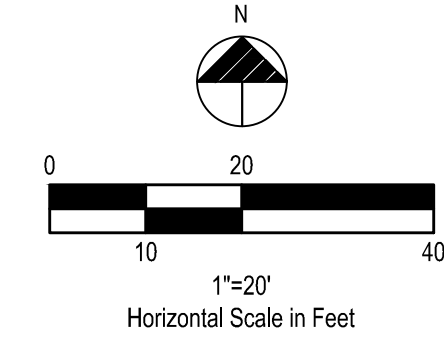
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET NE.
CANTON, OHIO 44705

SITE PLAN SOUTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

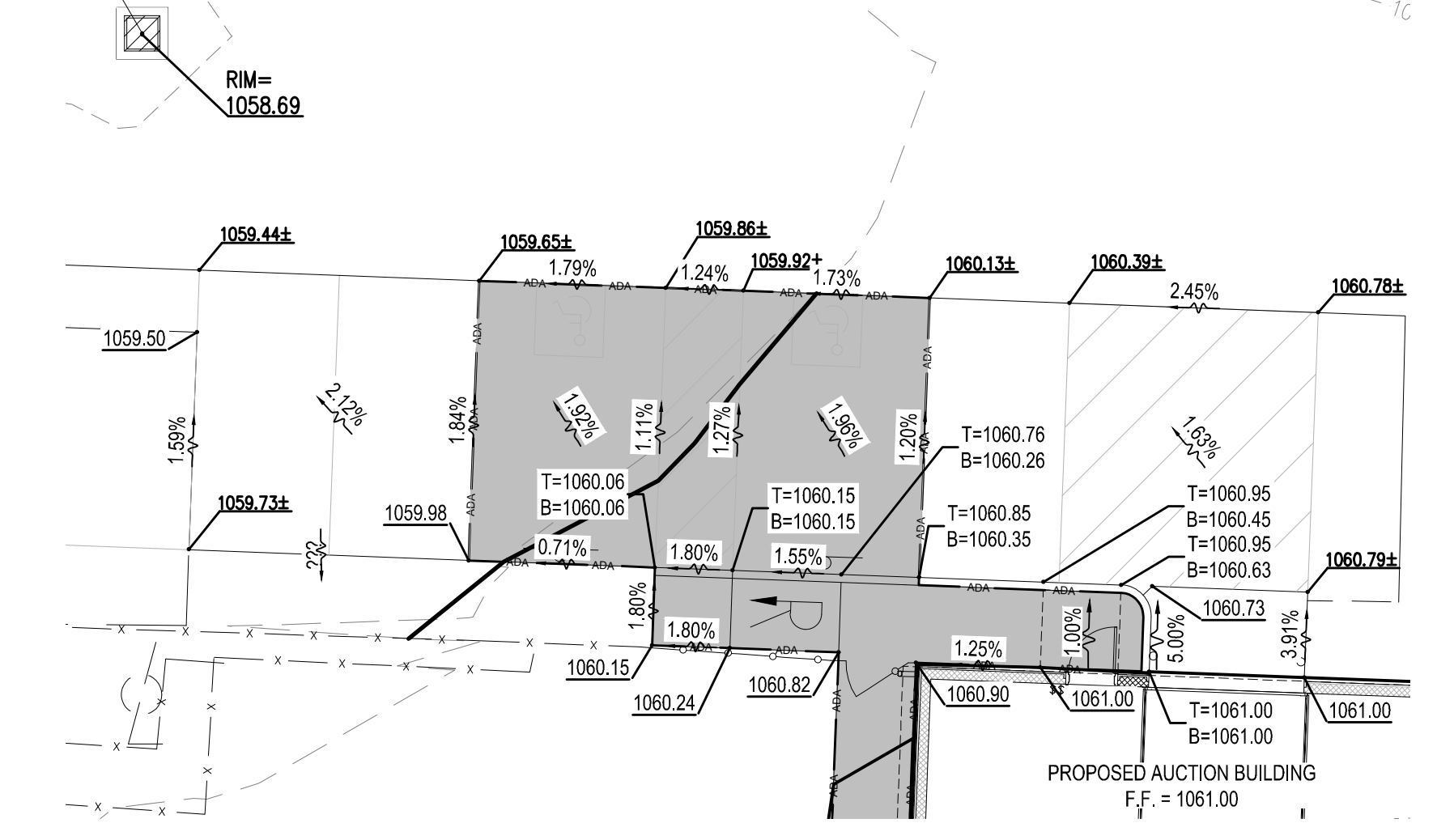
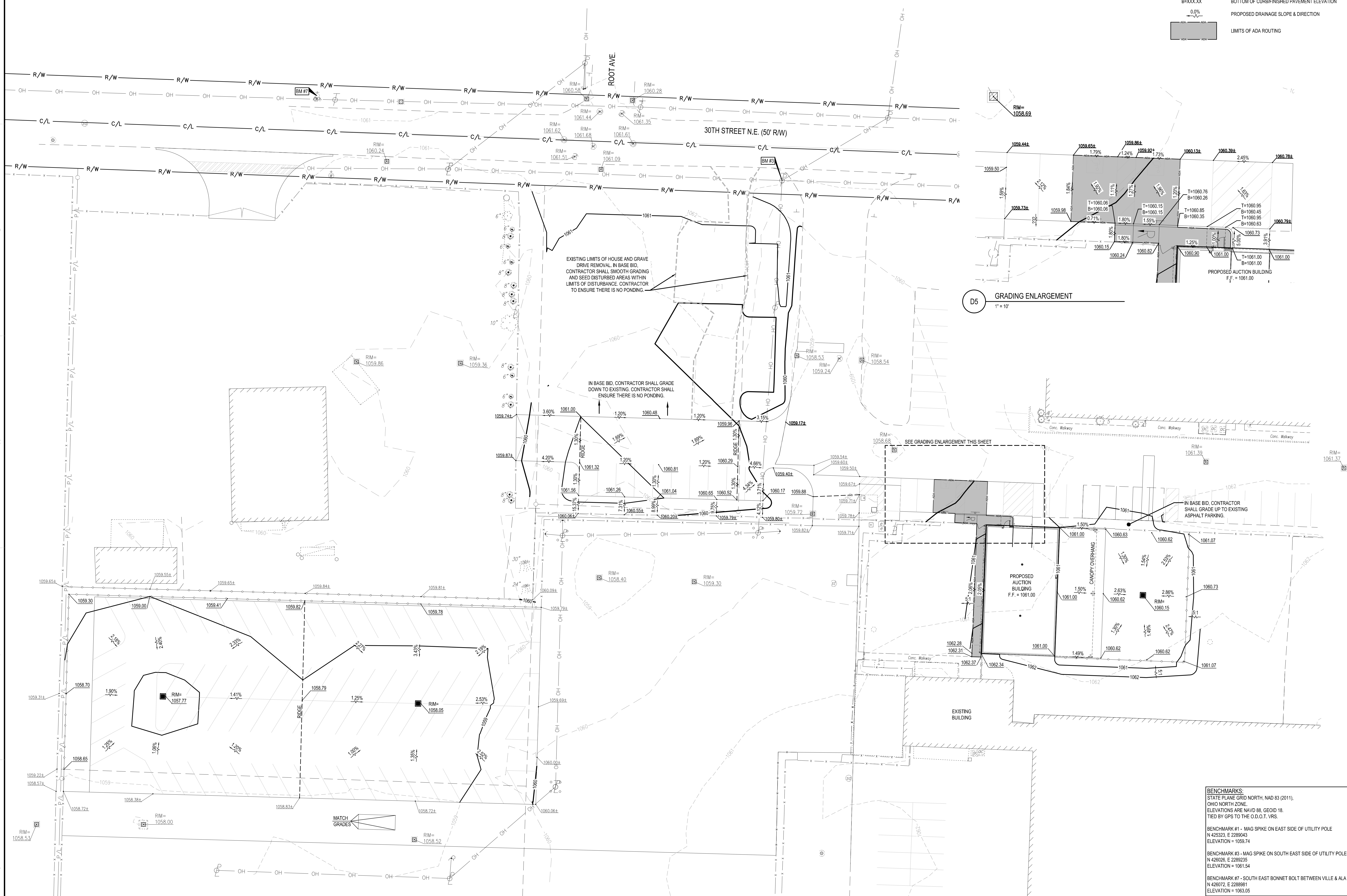
JOB NO.
2020377.06

C-112



LEGEND
(SEE SHEET C-001 FOR GENERAL LEGEND)

000	PROPOSED CONTOUR
XXX.XX/4	EXISTING SPOT ELEVATION MATCH EXISTING GRADE
XXX.XX	PROPOSED ELEVATION @ FINISHED GROUND ELEVATION
T=XXX.XX	TOP OF CURB ELEVATION
B=XXX.XX	BOTTOM OF CURB FINISHED PAVEMENT ELEVATION
0.0%	PROPOSED DRAINAGE SLOPE & DIRECTION
[Symbol]	LIMITS OF ADA ROUTING



EXISTING LIMITS OF HOUSE AND GRAVE DRIVE REMOVAL. IN BASE BID, CONTRACTOR SHALL SMOOTH GRADING AND SEED DISTURBED AREAS WITHIN LIMITS OF DISTURBANCE. CONTRACTOR TO ENSURE THERE IS NO PONDING.

IN BASE BID, CONTRACTOR SHALL GRADE DOWN TO EXISTING. CONTRACTOR SHALL ENSURE THERE IS NO PONDING.

IN BASE BID, CONTRACTOR SHALL GRADE UP TO EXISTING ASPHALT PARKING.

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OHIO 44705

GRADING PLAN
NORTH

BENCHMARKS:
STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE.
ELEVATIONS ARE NAVD 88, GEOID 18, TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
N 425323, E 2289043
ELEVATION = 1059.74

BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
N 426026, E 2289235
ELEVATION = 1061.54

BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
N 426072, E 2288881
ELEVATION = 1063.05

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

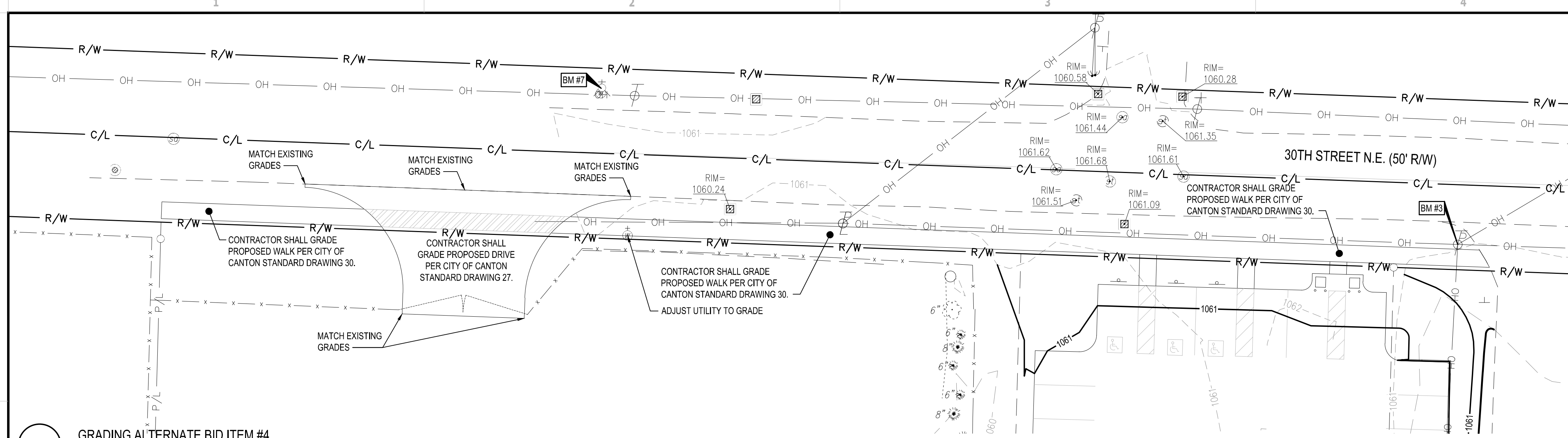
C-121

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 January 11, 2023 9:02 AM - v-ngrn

A1
BASE BID
1" = 20'



UTILITIES SHOWN ON SURVEY WERE LOCATED
BASED ON FIELD MARKING PROVIDED BY OUPS
REQUEST #A207700537 AND #A207700538.

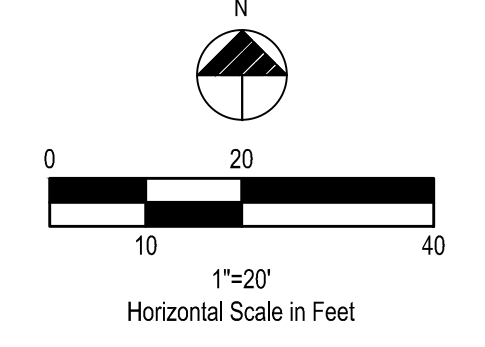


BENCHMARKS:
STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE. ELEVATIONS ARE NAVD 88, GEOID 18. TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE N 425223, E 2298043 ELEVATION = 1068.74

BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE N 426026, E 2298235 ELEVATION = 1061.54

BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA N 426072, E 2298981 ELEVATION = 1063.05

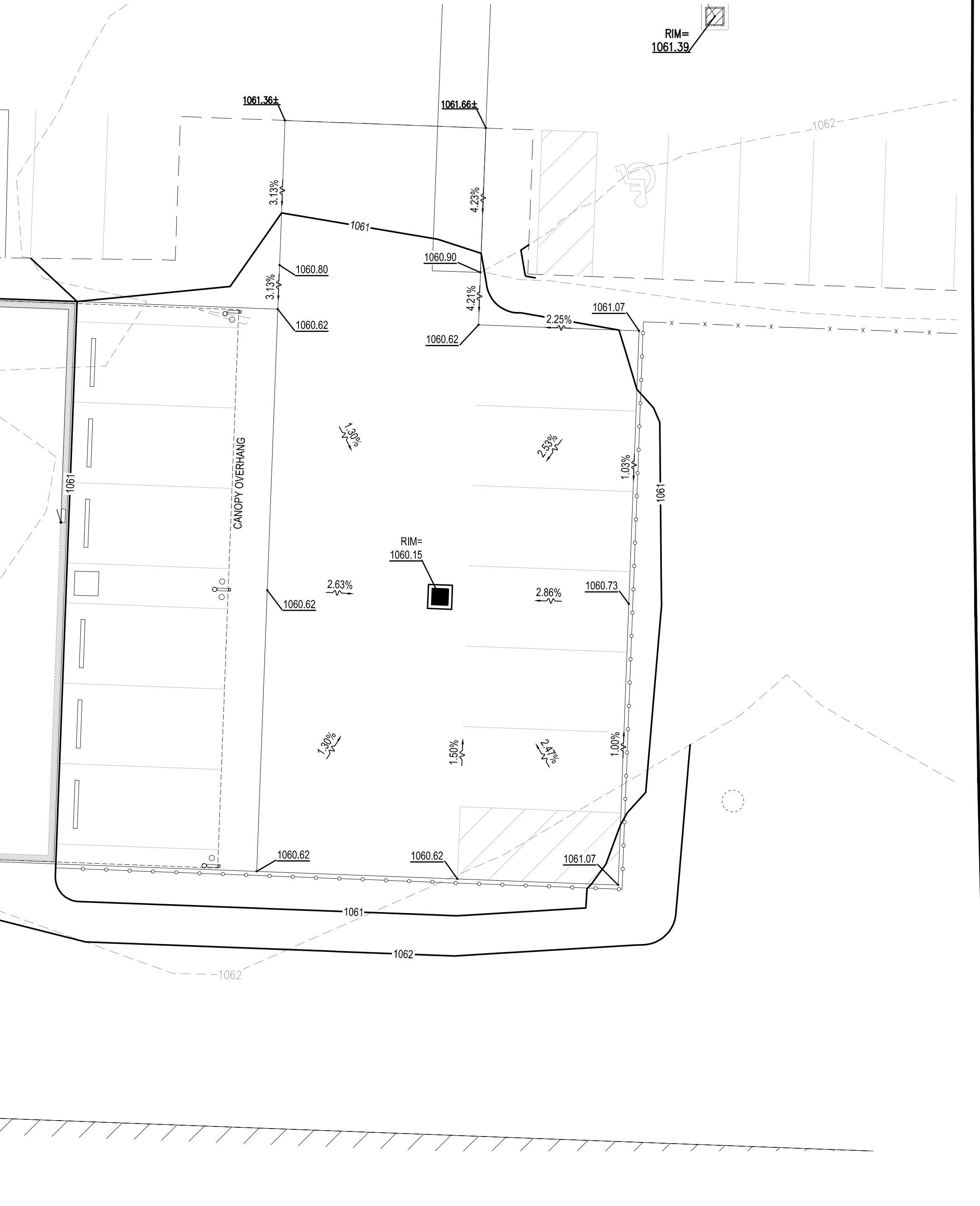
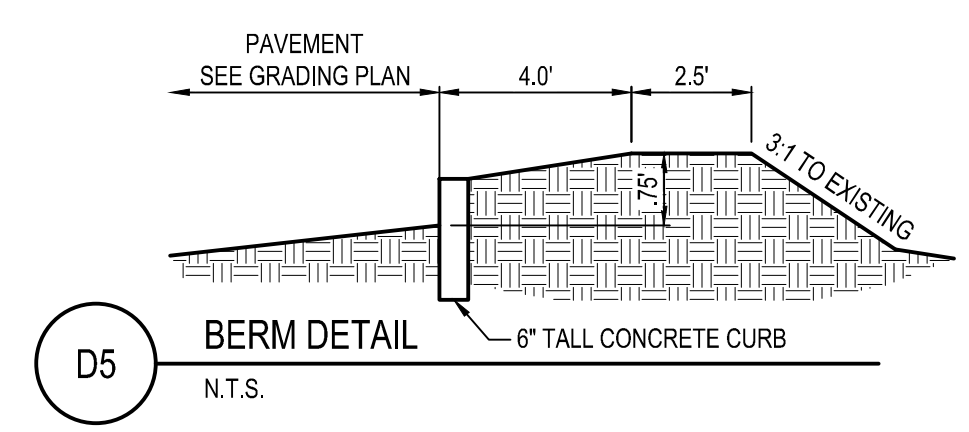
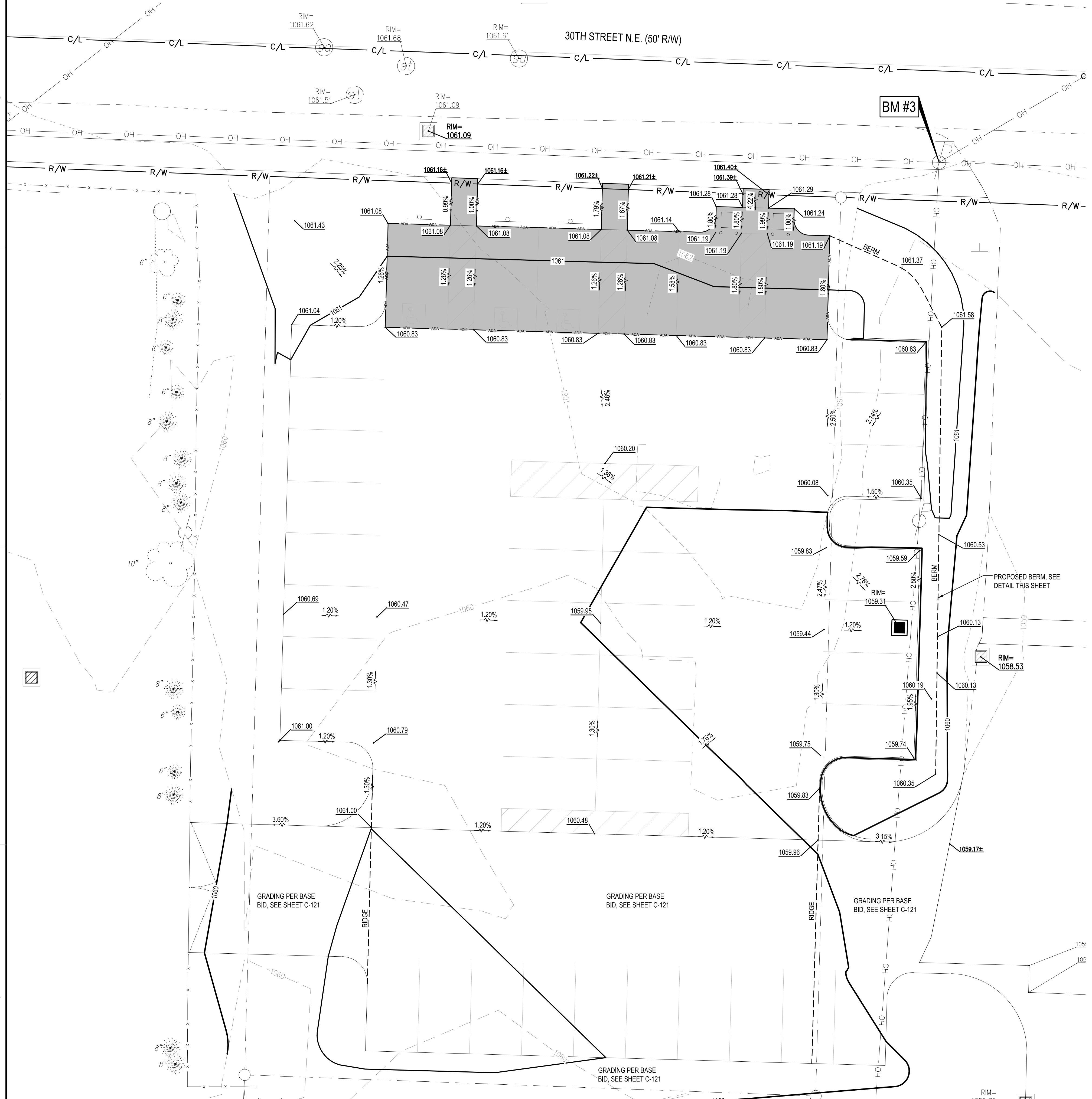


LEGEND
(SEE SHEET C-001 FOR GENERAL LEGEND)

0000	PROPOSED CONTOUR
XXXX.XX	EXISTING SPOT ELEVATION MATCH EXISTING GRADE
XXXX.XX	PROPOSED ELEVATION @ FINISHED GROUND ELEVATION
T=XXXX.XX	TOP OF CURB ELEVATION
B=XXXX.XX	BOTTOM OF CURB/FINISHED PAVEMENT ELEVATION
0.0%	PROPOSED DRAINAGE SLOPE & DIRECTION
--- ---	LIMITS OF ADA ROUTING



A1 GRADING ALTERNATE BID ITEM #4
1" = 20'



A1 GRADING ALTERNATE BID ITEM #3
1" = 10'

A5 GRADING ALTERNATE BID ITEM #2
1" = 10'

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OHIO 44705

GRADING ENLARGEMENT PLAN NORTH
ALTERNATE #2, #3, AND #4

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-123

BENCHMARKS:
STATE PLANE GRID NORTH, NAD 83 (2011).
OHIO NORTH ZONE.
ELEVATIONS ARE NAVD 88. GEOID 18.
TIED BY GPS TO THE O.D.O.T. VRS.

BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
N 425323 E 228943
ELEVATION = 1059.74

BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
N 426026 E 228925
ELEVATION = 1061.54

BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
N 426072 E 228981
ELEVATION = 1063.05

UTILITY CROSSINGS
GENERAL UTILITY CROSSING NOTES
1. CONTRACTOR SHALL COORDINATE ALL CROSSING/RELOCATIONS WITH THE RESPECTIVE UTILITY COMPANIES.
2. EXISTING AND PROPOSED PRESSURIZED WATER & GAS AND SECONDARY (ELECTRIC & COMMUNICATIONS) UTILITIES SHALL DEFLECT TO MAINTAIN 18" CLEAR AT SANITARY OR STORM SEWER CROSSINGS WHEN CONFLICTS OCCUR.
3. WHEN A PROPOSED PRESSURIZED SECONDARY UTILITY IS IN CROSSING CONFLICT WITH AN EXISTING PRESSURIZED SECONDARY UTILITY, THE PROPOSED UTILITY SHALL DEFLECT TO OBTAIN MINIMUM CLEARANCE. CONTRACTOR SHALL FIELD LOCATE EXISTING PRESSURIZED SECONDARY UTILITIES AT PROPOSED CROSSINGS.
4. FOR CLEARANCE BETWEEN PIPES OF LESS THAN 18", THE CONTRACTOR SHALL PROVIDE CONCRETE ENCASMENT PER SHEET C-002.
5. EX. FIBER OPTICS (SEE NOTES ABOVE)
6. PROP. 12" STORM INV. = 1068.63
7. EX. FIBER OPTICS (SEE NOTES ABOVE)
8. PROP. 6" STORM INV. = 1057.77
9. PROP. 6" SANITARY INV. = 1058.38

EXISTING STRUCTURES	
STRUCT. ID	STRUCTURE DETAILS
EX 272	EXISTING CATCH BASIN RM = 1058.69 18" RCP (NW) = 1054.09 18" RCP (E) = 1055.09
EX 312	EXISTING STORM MANHOLE RM = 1059.24 18" RCP (N) = 1055.44 12" RCP (E) = 1053.84 18" RCP (SE) = 1053.84 15" RCP (S) = 1053.84 12" RCP (W) = 1053.84
EX 364	EXISTING CATCH BASIN RM = 1058.53 12" RCP (E) = 1055.23
EX 592	EXISTING CATCH BASIN RM = 1061.39 18" RCP (W) = 1055.79 18" HDPE (E) = 1055.79
EX 1088	EXISTING CATCH BASIN RM = 1058.00 12" HDPE (E) = 1053.80 36" HDPE (S) = 1052.10 36" HDPE (W) = 1052.10 PROP. 18" (N) INV. = 1053.60

PLAN KEYNOTES (#)
STORM
100. PROPOSED 70 L.F. OF 18" HDPE STORM SEWER @ 0.50%
101. PROPOSED 138 L.F. OF 12" HDPE STORM SEWER @ 1.50%
102. PROPOSED 12" CONNECTION TO EXISTING 18" STORM SEWER WITH INSERTA TEE WITH A WATERTIGHT CONNECTION. EX. 18" INV. = 1055.39; PROP. 12" INV. = 1055.89.
103. PROPOSED FINGER DRAIN IN ALL PAVEMENT DIRECTION. SEE SHEET C-502. FINGER DRAIN INVERT SHALL MATCH THE BOTTOM OF THE PAVEMENT AGGREGATE BASE.
104. PROPOSED 38 L.F. OF 12" HDPE STORM SEWER @ 1.11%
105. PROPOSED 12" CONNECTION TO EXISTING 18" STORM SEWER WITH INSERTA TEE WITH A WATERTIGHT CONNECTION. EX. 18" INV. = 1055.66; PROP. 12" INV. = 1056.16.
106. PROPOSED 72 L.F. OF 12" HDPE STORM SEWER @ 1.00%
107. PROPOSED WYE, SEE SHEET C-502. 6" INV. = 1058.50
108. PROPOSED 6" DOWNSPOUT COLLECTOR LINE @ 2.00% MINIMUM WITH WYE. 6" INV. = 1058.50 AT BUILDING COLUMN.
109. PROPOSED 6" INV. = 1058.50 AT BUILDING COLUMN.
110. PROPOSED 6" INV. = 1058.50 AT COLUMN.
111. PROPOSED 86 L.F. OF 6" PVC STORM SEWER @ 1.00%
112. PROPOSED CLEANOUT, SEE SHEET C-502. 6" INV. = 1057.36.
113. PROPOSED 9 L.F. OF 6" PVC STORM SEWER @ 1.00%
114. PROPOSED CLEANOUT, SEE SHEET C-502. 6" INV. = 1057.46.
115. PROPOSED 66 L.F. OF 6" PVC STORM SEWER @ 1.00%
116. PROPOSED CLEANOUT, SEE SHEET C-502. 6" INV. = 1058.12.
117. PROPOSED 6 L.F. OF 6" PVC STORM SEWER @ 6.32%
118. PROPOSED 25 L.F. OF 6" PVC STORM SEWER @ 4.43%
119. PROPOSED 44 L.F. OF 6" PVC STORM SEWER @ 2.50%
120. PROPOSED 6" DOWNSPOUT COLLECTOR LINE @ 2.00% MINIMUM WITH WYE. 6" INV. = 1057.50 AT BUILDING COLUMN. CONTRACTOR SHALL TIE 4" FOUNDATION UNDERDRAIN INTO COLLECTOR LINE WITH APPROPRIATE FITTINGS.

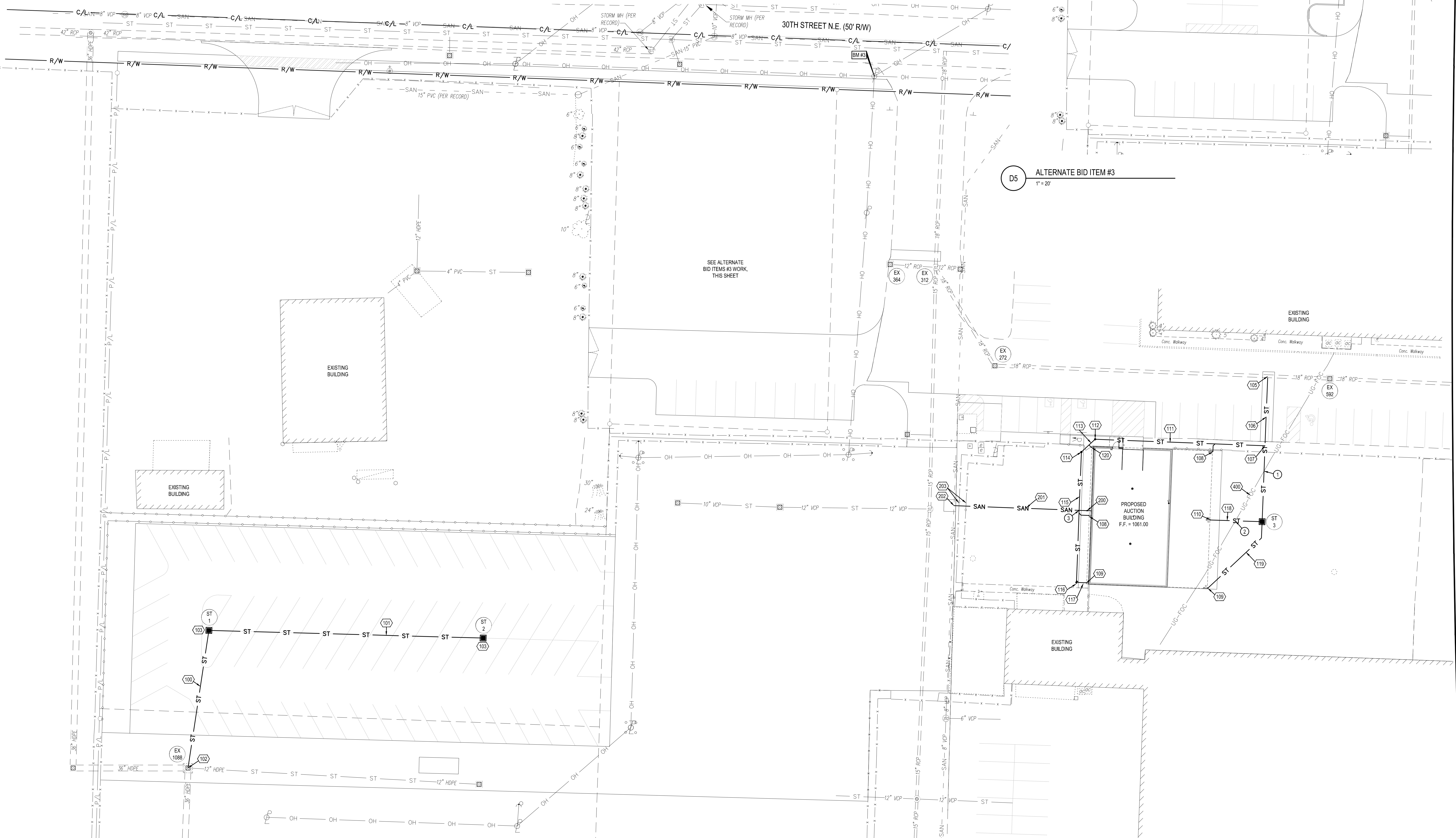
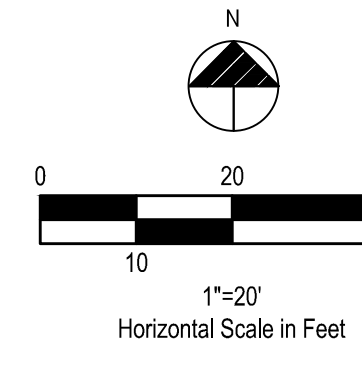
SANITARY
200. PROPOSED PAVEMENT CLEANOUT, SEE SHEET C-502. 6" INV. = 1056.00.
201. PROPOSED 89 L.F. OF 6" PVC SANITARY SEWER @ 2.00% MIN.
202. PROPOSED CONNECTION INTO EXISTING SANITARY LINE. CONTRACTOR SHALL FIELD VERIFY EXISTING SANITARY INVERT ELEVATION AND NOTIFY CONSTRUCTION MANAGER IMMEDIATELY IF SEWER IS NOT ABLE TO BE INSTALLED CORRECTLY. CONTRACTOR SHALL REMOVE FENCING AS NEEDED FOR INSTALLATION OF PROPOSED SEWER AND REPLACE UPON COMPLETION OF SANITARY WORK.

ELECTRIC AND COMMUNICATIONS
400. EXISTING UNDERGROUND FIBER OPTICS LINE. CONTRACTOR SHALL COORDINATE WITH OWNER FOR STATUS OF LINE BEING RELOCATED AND POSSIBLE ROUTING OF LINE. FUTURE ELECTRIC VEHICLE CHARGING STATION. SEE ELECTRICAL DRAWING FOR SPECIFICATIONS.

PROPOSED STRUCTURES

STRUCT. ID	STRUCTURE DETAILS
ST 1	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1057.77 INV. 15" (E)=1054.21 INV. 18" (S)=1053.96
ST 2	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1059.05 INV. 15" (W)=1054.90
ST 3	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1060.15 INV. 6" (W/S)=1057.39 INV. 12" (W)=1056.89
ST 4	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1059.31 INV. 12" (E)=1056.31

LEGEND
(SEE SHEET C-001 FOR GENERAL LEGEND)
ST - PROPOSED STORM SEWER (12" AND SMALLER)
D.S. - PROPOSED DOWNSPOUT
A - APPURTENANCES
E - UTILITY CONSTRUCTION KEYNOTE



D5 ALTERNATE BID ITEM #3
1" = 20'

SEE ALTERNATE BID ITEMS #3 WORK, THIS SHEET

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OHIO 44705

UTILITY PLAN NORTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-131

PLAN KEYNOTES (#)

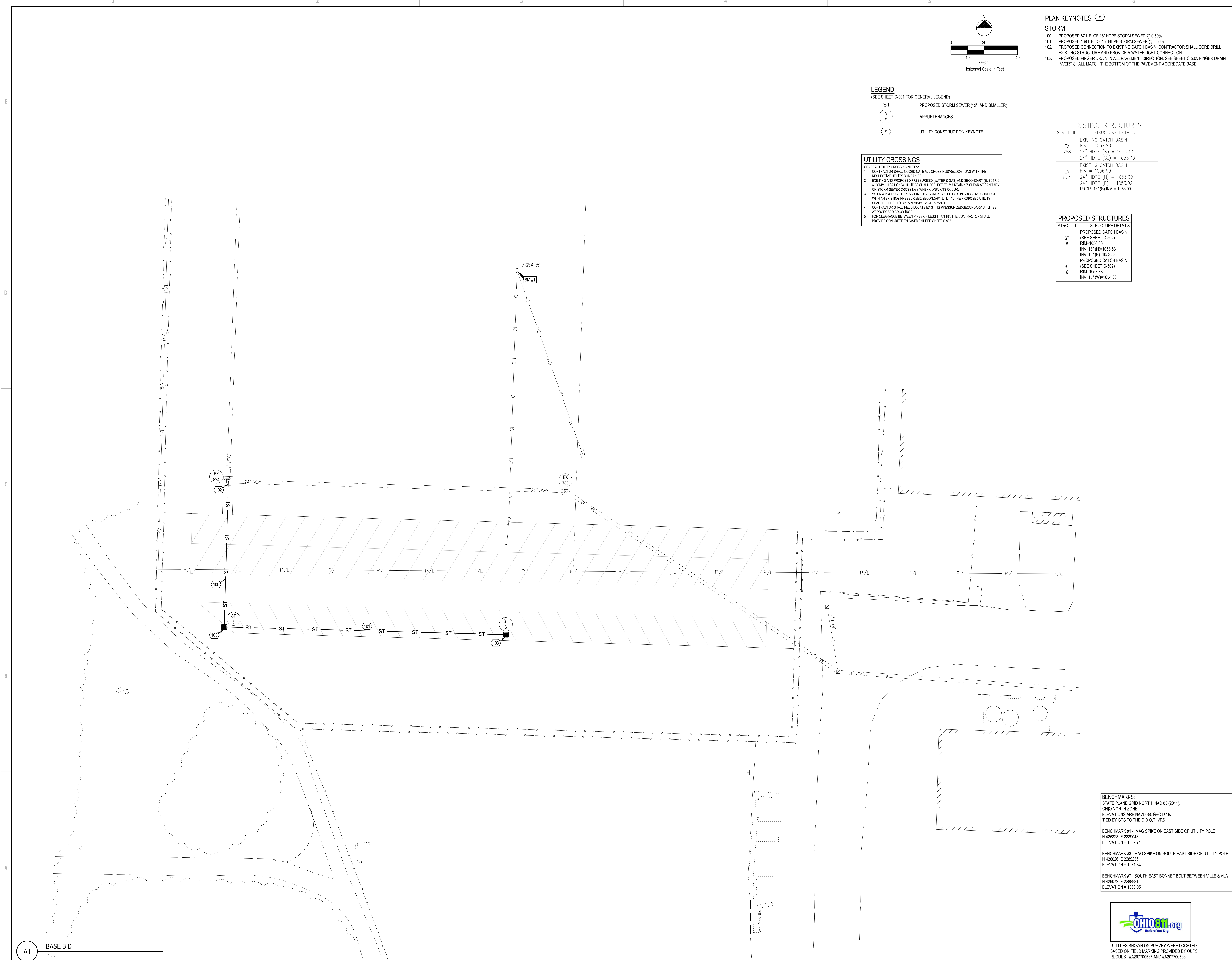
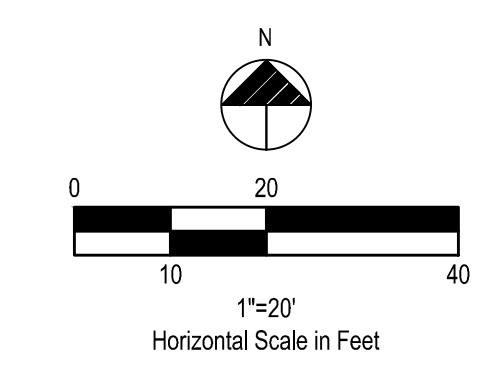
- STORM**
- 100. PROPOSED 87 L.F. OF 18" HDPE STORM SEWER @ 0.50%
 - 101. PROPOSED 169 L.F. OF 15" HDPE STORM SEWER @ 0.50%
 - 102. PROPOSED CONNECTION TO EXISTING CATCH BASIN. CONTRACTOR SHALL CORE DRILL EXISTING STRUCTURE AND PROVIDE A WATERTIGHT CONNECTION.
 - 103. PROPOSED FINGER DRAIN IN ALL PAVEMENT DIRECTION. SEE SHEET C-502. FINGER DRAIN INVERT SHALL MATCH THE BOTTOM OF THE PAVEMENT AGGREGATE BASE

EXISTING STRUCTURES	
STRUCT. ID	STRUCTURE DETAILS
EX 788	EXISTING CATCH BASIN RIM = 1057.20 24" HDPE (W) = 1053.40 24" HDPE (SE) = 1053.40
EX 824	EXISTING CATCH BASIN RIM = 1056.99 24" HDPE (N) = 1053.09 24" HDPE (E) = 1053.09 PROP. 18" (S) INV. = 1053.09

PROPOSED STRUCTURES	
STRUCT. ID	STRUCTURE DETAILS
ST 5	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1056.83 INV. 18" (N)=1053.53 INV. 15" (E)=1053.53
ST 6	PROPOSED CATCH BASIN (SEE SHEET C-502) RIM=1057.38 INV. 15" (W)=1054.38

- LEGEND**
(SEE SHEET C-001 FOR GENERAL LEGEND)
- ST- PROPOSED STORM SEWER (12" AND SMALLER)
 - (A) APPURTENANCES
 - (#) UTILITY CONSTRUCTION KEYNOTE

- UTILITY CROSSINGS**
GENERAL UTILITY CROSSING NOTES:
1. CONTRACTOR SHALL COORDINATE ALL CROSSINGS/RELOCATIONS WITH THE RESPECTIVE UTILITY COMPANIES.
 2. EXISTING AND PROPOSED PRESSURIZED (WATER & GAS) AND SECONDARY (ELECTRIC & COMMUNICATION) UTILITIES SHALL DEFLECT TO MAINTAIN 18" CLEAR AT SANITARY OR STORM SEWER CROSSINGS WHEN CONFLICTS OCCUR.
 3. WHEN A PROPOSED PRESSURIZED/SECONDARY UTILITY IS IN CROSSING CONFLICT WITH AN EXISTING PRESSURIZED/SECONDARY UTILITY, THE PROPOSED UTILITY SHALL DEFLECT TO OBTAIN MINIMUM CLEARANCE.
 4. CONTRACTOR SHALL FIELD LOCATE EXISTING PRESSURIZED/SECONDARY UTILITIES AT PROPOSED CROSSINGS.
 5. FOR CLEARANCE BETWEEN PIPES OF LESS THAN 18" THE CONTRACTOR SHALL PROVIDE CONCRETE ENCASUREMENT PER SHEET C-502.



REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET NE.
CANTON, OHIO 44705

UTILITY PLAN SOUTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-132

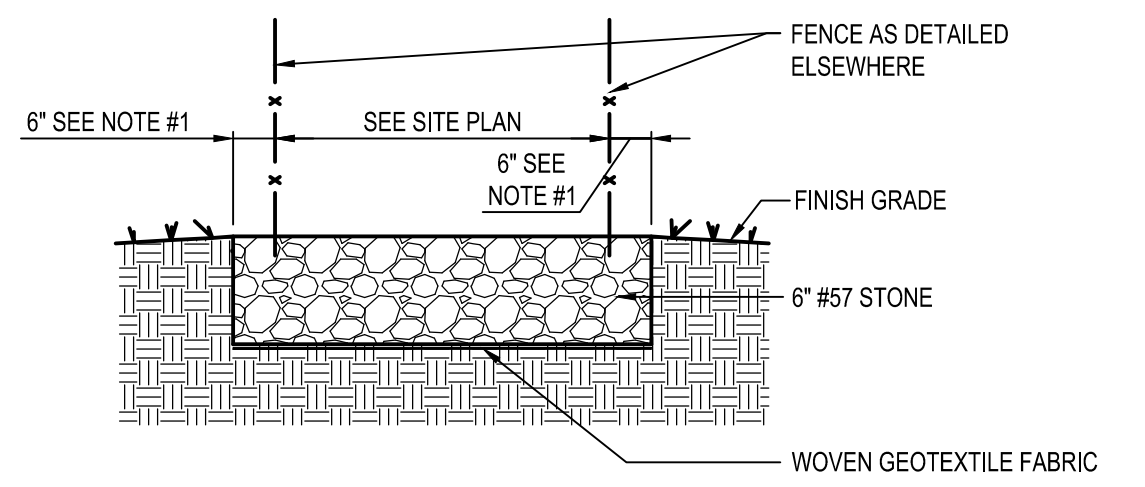
- BENCHMARKS:**
STATE PLANE GRID NORTH, NAD 83 (2011), OHIO NORTH ZONE. ELEVATIONS ARE NAVD 88, GEOID 18, TIED BY GPS TO THE O.D.O.T. VRS.
- BENCHMARK #1 - MAG SPIKE ON EAST SIDE OF UTILITY POLE
N 425323, E 2289943
ELEVATION = 1056.74
 - BENCHMARK #3 - MAG SPIKE ON SOUTH EAST SIDE OF UTILITY POLE
N 426326, E 2289235
ELEVATION = 1051.54
 - BENCHMARK #7 - SOUTH EAST BONNET BOLT BETWEEN VILLE & ALA
N 426372, E 2288981
ELEVATION = 1063.05



UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY OUPS REQUEST #A20770557 AND #A20770558.

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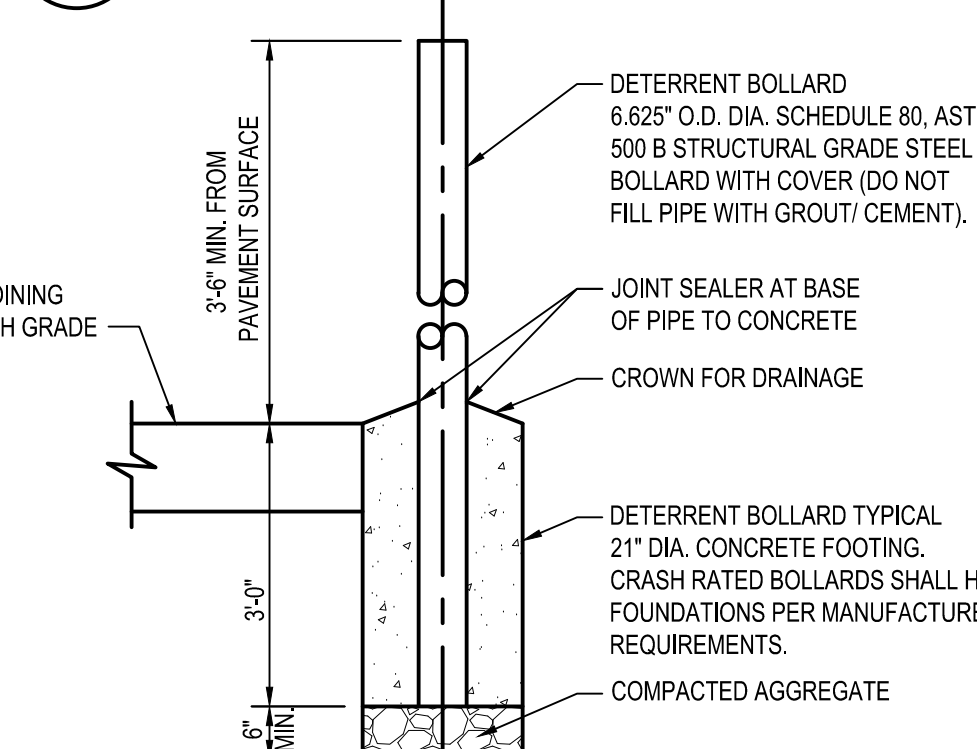
A1 BASE BID
1" = 20'



E3 FENCE GRAVEL SECTION
 N.T.S.

E3 FENCE GRAVEL SECTION
 N.T.S.

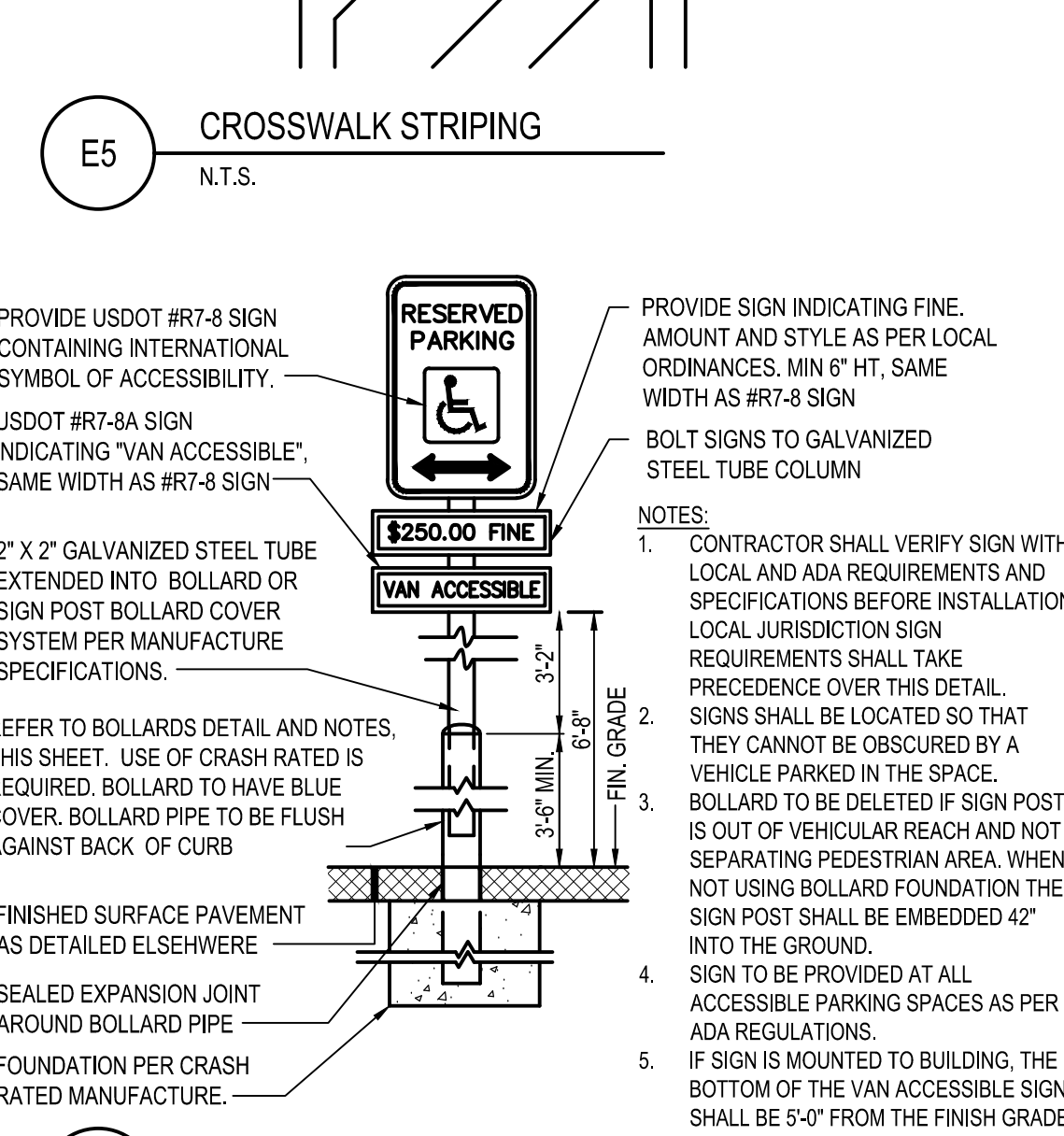
E4 CONCRETE CURB TAPER
 N.T.S.



E4 CONCRETE CURB TAPER
 N.T.S.

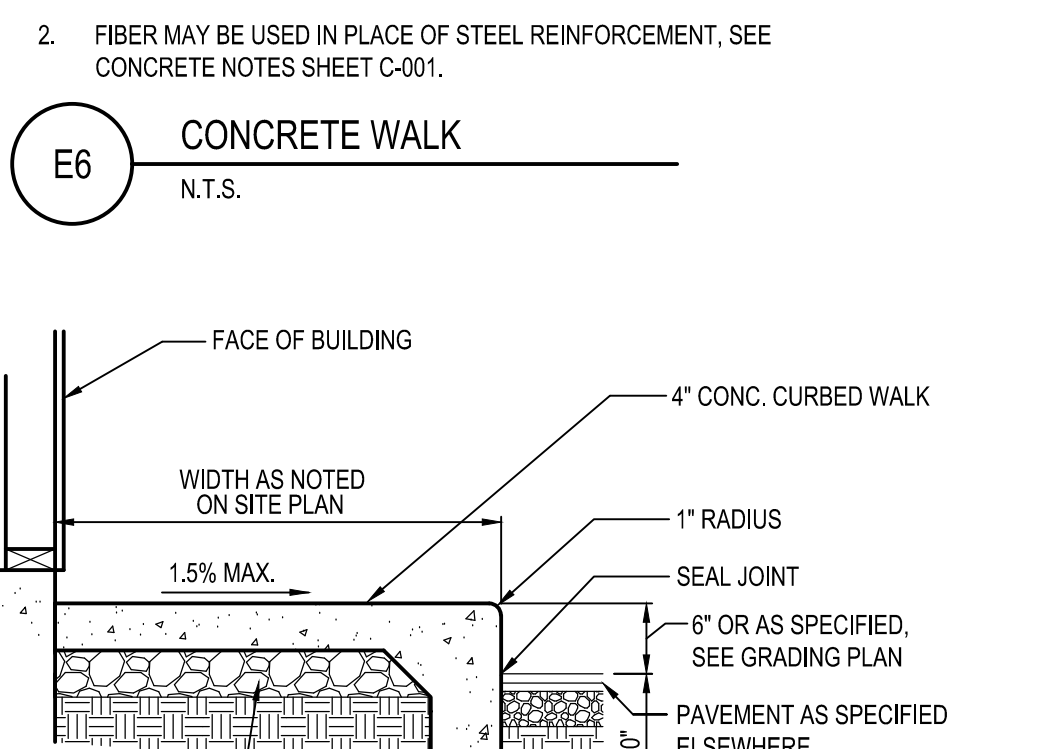
E4 CONCRETE CURB TAPER
 N.T.S.

E5 CROSSWALK STRIPING
 N.T.S.



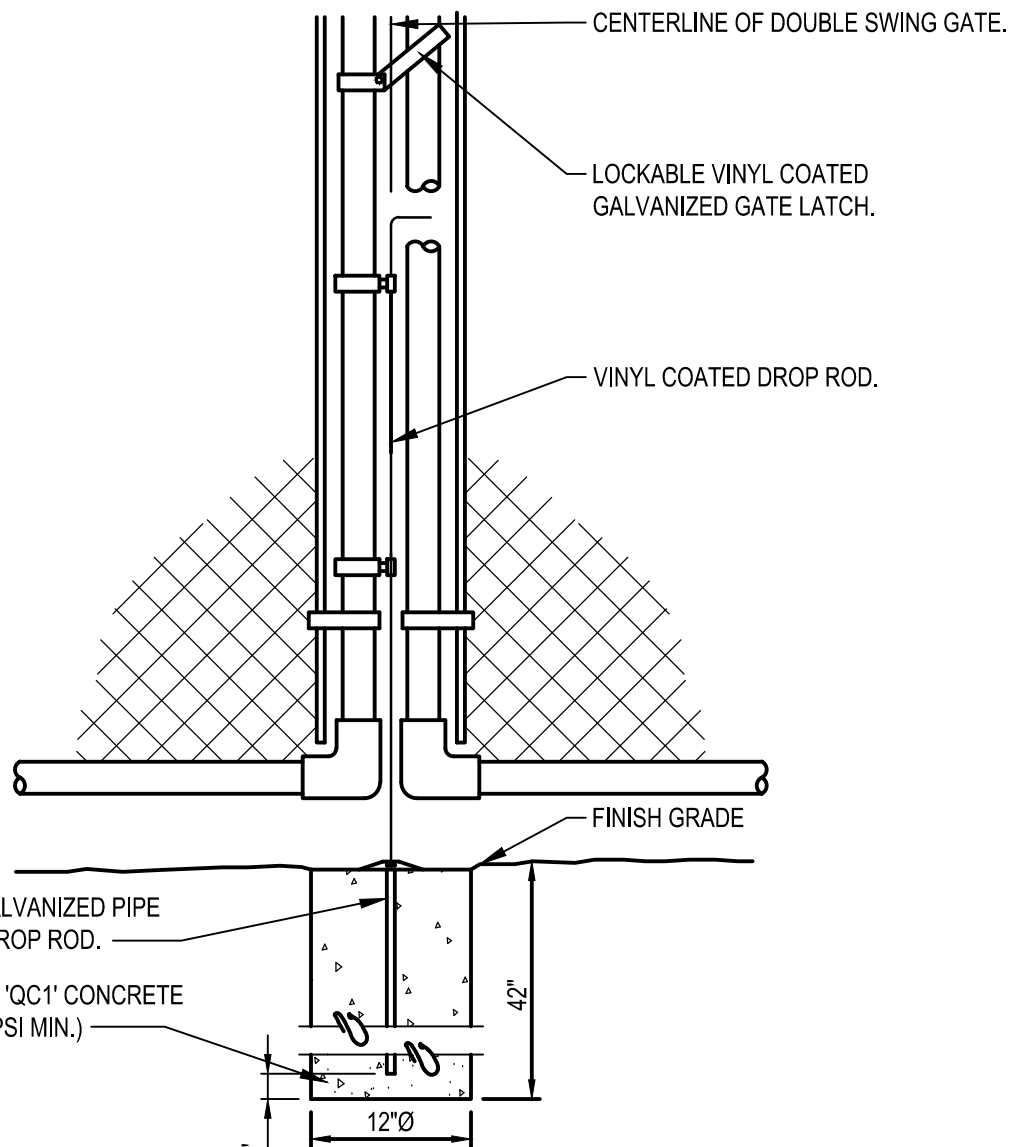
E5 CROSSWALK STRIPING
 N.T.S.

E6 CONCRETE WALK
 N.T.S.

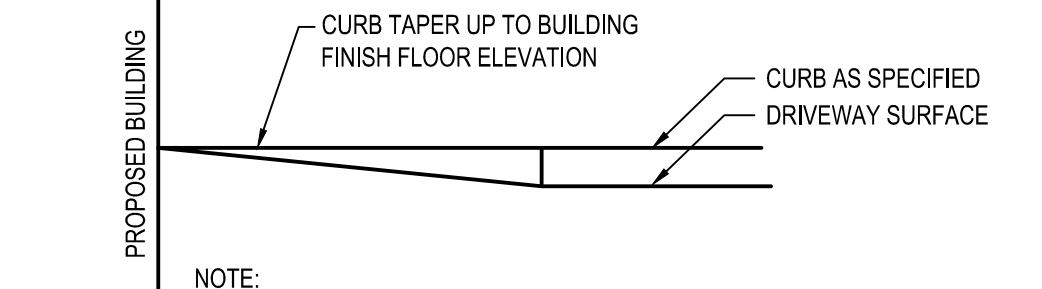


E6 CONCRETE WALK
 N.T.S.

E6 CONCRETE WALK
 N.T.S.



D1 DROP ROD/LATCH
 N.T.S.



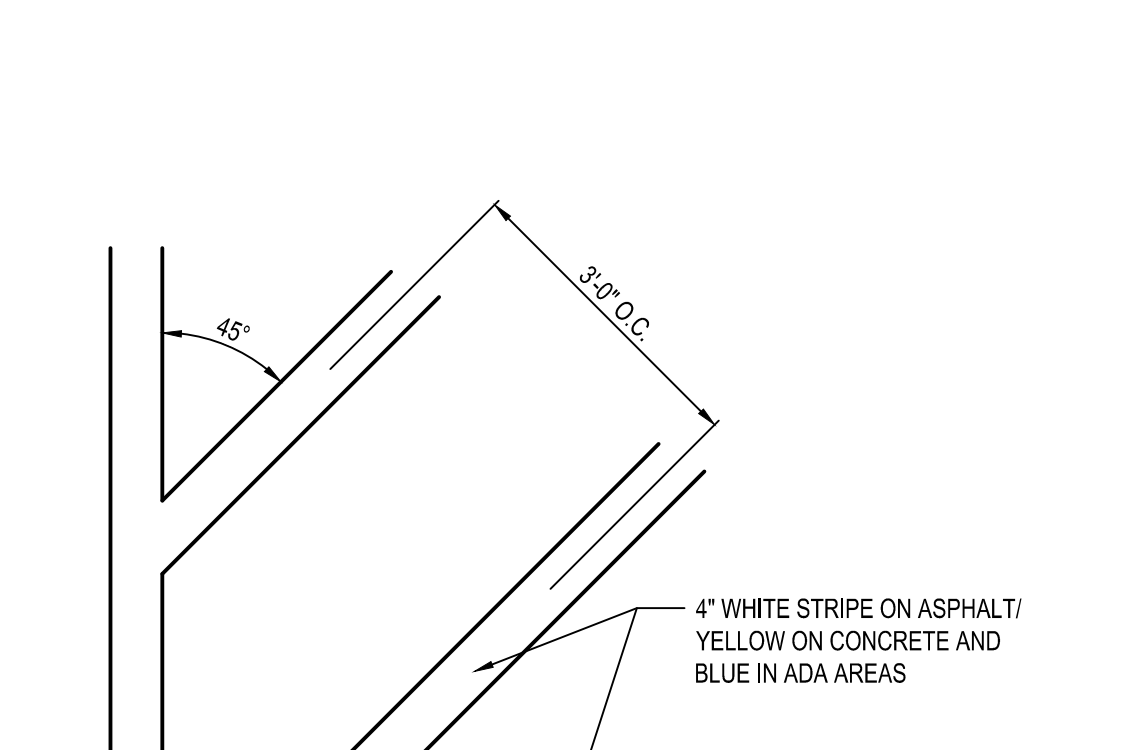
D3 CURB PAVEMENT TAPER
 N.T.S.

D4 BOLLARDS
 N.T.S.



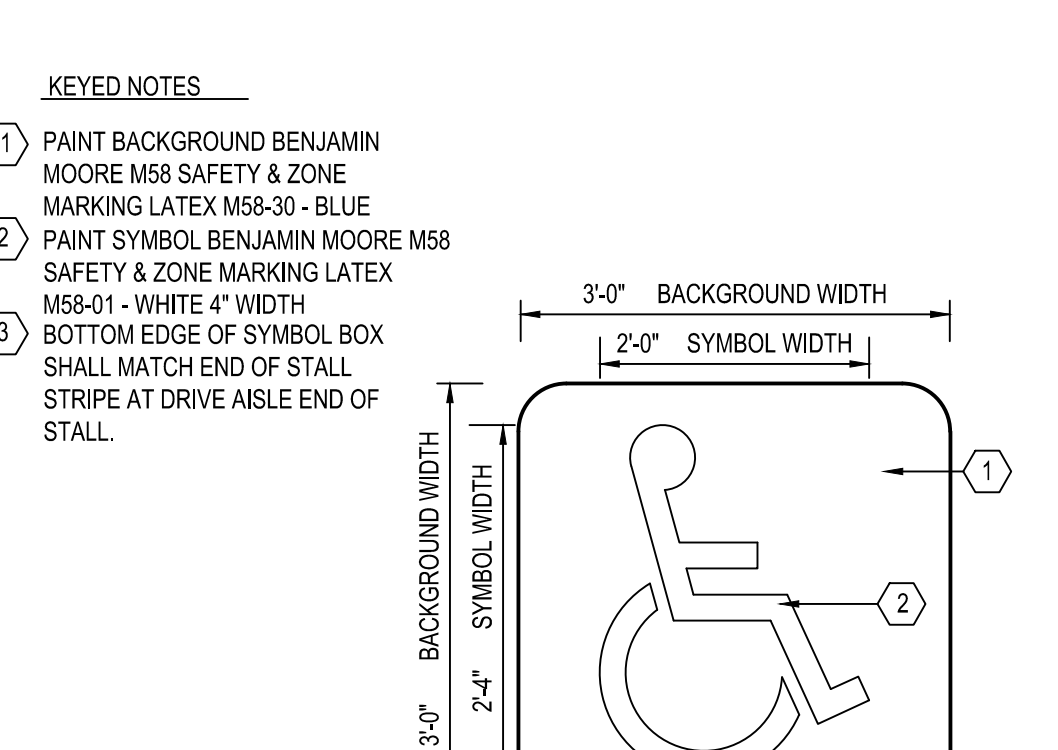
D4 BOLLARDS
 N.T.S.

D5 HANDICAPPED PARKING SIGN
 N.T.S.



D5 HANDICAPPED PARKING SIGN
 N.T.S.

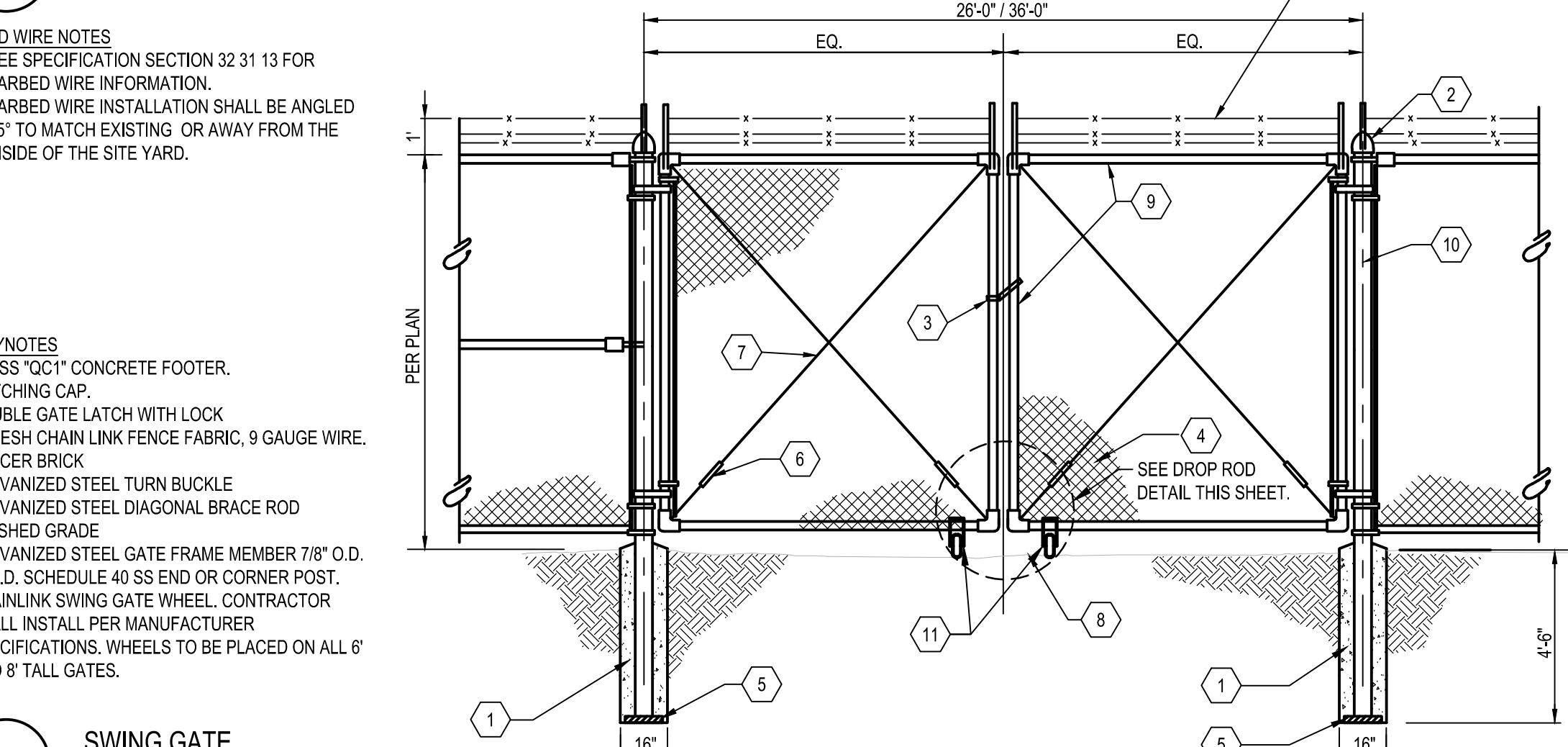
D6 CONCRETE CURBED WALK
 N.T.S.



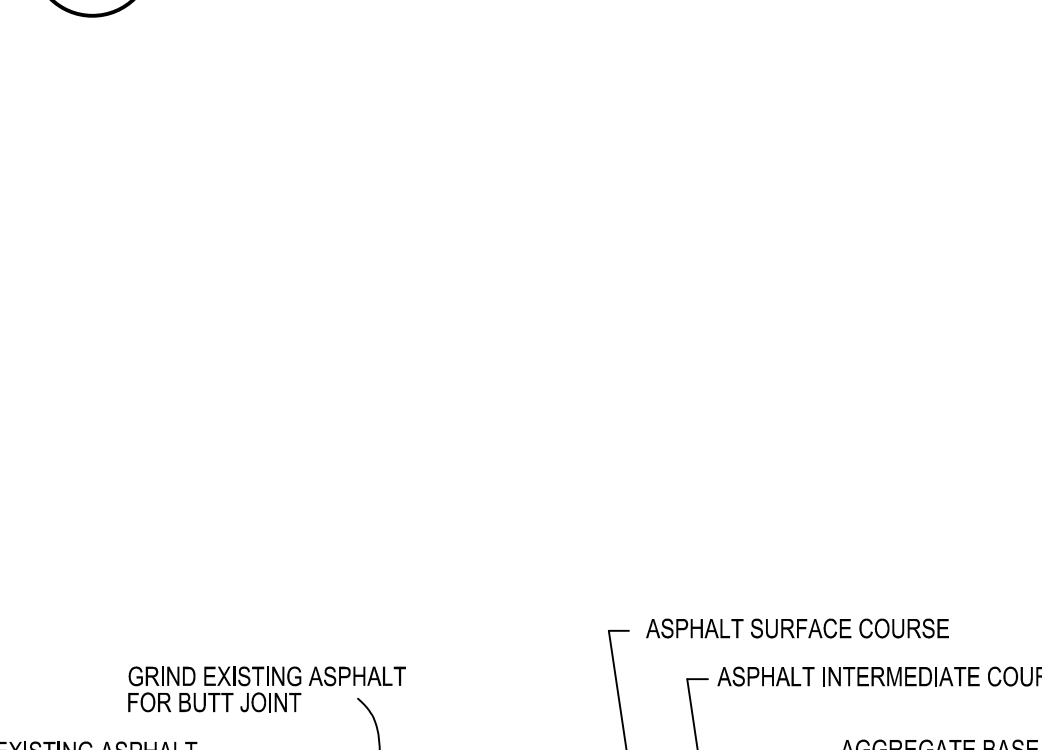
D6 CONCRETE CURBED WALK
 N.T.S.

GATE KEYNOTES
 1. CLASS "QC1" CONCRETE FOOTER.
 2. MATCHING CAP.
 3. LOCKABLE GALVANIZED GATE LATCH
 4. 2" MESH CHAIN LINK FENCE FABRIC, 9 GAUGE WIRE.
 5. SPACER BRICK
 6. 3" O.D. SCHEDULE 40 SS END OR CORNER POST.
 7. FINISH GRADE

C1 4' WIDE MAN GATE
 N.T.S.

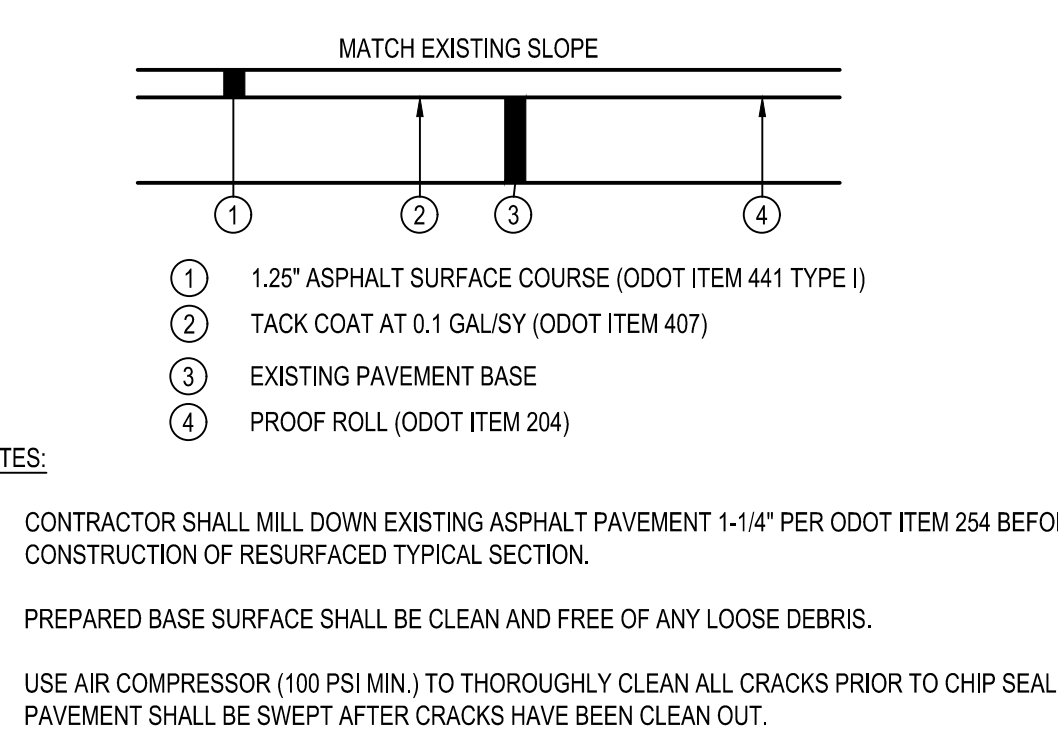


C3 CONCRETE WHEELSTOP
 N.T.S.



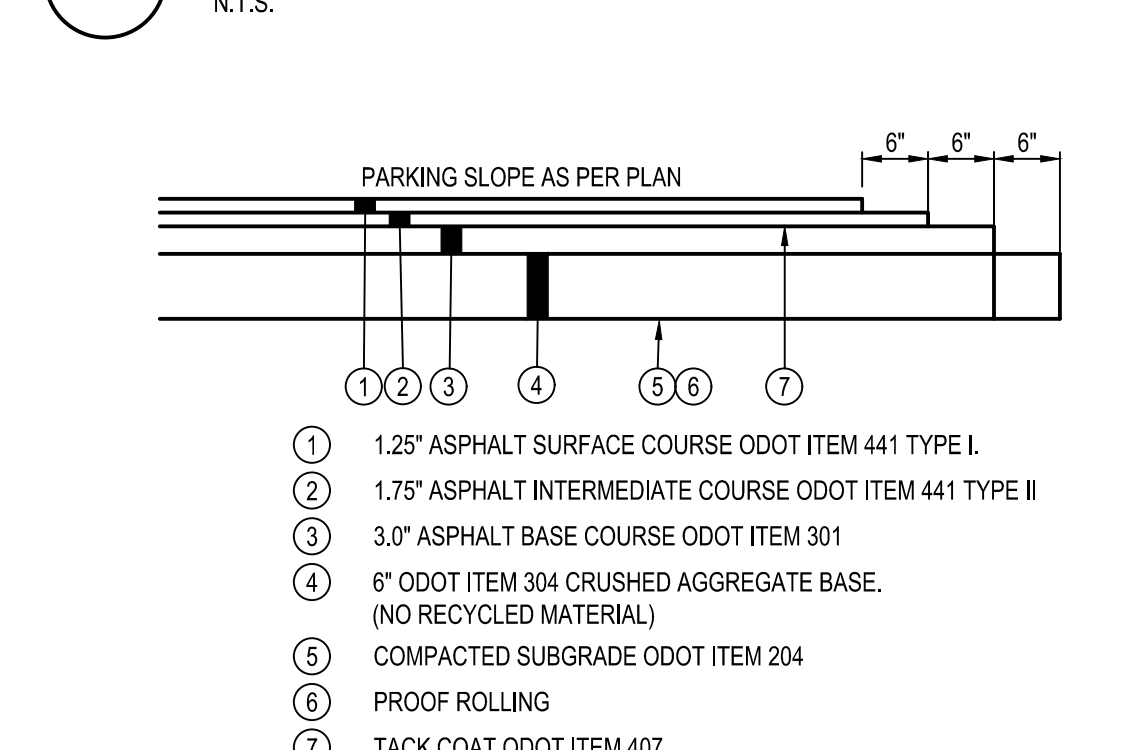
C3 CONCRETE WHEELSTOP
 N.T.S.

C5 TRANSVERSE STRIPING
 N.T.S.



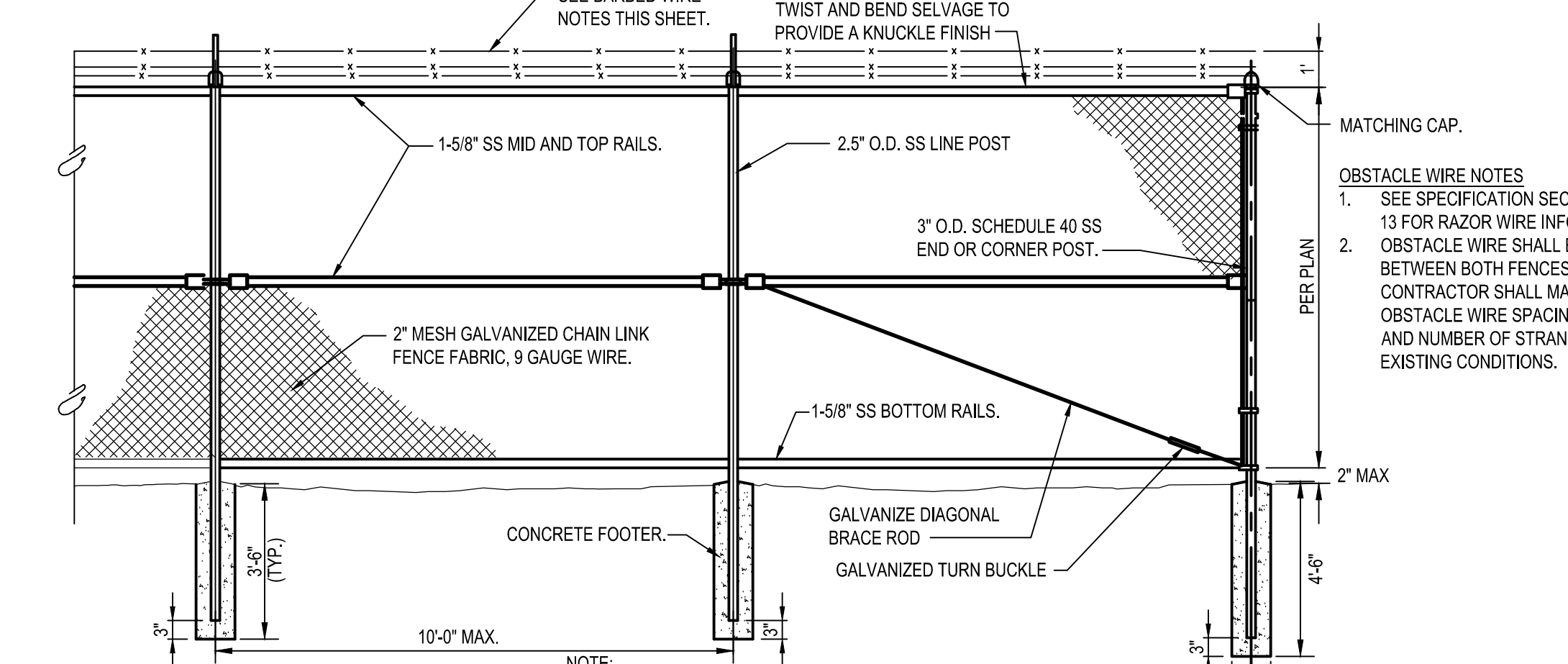
C5 TRANSVERSE STRIPING
 N.T.S.

C6 ADA PAVEMENT SYMBOL
 N.T.S.



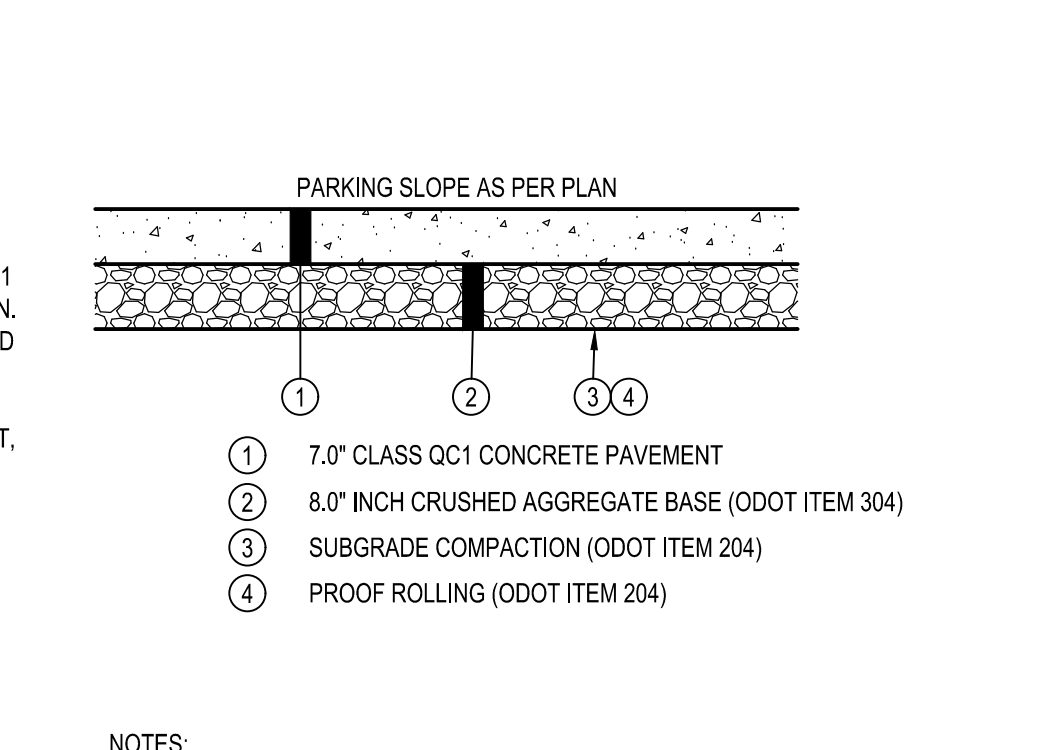
C6 ADA PAVEMENT SYMBOL
 N.T.S.

B1 SWING GATE
 N.T.S.



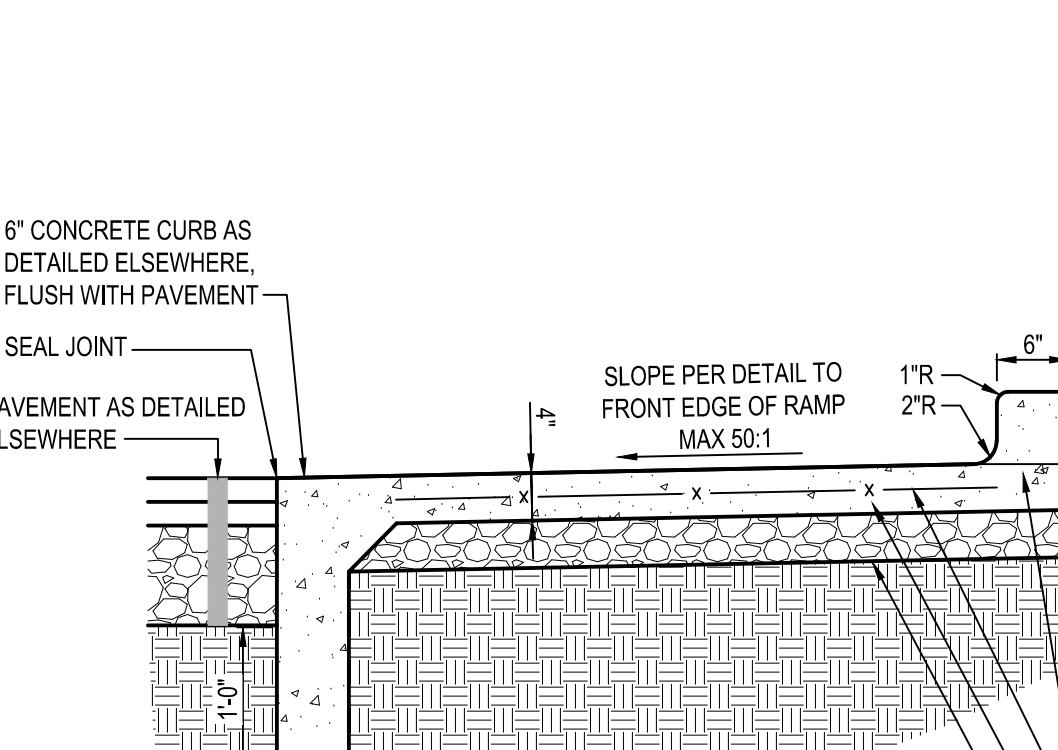
B1 SWING GATE
 N.T.S.

B3 BUTT JOINT
 N.T.S.



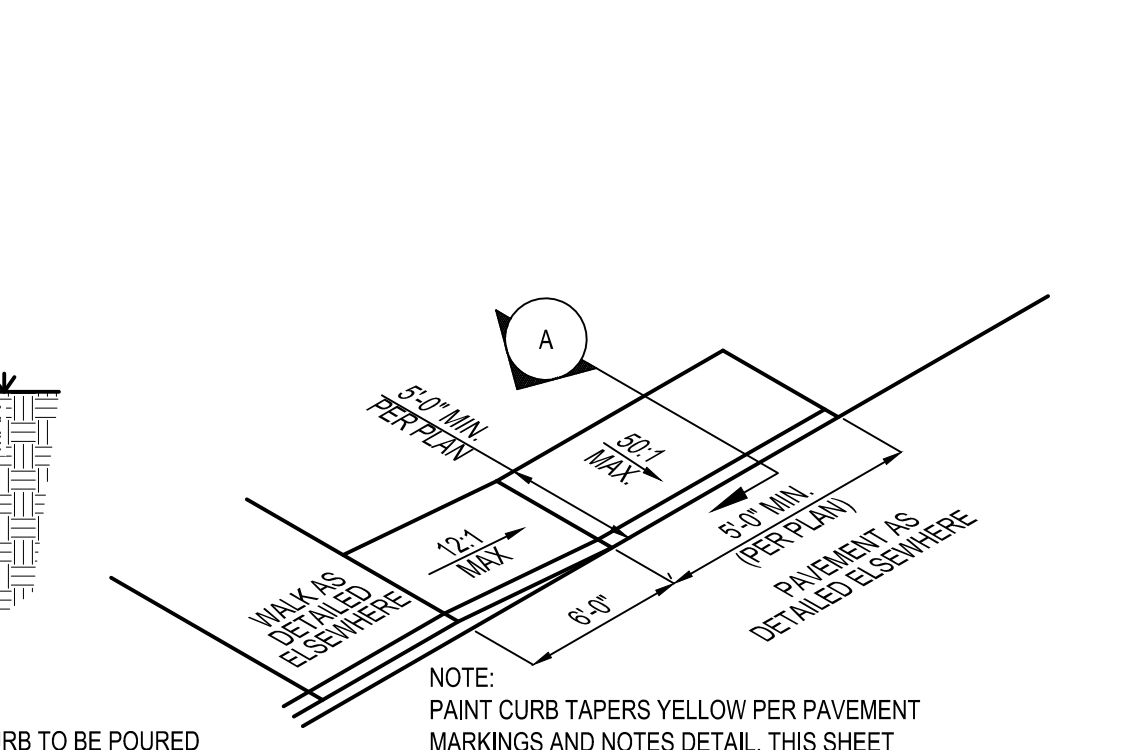
B3 BUTT JOINT
 N.T.S.

B4 RESURFACED ASPHALT PAVEMENT SECTION
 N.T.S.



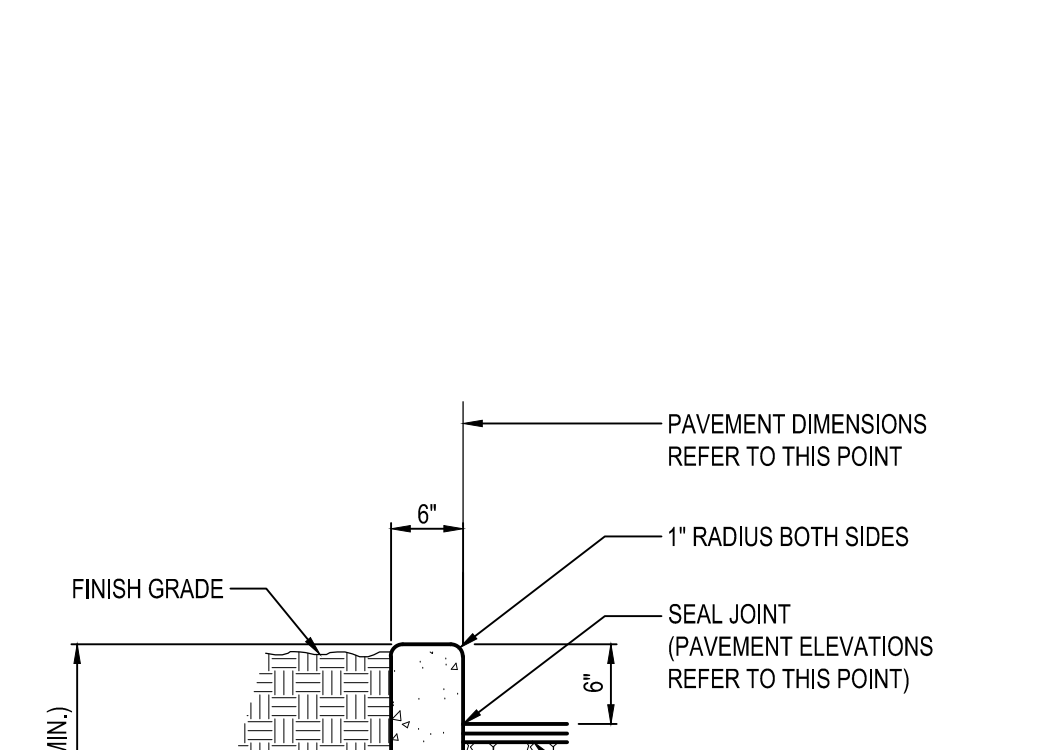
B4 RESURFACED ASPHALT PAVEMENT SECTION
 N.T.S.

B5 STANDARD DUTY ASPHALT PAVEMENT SECTION
 N.T.S.



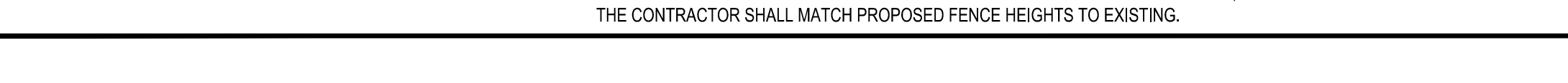
B5 STANDARD DUTY ASPHALT PAVEMENT SECTION
 N.T.S.

B6 PAVEMENT MARKINGS & NOTES
 N.T.S.



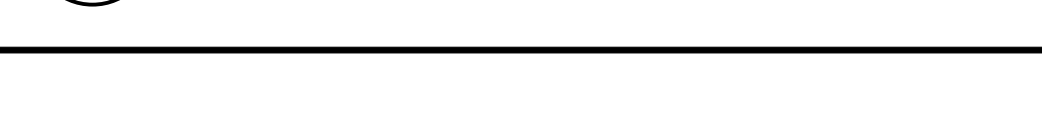
B6 PAVEMENT MARKINGS & NOTES
 N.T.S.

A1 CHAINLINK FENCE WITH BARB WIRE
 N.T.S.



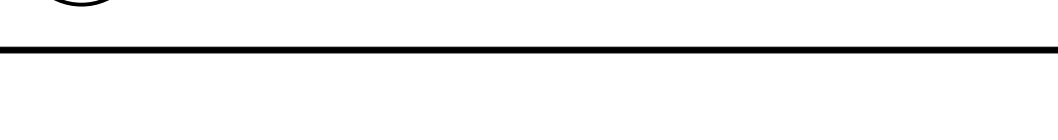
A1 CHAINLINK FENCE WITH BARB WIRE
 N.T.S.

A3 CONCRETE APRON SECTION
 N.T.S.



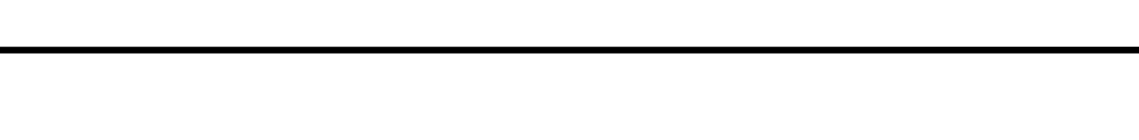
A3 CONCRETE APRON SECTION
 N.T.S.

A4 ADA ACCESSIBLE RAMP
 N.T.S.



A4 ADA ACCESSIBLE RAMP
 N.T.S.

A6 CONCRETE CURB
 N.T.S.



A6 CONCRETE CURB
 N.T.S.

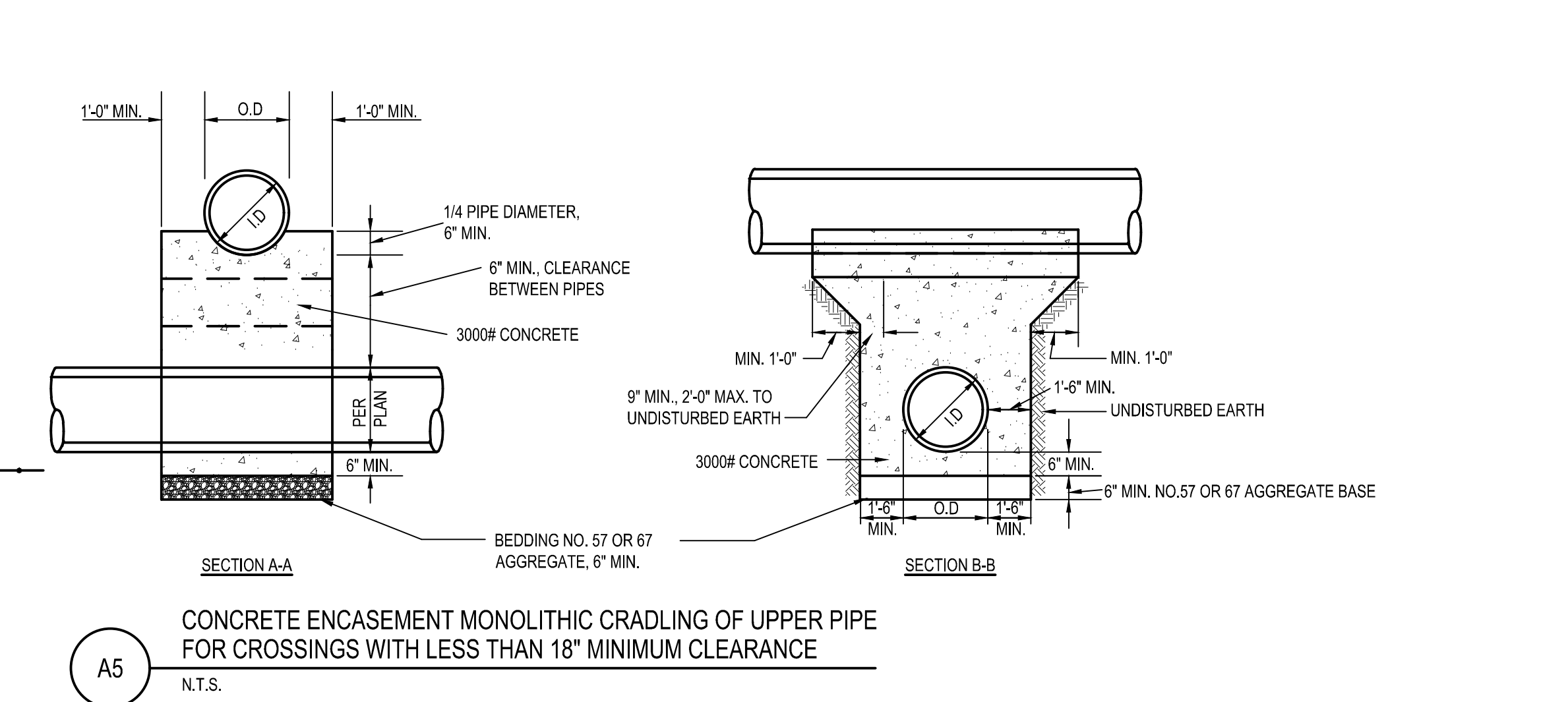
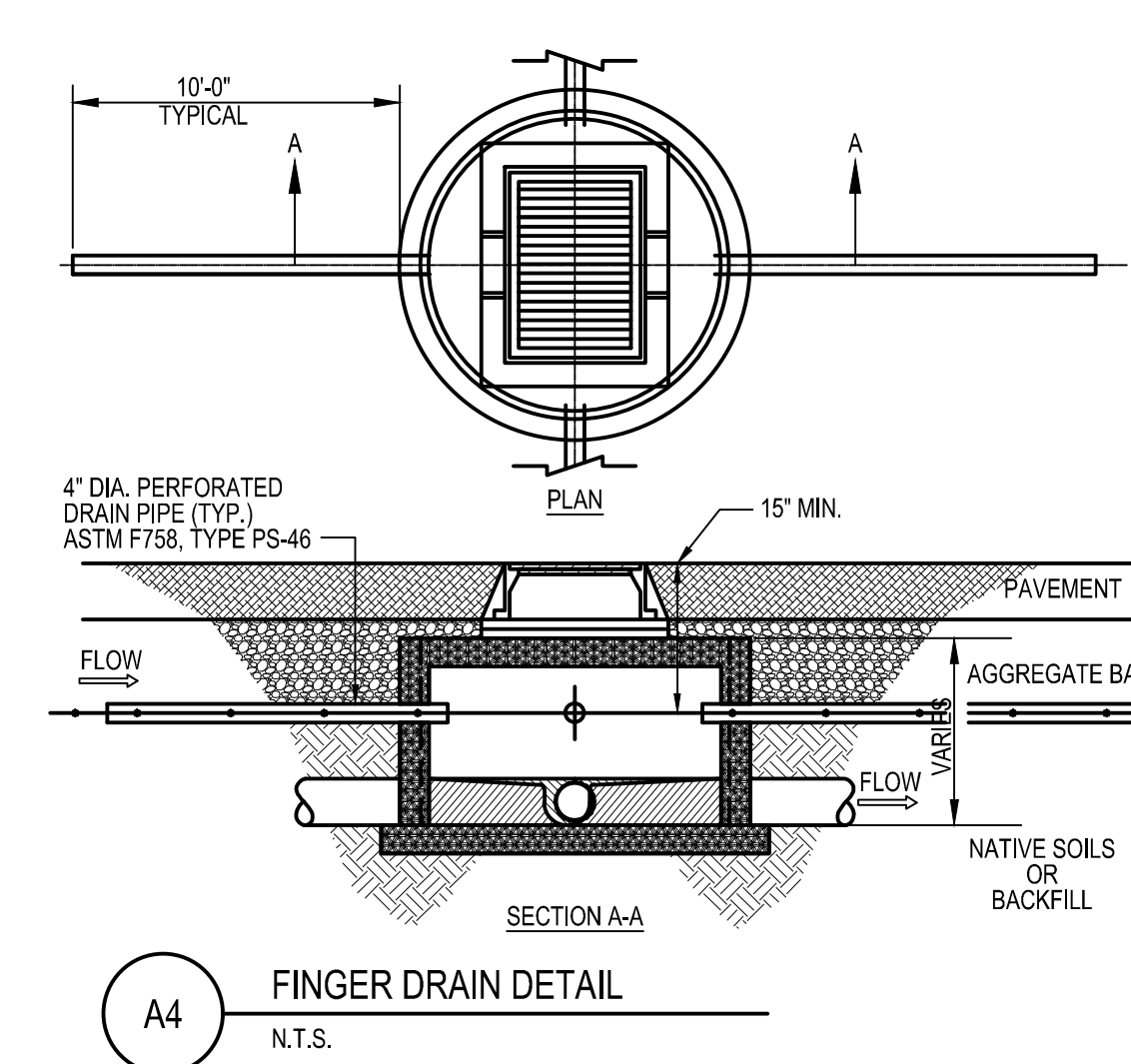
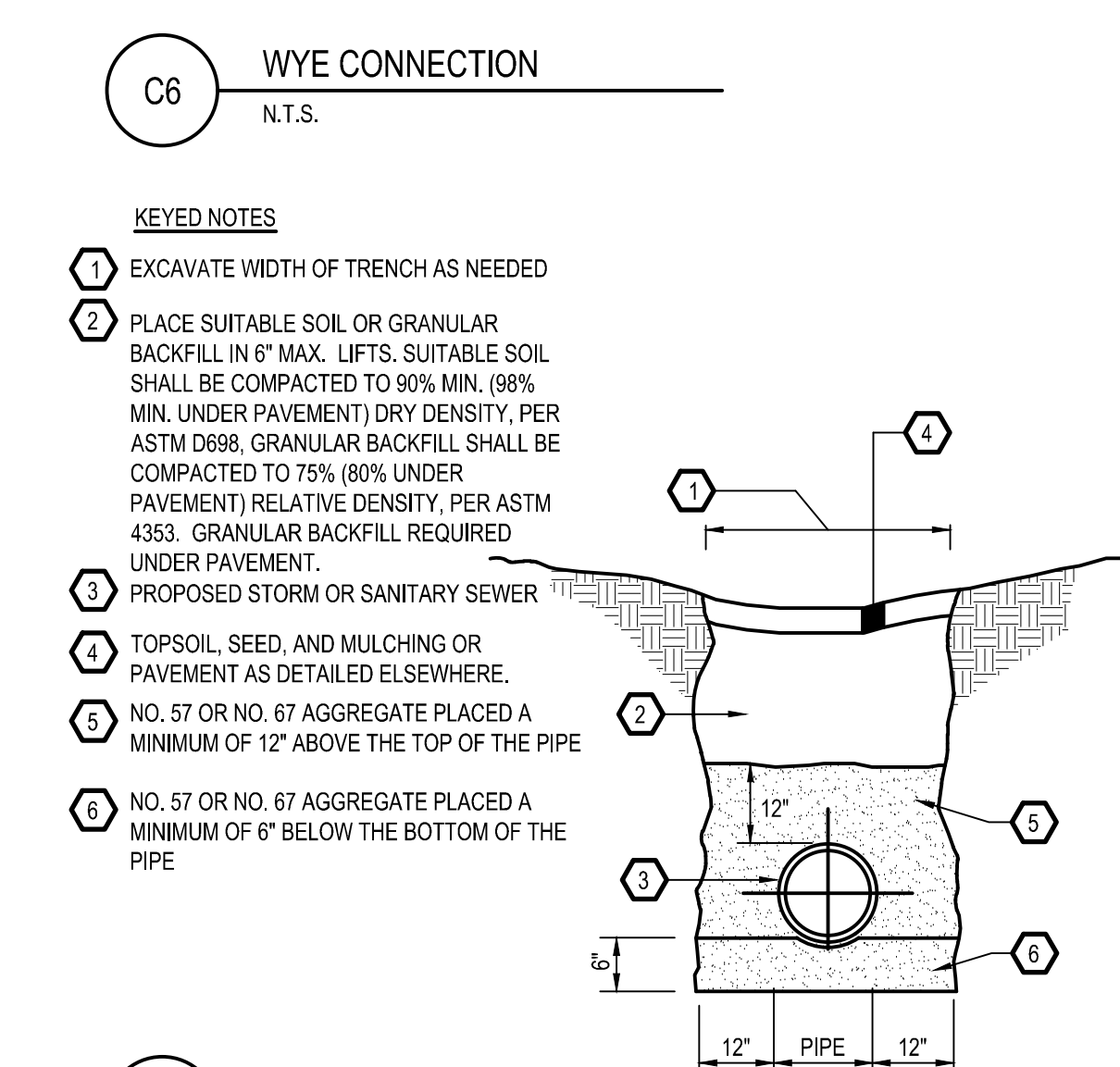
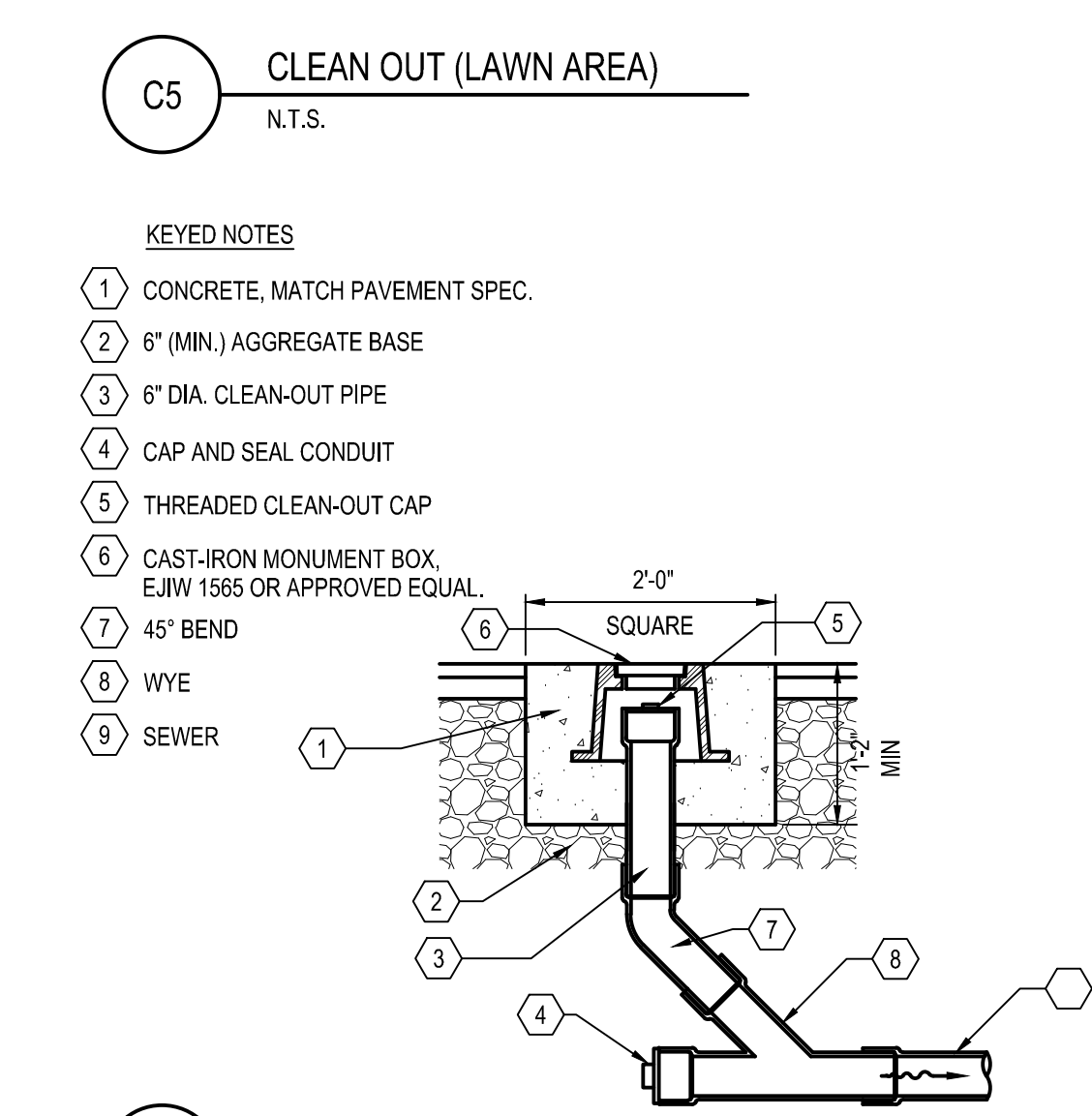
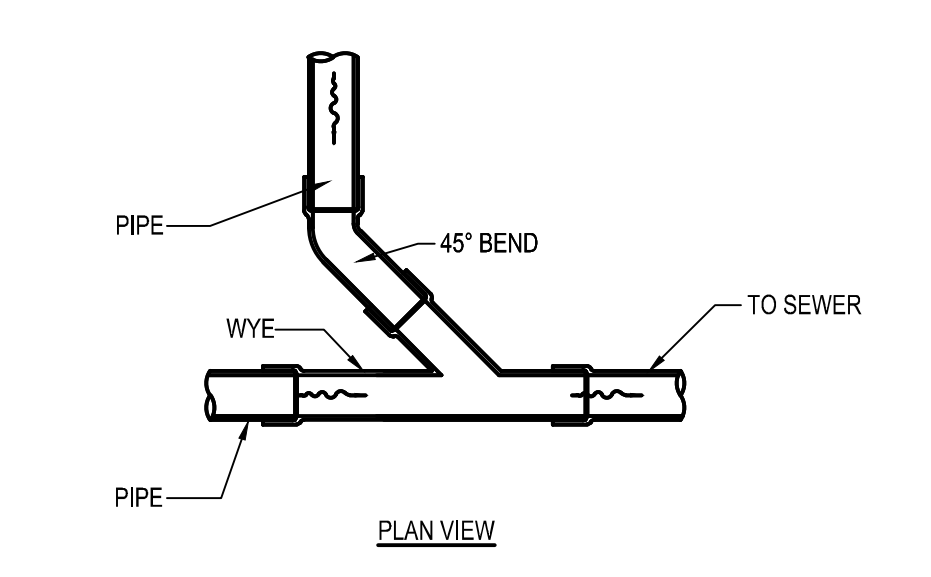
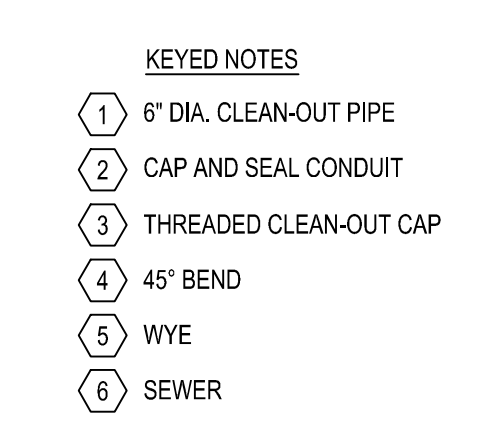
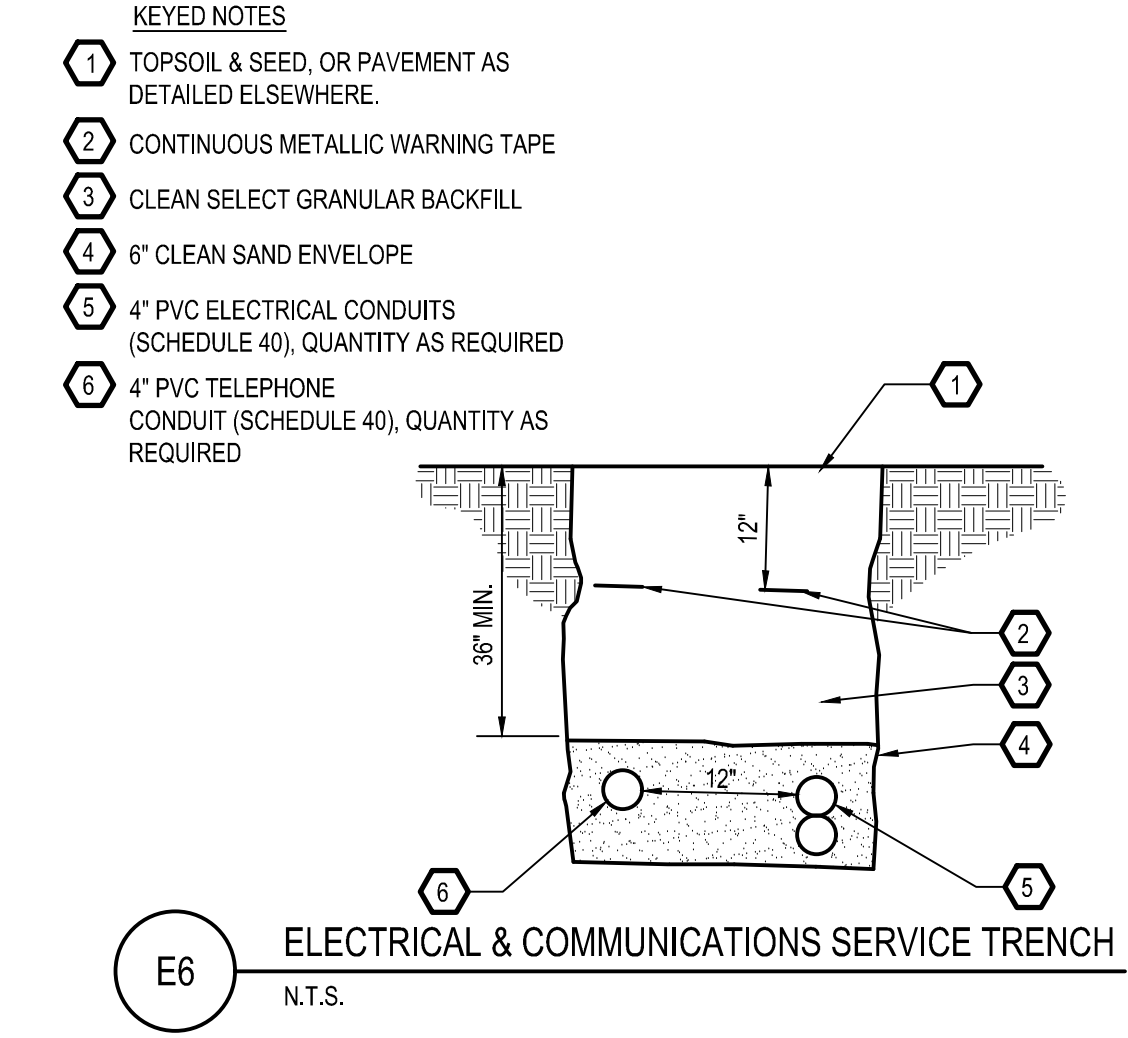
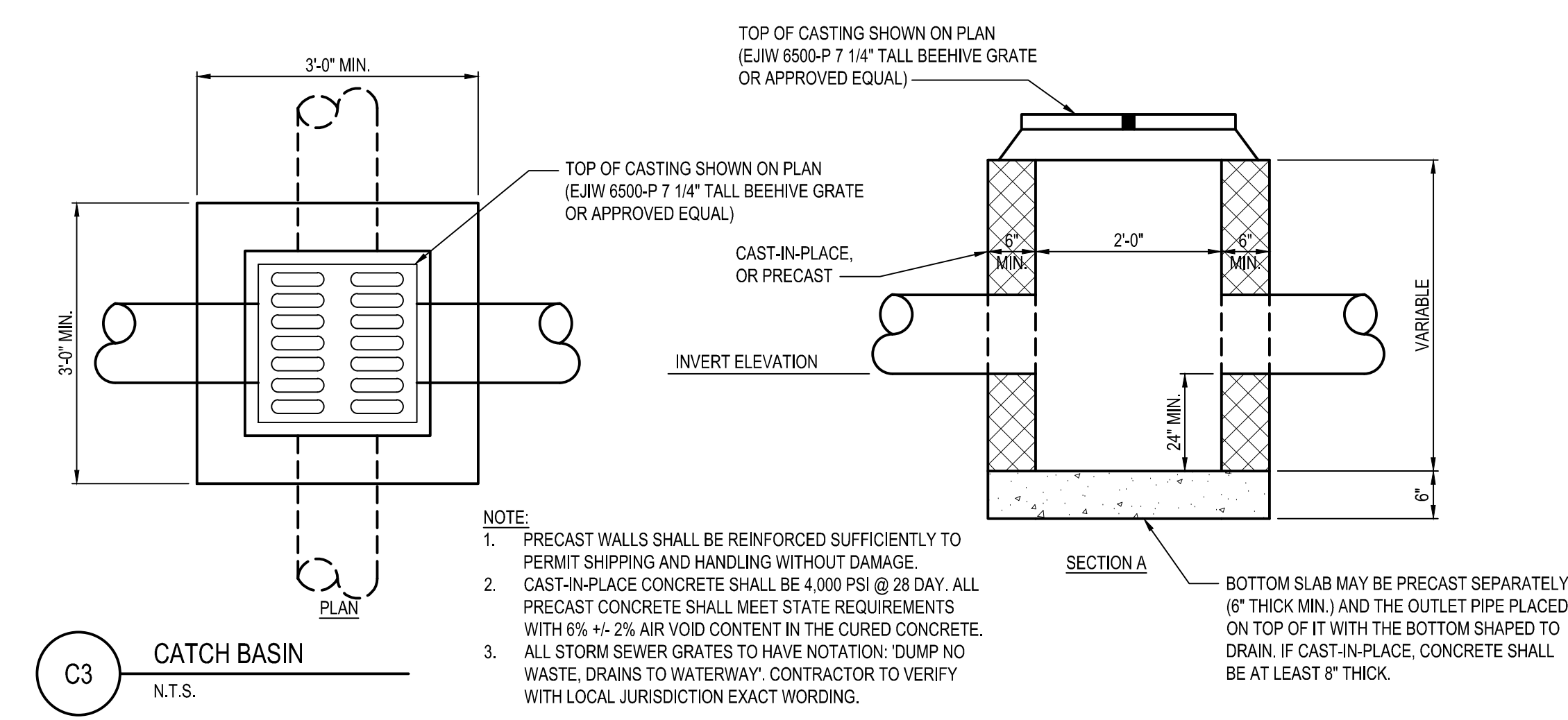
REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET NE.
 CANTON, OHIO 44705

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-501



REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET NE.
CANTON, OHIO 44705

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-502

REV.	DATE	DESCRIPTION

FOR REFERENCE ONLY

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET NE.
 CANTON, OHIO 44705

CITY OF CANTON DETAILS

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
MLH	TJW

JOB NO.
2020377.06

C-503

PLAN VIEW:
NOT TO SCALE

PROFILE VIEW (ALONG CURB):
NOT TO SCALE

ISOMETRIC VIEW:
NOT TO SCALE

SECTION A-A:
NOT TO SCALE

SECTION B-B:
NOT TO SCALE

NOTES:

- SIDEWALKS, CURBS, AND DRIVEWAYS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CITY OF CANTON SPECIFICATIONS FOR THE CONSTRUCTION, REPAIR, AND REPLACEMENT OF SIDEWALKS, CURBS, AND DRIVEWAYS.
- ODOT REFERENCES ARE FROM THE CURRENT ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS. ANY DISCREPANCIES SHALL BE SUBJECT TO THE CITY ENGINEER'S DISCRETION.
- ALTERNATIVE DESIGNS MAY BE APPROVED OR REQUIRED BY THE CITY ENGINEER FOR COMMERCIAL DRIVES.
- WHEN LAWNSTRIP WIDTH IS LESS THAN 3 FEET, LOWER THE DRIVE APPROACH/SIDEWALK PROFILE SO THAT DRIVE APPROACH CROSS SLOPE IS CONSTANT 3/16" PER FOOT FROM BACK OF CURB TO BACK OF SIDEWALK. CONSTRUCT SIDEWALK TRANSITIONS WITH A MAXIMUM 12" LONGITUDINAL SLOPE (PARALLEL TO STREET).
- GRADE AS APPROPRIATE OR IN ACCORDANCE WITH PLANS TO PROVIDE ADEQUATE TRANSITION TO DRIVEWAY AND YARD. FOR CITY PROJECTS, DRIVE MATERIALS AND BUILDUP SHALL MATCH EXISTING. GRADING AND MATERIALS SHALL BE PAID UNDER APPROPRIATE DRIVE RESTORATION ITEMS, ETC.
- FOR CITY PROJECTS AND REIMBURSEMENT PROGRAM, DRIVE APPROACH PAY LIMITS SHALL CORRESPOND WITH DRIVE APPROACH LIMITS AS INDICATED HEREIN. IF SIDEWALK TRANSITIONS ARE CONSTRUCTED (SEE NOTE 5), PAY LIMITS SHALL BE EXTENDED TO INCLUDE THE COST OF THE SIDEWALK TRANSITIONS, DRIVE APPROACHES AND PAY LIMITS DO NOT INCLUDE ANY CONCRETE PORTIONS OF DRIVE BEYOND BACK OF SIDEWALK OR ANY OTHER WORK NOT DIRECTLY RELATED TO THE CONSTRUCTION OF THE DRIVE APPROACH. THE COSTS ASSOCIATED WITH EXCAVATION, FORMING, GRADING, AND RESTORATION DIRECTLY RELATED TO THE DRIVE APPROACH AS WELL AS THE COSTS FOR THE CURB CUT/DROP CURB ARE INCIDENTAL TO THE COST OF THE DRIVE APPROACH.
- CONNECT APRON TO CURB WITH DOWELS OR WIRE MESH. REFER TO CITY STANDARD DRAWINGS NO. 29 FOR DRIVE APPROACHES WITH SIDEWALK AGAINST CURB.
- PLACE 1/2" EXPANSION JOINTS AGAINST EXISTING CONCRETE DRIVES AND WALKS, BUILDING WALLS, AND OTHER FIXED OBJECTS.
- WHEN THE LOCATION OF THE DRIVE APPROACH IS UNKNOWN AT THE TIME OF CURB CONSTRUCTION, THE DROP MAY BE SAW-CUT WITH THE CITY ENGINEER'S APPROVAL.
- ANY MODIFICATIONS TO THESE STANDARDS ARE SUBJECT TO THE APPROVAL OF THE CITY ENGINEER.

SECTION A-A:
NOT TO SCALE

SECTION B-B:
NOT TO SCALE

THE CITY OF CANTON, OHIO
 THOMAS M. BERNABEI, MAYOR
 OFFICE OF THE CITY ENGINEER
 JAMES J. BENEKOS, P.E., P.S., CITY ENGINEER
 2436 30TH ST. NE CANTON OH 44705
 330-489-3381 | www.cantonohio.gov/engineering

STANDARD DRAWING NO. 27
DRIVE APPROACH
WITH LAWNSTRIP BETWEEN SIDEWALK & CURB
 CE_27_20220513.DWG

ODOT REFERENCES ARE 2019 CMS - CROSS REFERENCE TO CURRENT CMS AT TIME OF CONSTRUCTION.

ALL CURB AND WALK CONSTRUCTION TO CONFORM TO CURRENT CITY OF CANTON SPECIFICATIONS FOR THE CONSTRUCTION, REPAIR AND REPLACEMENT OF SIDEWALKS, CURBS AND DRIVEWAYS.

GENERAL CRITERIA

PAVEMENT WIDTHS ARE TRADITIONALLY AND TYPICALLY 3/5THS THE RIGHT OF WAY WIDTH. LANE WIDTHS ARE 12 FT. TYP. AND PARKING WIDTHS ARE 8 FT. TYPICAL (2' - 3' APRON EA. SIDE). BY ORD. - MIN. 28 FT. PAVEMENT REQUIRED FOR PARKING (SIDE - 32 FT. PREFERRED. BUSINESS/COMMERCIAL DISTRICTS AND MAJOR STREET CORRIDORS REQUIRE SPECIAL SECTIONS. SPECIAL IMPROVEMENT DISTRICTS AND CORRIDORS REQUIRE ENHANCEMENTS & SPECIAL SECTIONS. SIDEWALKS ARE REQUIRED IN THE CITY OF CANTON UNLESS A WAIVER IS GRANTED. REFER TO CANTON STANDARD DRAWINGS FOR APPROPRIATE CONSTRUCTION STANDARDS.

- 1 203 - EXCAVATION & EMBANKMENT
- 2 204 - SUBGRADE COMPACTION
- 3 304 - 4" AGGREGATE BASE
- 4 304 - 6" AGGREGATE BASE
NO FOUNDRY SAND, ACBFS, GRANULATED SLAG OR OTHER SLAG PERMITTED IN ODOT 304 BASE
- 5 659 - LAWNSTRIP; 4" TOPSOIL / SEED / MULCH CLASS 1 LAWN MIX SEE NOTE 5a.
- 6 608 - CONCRETE WALK
4" THICK - RESIDENTIAL
5" THICK - COMMERCIAL
ODOT 499 CLASS "QC" CONCRETE. SEE CURRENT CITY SPECS FOR CURB / WALK CONSTRUCTION.

- 7 609 - CONC. CURB - CITY STD. 30 OR ODOT TYPE 6. ODOT 499 CLASS "QC" CONCRETE. SEE CURRENT CITY SPECS FOR CURB / WALK CONSTRUCTION.
- 8 605 - 4" PIPE UNDERDRAIN - (M) TYP. - NO. 8 STONE BEDDING (NO ACBFS) - FILTER SLEEVE.
- 9 705.03 - 1/2" PREFORMED JOINT W/ SEALER
- 10 452 - 6" PLAIN PORTLAND CEMENT CONC. PAVEMENT, ODOT 499 CLASS "QC" CONCRETE
- 11 608 - CONCRETE WALK - CITY STD. 29, TYPE III. ODOT 499 CLASS "QC" CONCRETE. SEE CURRENT CITY SPECS FOR CURB / WALK CONSTRUCTION.
- 12 441 - 1-1/2" ASPHALT CONC. SURFACE COURSE, TYPE I
- 13 441 - 1-1/2" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I
- 14 301 - 4" ASPHALT CONC. BASE
- 15 407 - TACK COAT (USE RUBBERIZED TACK FOR ASPHALT OVERLAY ON PORTLAND CEMENT CONCRETE OR BRICK PAVEMENT)
- 16 408 - PRIME COAT

READ FOR ALL NEW STREET CONSTRUCTION AND IMPROVEMENT THE OWNER/DEVELOPER SHALL PROVIDE A TYPICAL SECTION PREPARED BY A PROFESSIONAL ENGINEER TO BE REVIEWED AND APPROVED BY THE CITY ENGINEER.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
 DANIEL J. MOEGLIN, P.E., CITY ENGINEER
 2436 30th St. NE 44705 : 330-489-3381 : www.cantonohio.gov/engineering

STANDARD DRAWING NO. 32
MINIMUM PAVEMENT STANDARDS
FOR LOCAL STREETS
 CE_32_20210301.DWG

Drawing Name: C:\2020\2020377\06 - Service Center - Impound Lot And Salt Dome Demo\4_Working
 File:00_CAD\03\Sheet\2020377\06 Notes And Details.dwg
 January 11, 2023 10:37 AM - m.ring

SPECIAL INSPECTION AND TESTING:

THIS PROJECT REQUIRES SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE...

THE SPECIAL INSPECTIONS AND TESTING PROGRAM:

THE SPECIAL INSPECTION AND TESTING PROGRAM IS A QUALITY ASSURANCE PROGRAM INTENDED TO ENSURE THAT THE WORK IS PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS...

THE PROJECT OWNER IS RESPONSIBLE FOR EMPLOYING SPECIAL INSPECTION SERVICES. THE SPECIAL INSPECTOR/AGENCY SHALL NOT BE IN THE EMPLOY OF THE CONTRACTOR...

THE SPECIAL INSPECTOR IS OBLIGATED TO BOTH THE OWNER AND THE BUILDING OFFICIAL FOR OBSERVING THAT THE WORK IS EXECUTED IN SUBSTANTIVE ACCORDANCE WITH THE OFFICIAL CONTRACT DOCUMENTS...

THE INSPECTOR AND TESTING AGENTS SHALL DISCLOSE ANY PAST OR PRESENT BUSINESS RELATIONSHIP OR POTENTIAL CONFLICT OF INTEREST WITH THE CONTRACTOR OR ANY OF THE SUBCONTRACTORS...

SPECIAL INSPECTION REPORT REQUIREMENTS:

SPECIAL INSPECTION REPORTS AND A FINAL REPORT IN ACCORDANCE WITH SECTION 1704.2 SHALL BE SUBMITTED TO THE BUILDING OFFICIAL PRIOR TO THE TIME THAT PHASE OF THE WORK IS APPROVED FOR OCCUPANCY...

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS AND TESTS. THE SPECIAL INSPECTOR SHALL FURNISH THE INSPECTION REPORTS TO THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE...

CONTRACTOR RESPONSIBILITIES:

THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SPECIAL INSPECTOR IN ADVANCE OF CONSTRUCTION SCHEDULES AND PLANNED OPERATIONS IN ORDER TO ASSURE TIMELY AND APPROPRIATE INSPECTION FOR THE ITEMS LISTED IN THE SCHEDULE OF SPECIAL INSPECTIONS...

THE CONTRACTOR SHALL COOPERATE WITH AND ASSIST THE SPECIAL INSPECTOR IN PERFORMING HIS INSPECTION DUTIES. THE SPECIAL INSPECTOR SHALL HAVE FREE ACCESS TO THE PROJECT AT ALL TIMES...

PROVIDE ACCESS TO APPROVED PLANS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE SPECIAL INSPECTOR ACCESS TO APPROVED PLANS...

CORRECT DISCREPANCIES AND DEVIATIONS. THE CONTRACTOR SHALL UPON BEING INFORMED BY THE SPECIAL INSPECTOR, IMMEDIATELY CAUSE TO ELIMINATE SUCH DISCREPANCIES AND DEVIATIONS...

WORK COMPLETED WITHOUT INSPECTION. WORK REQUIRING INSPECTION WHICH IS COMPLETED WITHOUT INSPECTION WILL BE REJECTED SOLELY ON THAT BASIS...

RETAIN SPECIAL INSPECTION RECORDS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR RETAINING AT THE JOB SITE ALL SPECIAL INSPECTION RECORDS COMPLETED BY THE SPECIAL INSPECTOR...

COORDINATE AND SUBMIT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING TO THE BUILDING OFFICIAL AND THE OWNER A STATEMENT OF CONTRACTOR RESPONSIBILITY...

A. STATEMENT OF CONTRACTOR RESPONSIBILITY SHALL CONTAIN THE FOLLOWING: 1. ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED IN THE QUALITY ASSURANCE PLAN...

2. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL. 3. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTORS ORGANIZATION...

B. STRUCTURAL COMPONENT SUBCONTRACTORS INCLUDE BUT ARE NOT LIMITED TO STRUCTURAL STEEL FABRICATORS AND ERECTORS, COMPONENT FABRICATORS SUCH AS STEEL JOISTS, METAL OR WOOD TRUSSES, CONCRETE, AND MASONRY CONTRACTORS.

C. AT THE COMPLETION OF STRUCTURAL COMPONENT FABRICATION, THE FABRICATORS SHALL SUBMIT A CERTIFICATE OF COMPLIANCE STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS OF:

RETESTING AND RESPECTION OF MATERIALS, WORK, AND/OR PRODUCTS THAT DO NOT MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND SHOP DRAWING SUBMITTAL DATA.

REVIEW OF PROPOSED REPAIR AND/OR REPLACEMENT PROCEDURES BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND THE INSPECTORS AND TESTING AGENCIES.

REPAIR OR REPLACEMENT OF WORK THAT DOES NOT MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

THE CONTRACTOR IS RESPONSIBLE FOR THE TRAVEL COSTS OF THE SPECIAL INSPECTOR OR AGENTS WHEN SHOP INSPECTION IS REQUIRED OF A NON APPROVED STRUCTURAL COMPONENT FABRICATOR.

INSPECTION OF FABRICATION:

WHERE FABRICATION OF STRUCTURAL LOAD BEARING, OR LATERAL LOAD RESISTING MEMBERS OR ASSEMBLIES ARE PERFORMED ON THE PREMISES OF THE FABRICATOR, THE SHOP FABRICATION REQUIRES SPECIAL INSPECTION DURING THE FABRICATION OF ITEMS FOR THIS PROJECT.

EXEMPTION:

FABRICATORS APPROVED BY THE BUILDING OFFICIAL ARE EXEMPT FROM THE ON PREMISE INSPECTION. THE APPROVAL BY THE BUILDING OFFICIAL OF ANY FABRICATOR SHOULD BE PROPERLY DOCUMENTED PRIOR TO THE COMMENCEMENT OF FABRICATION...

AT THE COMPLETION OF FABRICATION, THE FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

CONCRETE TESTING NOTES:

CONCRETE TESTING AND INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318 AND THE SCHEDULE OF SPECIAL INSPECTIONS. SAMPLES FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY...

STEEL INSPECTION AND TESTING NOTES:

STRUCTURAL STEEL TESTING AND INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE REFERENCED STANDARDS AND THE SCHEDULE OF SPECIAL INSPECTIONS.

FIELD BOLTED CONNECTIONS WILL BE TESTED AND INSPECTED ACCORDING TO RCSC'S "INSPECTION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."

FIELD WELDS SHALL BE INSPECTED AND TESTED ACCORDING TO AWS D1.1. IN ADDITION TO VISUAL INSPECTION, WELDED MOMENT CONNECTIONS WILL BE TESTED BY ULTRASONIC, ASTM E184, OR OTHER AWS APPROVED METHOD.

MASONRY INSPECTION AND TESTING NOTES:

CONCRETE MASONRY TESTING AND INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS 402 (TMS 602) AND THE SCHEDULE OF SPECIAL INSPECTIONS. INSPECTION SHALL INCLUDE GENERAL INSPECTION OF WORK IN PROGRESS TO CONFIRM THAT MATERIALS, CONSTRUCTION, AND WORKMANSHIP ARE IN COMPLIANCE WITH PLANS, SPECIFICATIONS AND GOOD CONSTRUCTION PRACTICES...

FREQUENCY OF TESTING: AT THE BEGINNING OF MASONRY CONSTRUCTION AND FOR EVERY 5000 SQUARE FEET OF MASONRY INSTALLED THEREAFTER.

COLD WEATHER = LESS THAN 40 DEGREES FAHRENHEIT. HOT WEATHER = GREATER THAN 90 DEGREES FAHRENHEIT.

INSPECTOR TO BE CERTIFIED BY THE INTERNATIONAL CODE COUNCIL.

OTHER REQUIRED INSPECTIONS:

THE REQUIREMENTS OF SPECIAL INSPECTIONS AND TESTING IN ACCORDANCE OF THE INTERNATIONAL BUILDING CODE ARE MINIMUM REQUIREMENTS AND DO NOT LIMIT THE REQUIREMENTS FOR THE CONTRACTOR TO PROVIDE OTHER QUALITY CONTROL INSPECTIONS AND TESTING REQUIRED BY THE OWNER, CONTRACT DOCUMENTS, OR OTHER GOVERNING AUTHORITIES HAVING JURISDICTION.

Tables 1.1 through 1.8 detailing inspection or execution tasks for deck placement, after deck placement, during welding, after welding, during mechanical fastening, and after mechanical fastening.

SCHEDULE OF SPECIAL INSPECTIONS

Main SCHEDULE OF SPECIAL INSPECTIONS table for 1704.2.5 INSPECTION OF FABRICATORS and 1705.2.1 STEEL - AISI 304 REQUIREMENTS (SEISMIC PROVISIONS).

1705.3 CONCRETE CONSTRUCTION table with columns for MATERIAL ACTIVITY, SERVICE, APPLICABLE TO PROJECT, and REFERENCES.

1705.4 MASONRY CONSTRUCTION table with columns for MATERIAL ACTIVITY, SERVICE, APPLICABLE TO PROJECT, and REFERENCES.

1705.6 BOLLS table with columns for MATERIAL ACTIVITY, SERVICE, and APPLICABLE TO PROJECT.

1705.2.1 STEEL CONSTRUCTION - OTHER INSPECTIONS table with columns for MATERIAL ACTIVITY, SERVICE, and APPLICABLE TO PROJECT.

DEFINITIONS table defining terms like SPECIAL INSPECTION, SPECIAL INSPECTOR, and SPECIAL INSPECTION PROGRAM.

Vertical sidebar containing GPD GROUP logo, address (CITY OF CANTON - 2022 SERVICE CENTER UPGRADES), permit information, date, and job number (2020377.06).

GENERAL SHEET NOTES

- SEE SHEET S-001 FOR STRUCTURAL GENERAL NOTES.
- SEE SHEET S-501 FOR TYPICAL DETAILS.
- BASE REFERENCE ELEVATION IS FROM FINISH FLOOR ELEVATION 1001.00 = (0'-0"). ALL ELEVATIONS ARE REFERENCED FROM BASE ELEVATION AND ARE SHOWN AS (x'-x").
- FOUNDATION ELEVATIONS SHOWN ON PLAN ARE TO TOP OF FOUNDATION AND ARE REFERENCED FROM BASE ELEVATION (0'-0").
- TOP OF FOUNDATIONS ARE (-1'-4") U.N.O.
- SPREAD FOOTINGS SHALL BE CENTERED BELOW COLUMNS, U.N.O.
- WALL FOOTING SHALL BE CENTERED BELOW WALLS, U.N.O.
- SEE ARCHITECTURAL DRAWINGS FOR EXTENT AND FINISH OF SLAB ON GRADE AND ANY FLOOR DEPRESSIONS.
- COORDINATE FLOOR DRAIN LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
- COORDINATE REQUIRED FOUNDATION DRAINAGE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
- PROVIDE SAWCUT CONTRACTION OR CONSTRUCTION JOINTS IN SLAB SPACED AT A MAXIMUM OF 12'-0" O.C. IN BOTH DIRECTIONS WITH A MAXIMUM LENGTH TO WIDTH RATIO OF 2 U.N.O. MATCH LOCATION OF JOINTS WITH ARCHITECTURAL DRAWINGS WHERE SHOWN. PROVIDE DIAMOND ISOLATION SLAB AT COLUMNS.
- PROVIDE (2)-#4x3'-0" LONG SLAB REINFORCEMENT AT ALL RE-ENTRANT CORNERS.
- MASONRY REINFORCEMENT: PROVIDE THE FC05(S-501) VERTICAL MASONRY REINFORCEMENT FULL HEIGHT OF WALLS, U.N.O. ALL REINFORCEMENT SHALL BE CENTERED IN CMU UNO.
- 8" CMU WALLS: #6@24" O.C. UNO
- SEE C3, C4 AND FOR ADDITIONAL TYPICAL MASONRY REINFORCEMENT.

LEGEND

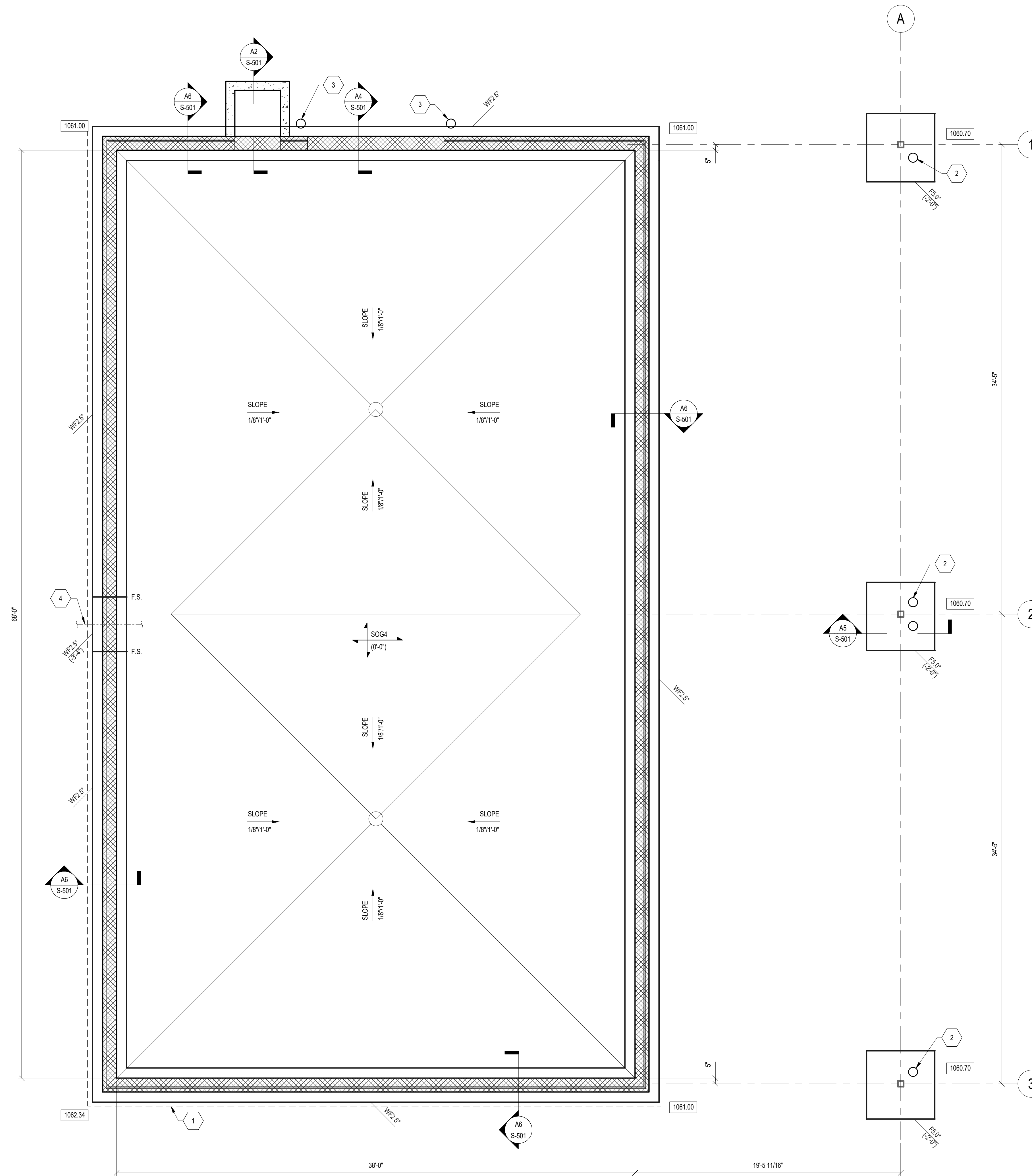
- "WF" DENOTES WALL FOOTING MARK. SEE FOUNDATION SCHEDULE ON SHEET S-501.
- "FK" DENOTES SPREAD FOOTING MARK. SEE FOUNDATION SCHEDULE ON SHEET S-501.
- "F.S." DENOTES FOOTING STEP LOCATION. SEE TYPICAL DETAIL ON SHEET S-501.
- 4" NORMAL HEIGHT CONCRETE SLAB ON GRADE w/6#-12.9/H#2.9 WWF (CENTERED) ON VAPOR RETARDER ON COMPACTED GRANULAR DRAINAGE FILL MATERIAL.
- [Symbol] APPROXIMATE PROPOSED FINISH GRADE ELEVATION. SEE CIVIL DRAWINGS.

SHEET KEYNOTES

1. 4" DIAMETER PERFORATED DRAIN PIPE. COORDINATE LOCATION AND EXTENTS WITH ARCHITECTURAL, PLUMBING AND CIVIL DRAWINGS.
2. SITE BOLLARD. SEE SITE AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION. WHERE BOLLARD IS INTEGRAL WITH FOUNDATION, EMBED BOLLARD INTO FOUNDATION 18" MIN. AND ENCASE IN CONCRETE FROM TOP OF FOUNDATION TO GRADE WITH 18" DIA. CAISSON. PROVIDE A MINIMUM OF 8" EDGE DISTANCE. BOLLARDS SHALL BE CAST IN PLACE WITH FOUNDATION. CONTRACTOR OPTION: BOLLARDS MAY BE POST-INSTALLED TO THE TOP OF FOUNDATION WITH A BASE PLATE AND ANCHOR RODS PER MANUFACTURER'S RECOMMENDATIONS.
3. ENLARGE FOUNDATION AS REQUIRED TO INSTALL SITE BOLLARD. MAINTAIN A MINIMUM 8" CLEAR CONCRETE AROUND BOLLARD. SEE SHEET KEYNOTE "2" FOR ADDITIONAL INFORMATION.
4. UNDERGROUND UTILITY LINE. COORDINATE WITH CIVIL, ELECTRICAL, AND PLUMBING. PROVIDE SLEEVE AS REQUIRED. NOT ALL SHOWN ON PLAN; SEE DETAILS ON SHEET S-501.

SUBSURFACE SOIL NOTE

NOTE:
 THE SOILS BELOW THE FOUNDATIONS OF THE BUILDING ARE REQUIRED TO BE IMPROVED BY MEANS RAMMED AGGREGATE PIERS PER THE SUBSURFACE INVESTIGATION REPORT. ALL FOUNDATIONS LISTED HAVE BEEN DESIGNED FOR A NET ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.



A3 FOUNDATION PLAN
 1/4" = 1'-0"

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

FOUNDATION PLAN

	DATE:
PERMIT	01/06/2023
BID	01/06/2023
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	CDD / JAG

JOB NO.
2020377.06

S-101

GENERAL SHEET NOTES

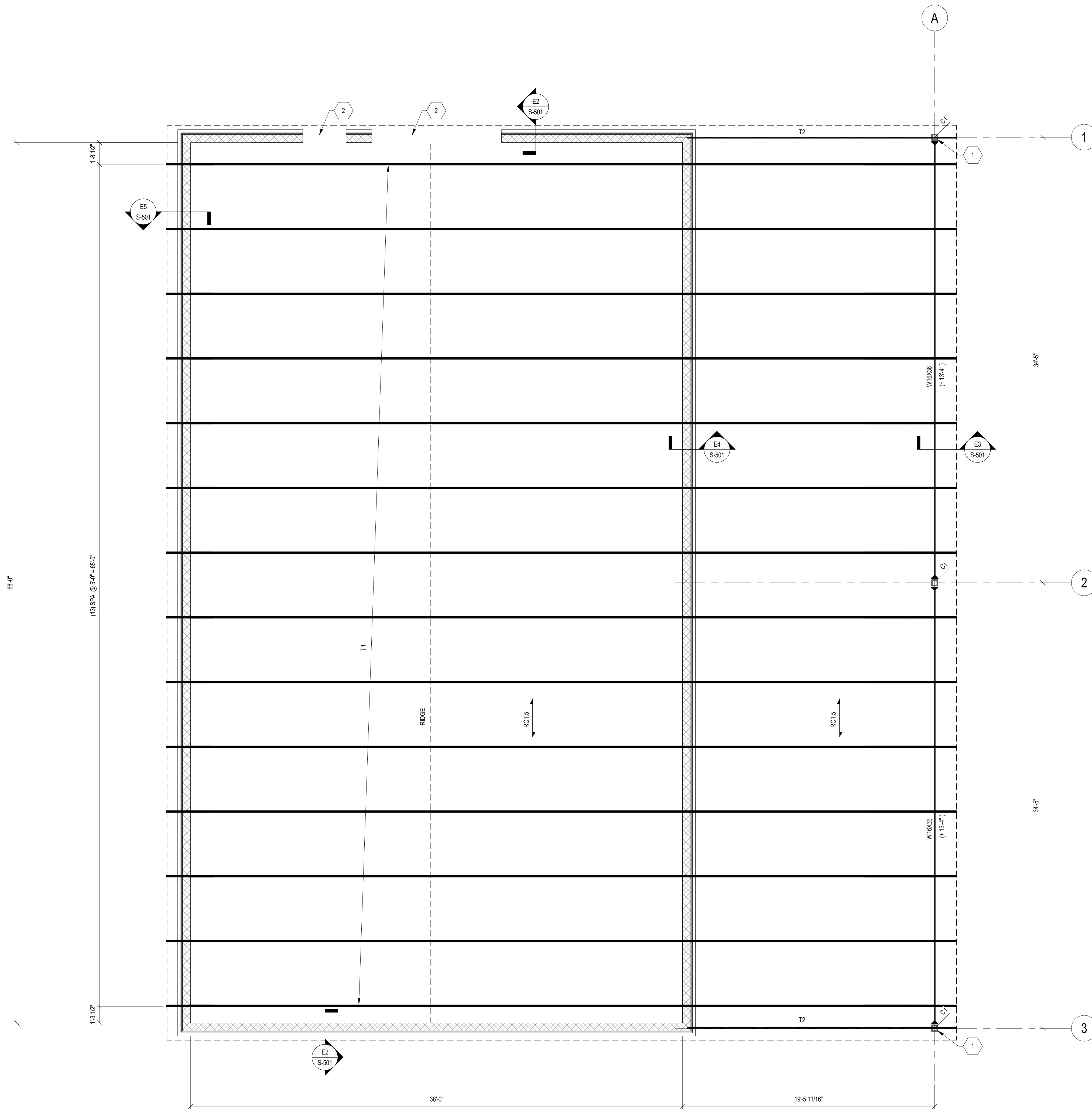
- SEE SHEET S-001 FOR STRUCTURAL GENERAL NOTES.
- SEE SHEET S-501 FOR TYPICAL DETAILS AND SCHEDULES.
- BASE REFERENCE ELEVATION IS FROM FINISH FLOOR ELEVATION 1001.00 = (0'-0"). ALL ELEVATIONS ARE REFERENCED FROM BASE ELEVATION AND ARE SHOWN AS (x'-x").
- TYPICAL COLD FORMED STEEL TRUSS BEARING ELEVATION = (+1'-3"-4") UNO.
- SEE MASONRY LINTEL SCHEDULE ON SHEET S-501 FOR LINTELS NOT SHOWN.
- FOR DIMENSIONS NOT SHOWN, SEE ARCHITECTURAL DRAWINGS.
- COLD FORMED STEEL BRIDGING SHALL BE PROVIDED BY THE STEEL TRUSS SUPPLIER AS REQUIRED.
- MASONRY REINFORCEMENT:
 PROVIDE THE FOLLOWING VERTICAL MASONRY REINFORCEMENT FULL HEIGHT OF WALLS, UNO. ALL REINFORCEMENT SHALL BE CENTERED IN CMU UNO.
 8" CMU EXTERIOR WALLS: #6@24" O.C. UNO.

LEGEND

- (x'-x") DENOTES TOP OF STEEL ELEVATION ABOVE FINISH FLOOR ELEVATION OF (0'-0").
- [x'-x"] DENOTES BOTTOM OF STEEL ELEVATION ABOVE FINISH FLOOR ELEVATION OF (0'-0").
- "T" DENOTES COLD FORMED STEEL ROOF TRUSS. SEE TRUSS PROFILE ON SHEET S-501.
- RC1.5 → 1 1/2"x22 GAUGE GALVANIZED WIDE RIB METAL ROOF DECK (TYPE B).
- MOMENT CONNECTION. SEE DETAILS ON SHEET S-501.

SHEET KEYNOTES

1. ADJUST BEARING CONDITION AT COLD FORMED STEEL TRUSS TO ACCOMMODATE TOP PLATE AT BEAM TO COLUMN CONNECTION.
2. SEE MASONRY LINTEL SCHEDULE.



A3 ROOF FRAMING PLAN
 1/4" = 1'-0"

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ROOF FRAMING PLAN

	DATE:
PERMIT	01/06/2023
BID	01/06/2023
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	CDD / JAG

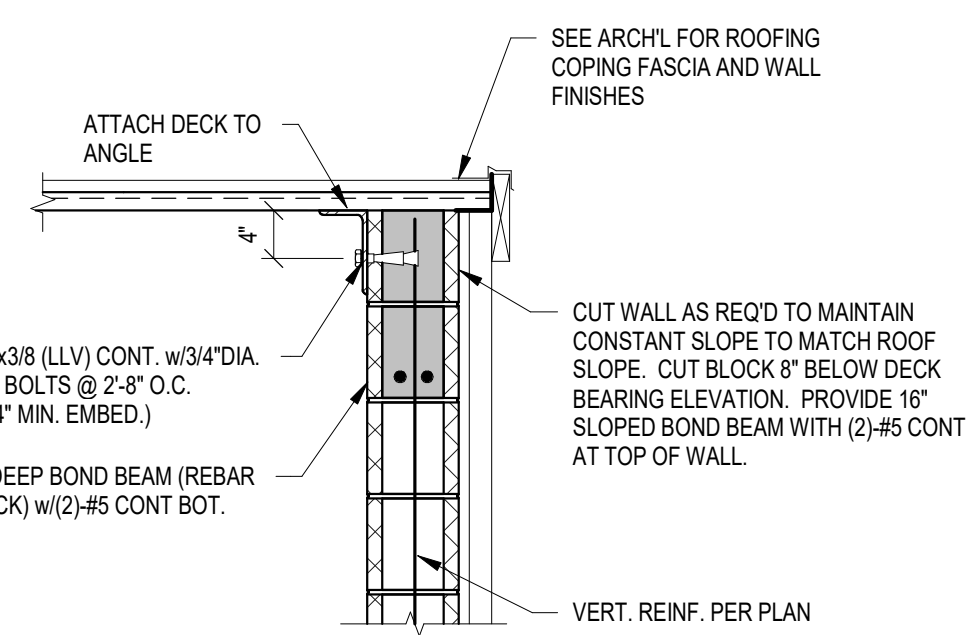
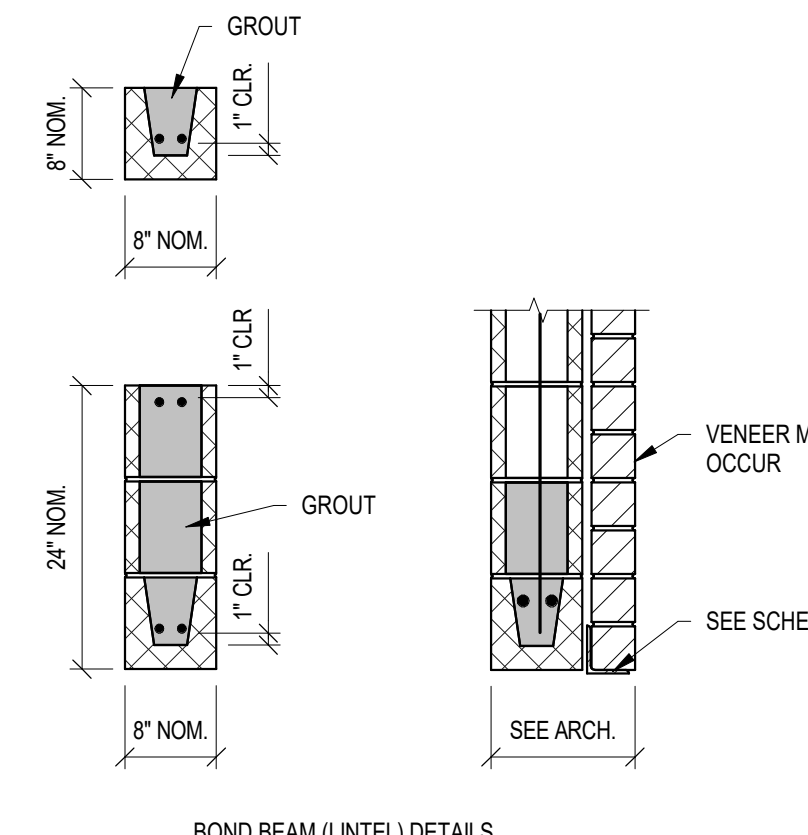
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S-111

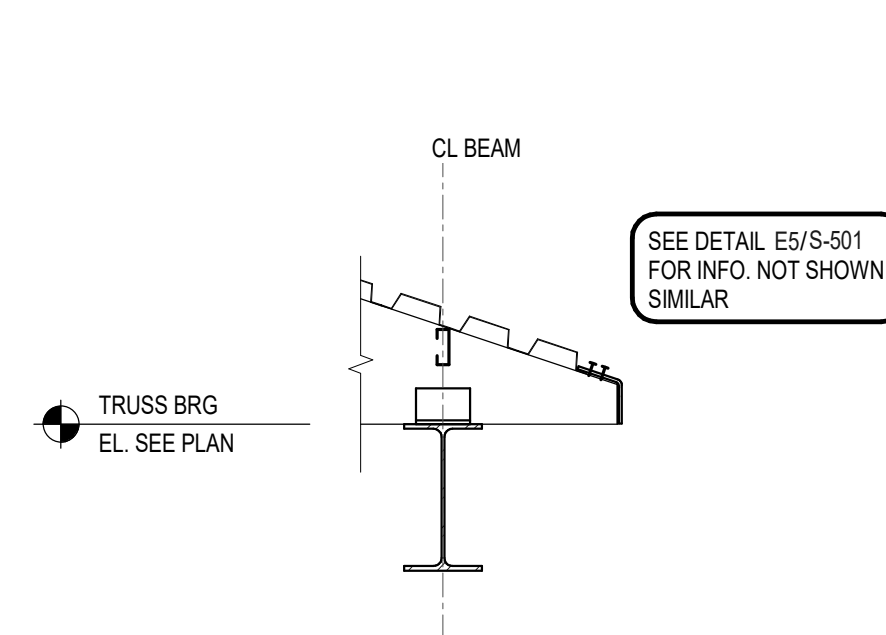
MASONRY LINTEL SCHEDULE

REINFORCED BOND BEAMS				
CLEAR SPAN	DEPTH	REINFORCING (8" WIDE BLOCK)	MIN. CLEAR DIST. ABOVE OPENING	EXTERIOR VENEER
0'-8" TO 3'-4"	8"	(2)#5	2'-4"	L3 1/2x3 1/2x3/8 LLV
>3'-4" TO 4'-8"	8"	(2)#5	3'-0"	L4x3 1/2x3/8 LLV
>4'-8" TO 6'-0"	16"	(2)#5	3'-8"	L5x3 1/2x3/8 LLV
>6'-0" TO 7'-4"	16"	(2)#5	4'-4"	L5x3 1/2x3/8 LLV
>7'-4" TO 10'-0"	24"	(2)#6 TAB	5'-8"	L6x3 1/2x3/8 LLV

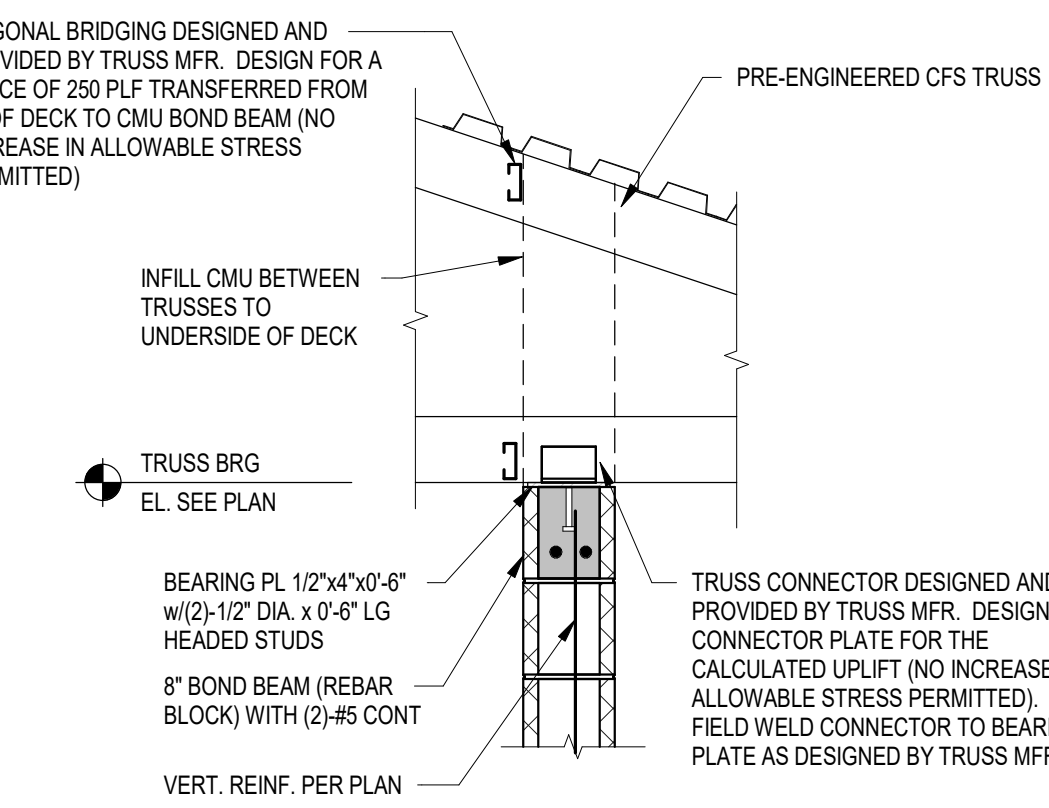
- NOTES:
- SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS.
 - BOND BEAMS SHALL BE GROUTED SOLID.
 - EXTEND BOND BEAM 1'-4" PAST EACH END OF OPENING ON 1'-4" MIN. HEIGHT OF GROUTED SOLID MASONRY.
 - GALVANIZE ALL VENEER LINTEL ANGLES THAT ARE EXPOSED TO WEATHER.
 - PROVIDE 8" MINIMUM BEARING EACH END FOR VENEER LINTEL ANGLES.
 - SCHEDULE APPLIES ONLY TO LINTELS NOT OTHERWISE SHOWN.
 - CONTRACTOR TO PROVIDE TEMPORARY SHORING UNTIL MASONRY HAS PROPERLY SET (3 DAYS MIN.).
 - ALL VERTICAL WALL REINFORCEMENT SHALL BE CONTINUOUS THROUGH BOND BEAM BEARING LOCATIONS. DO NOT TERMINATE VERTICAL REINFORCEMENT AT SIDE OF WINDOW/DOOR OPENINGS.



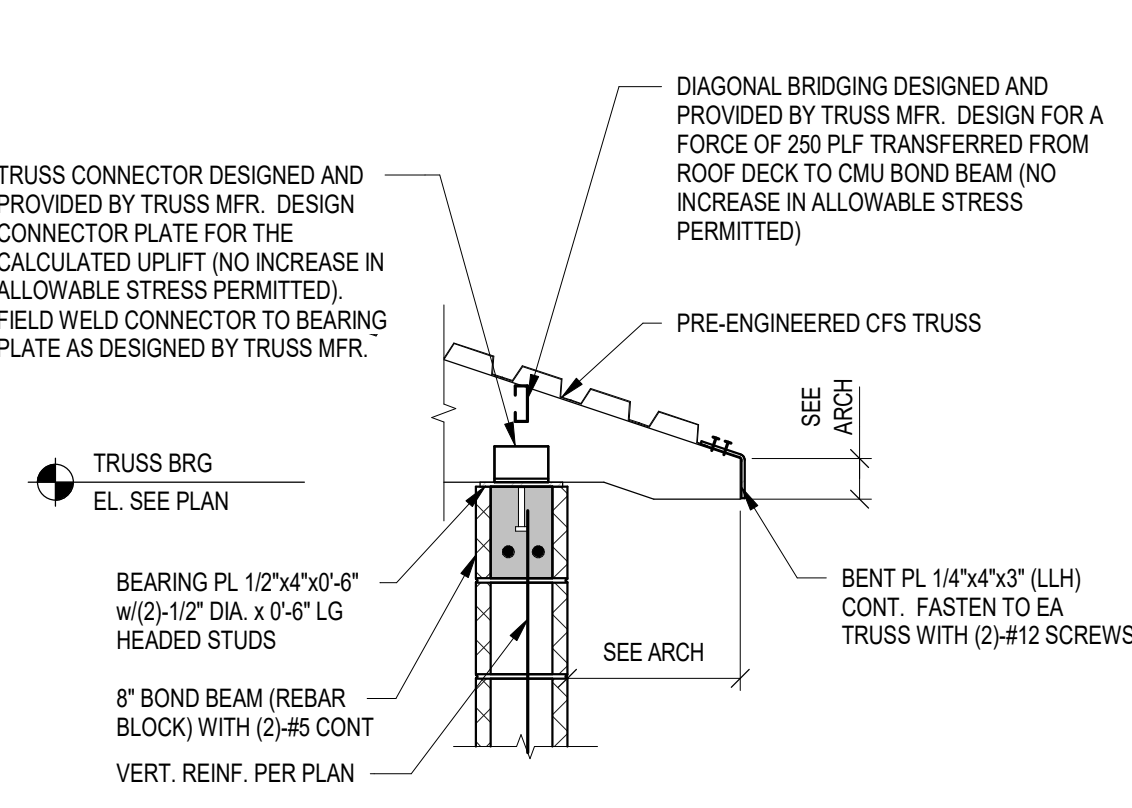
E2 SECTION
3/4" = 1'-0"



E3 SECTION
3/4" = 1'-0"



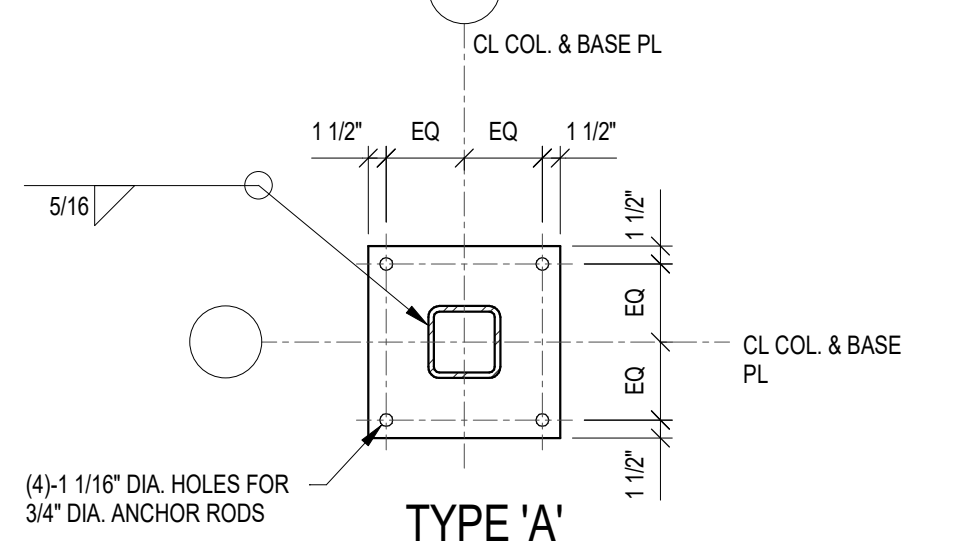
E4 SECTION
3/4" = 1'-0"



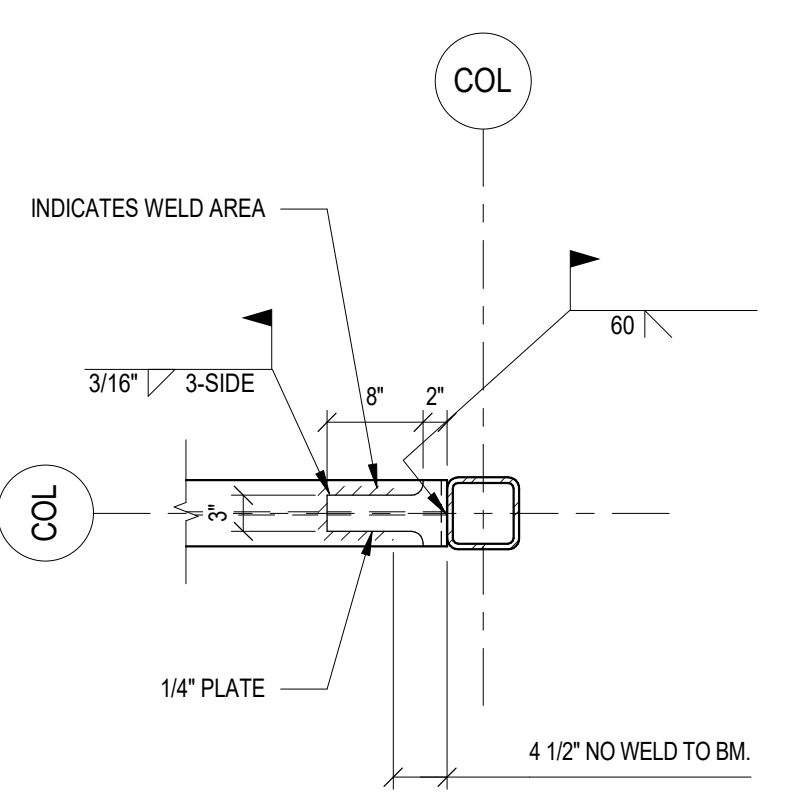
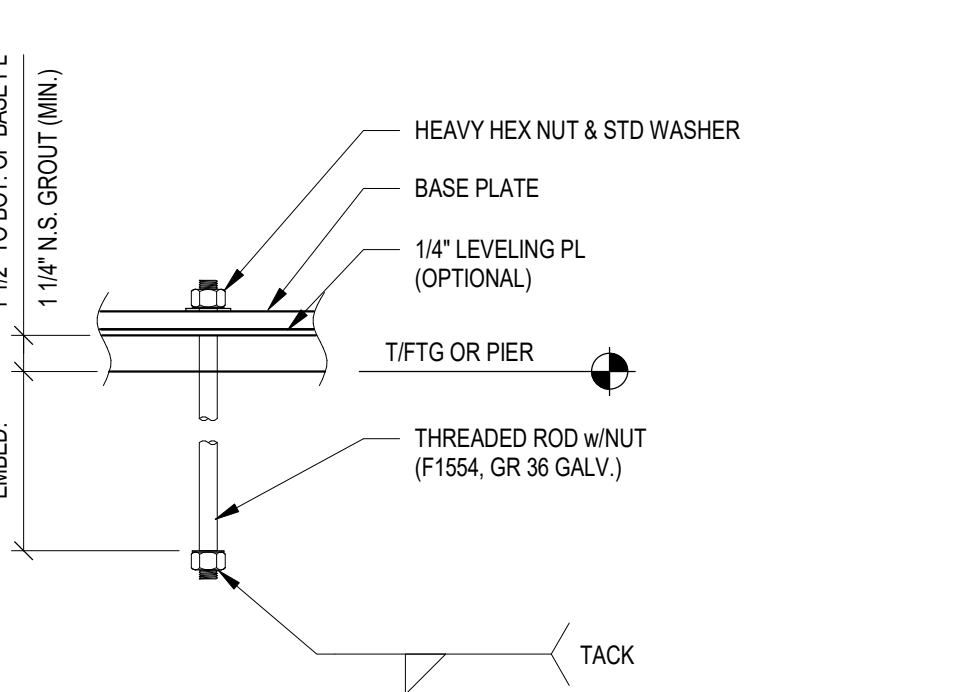
E5 SECTION
3/4" = 1'-0"

COLUMN SCHEDULE

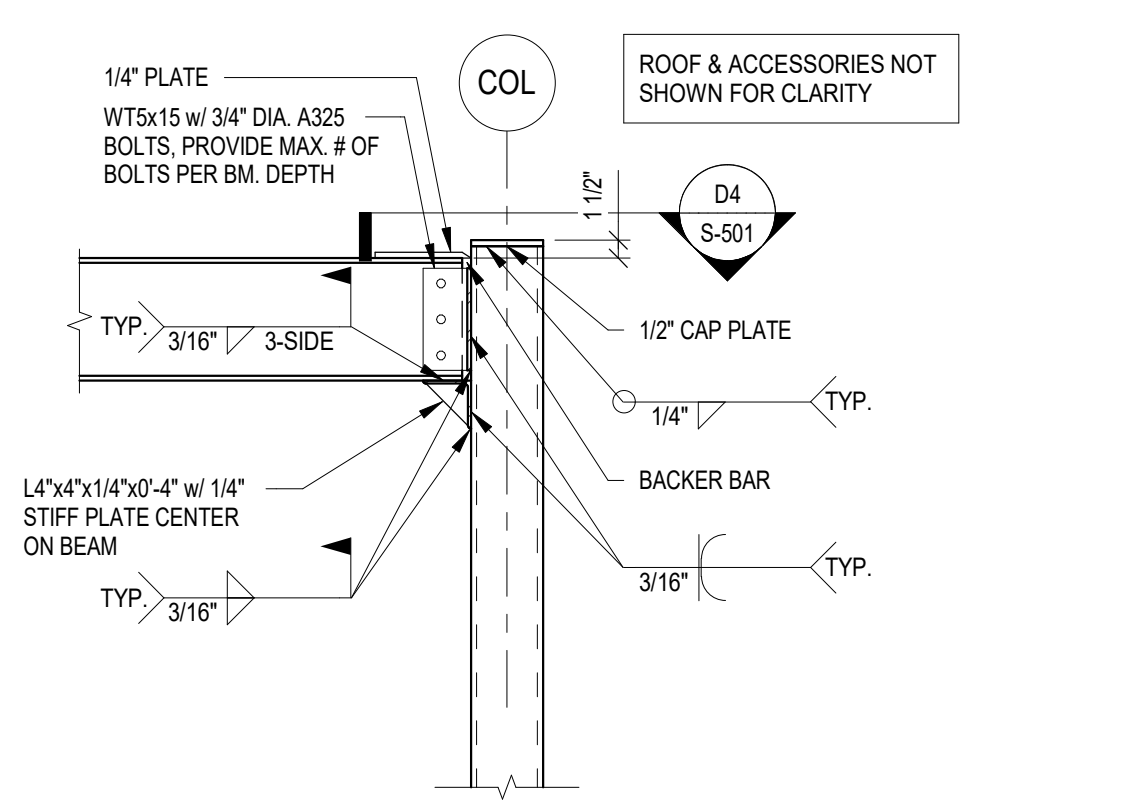
TYPE MARK	TYPE	BASE PLATE BxWxH	ANCHOR ROD	BASE PLATE TYPE	EMBEDMENT
C1	HSS6x6x1/4	12"x14"x1"	(4)3/4" DIA.	TYPE 'X'	1'-0"



E6 BASE PLATE TYPES
3/4" = 1'-0"

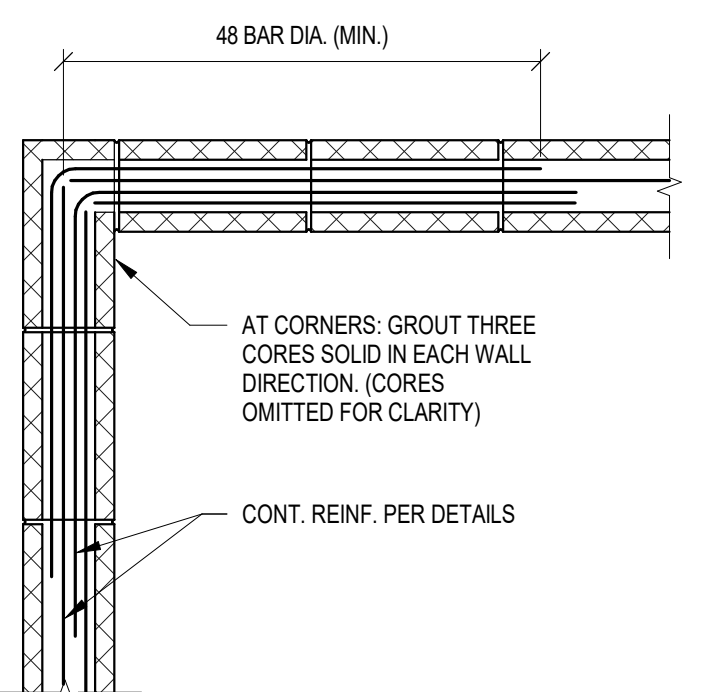
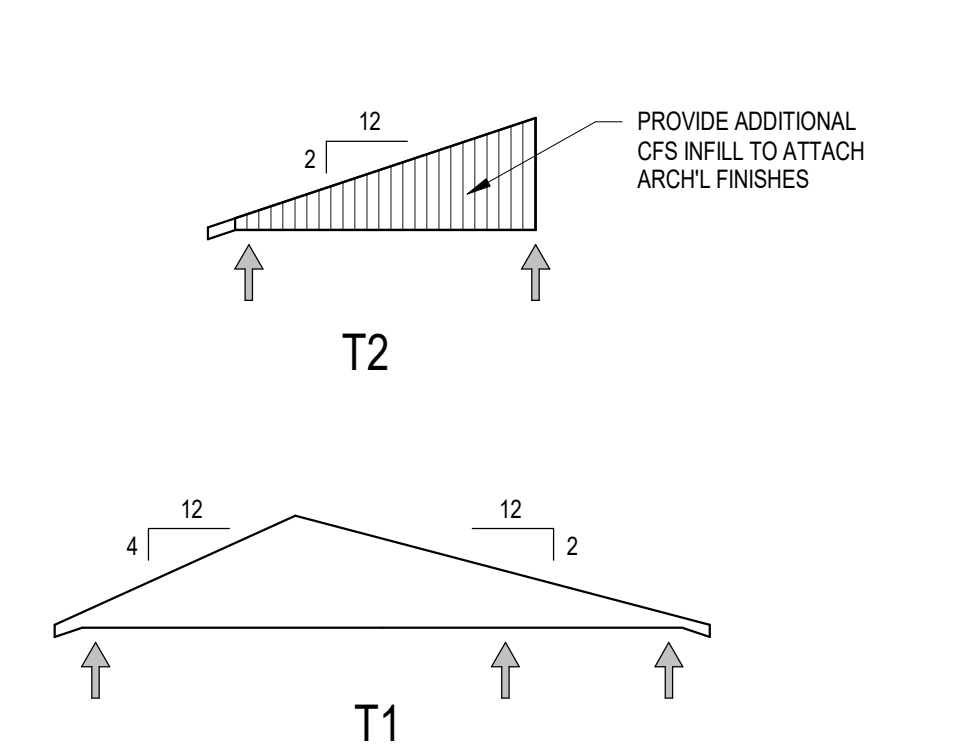


D4 TYPICAL AT MOMENT CONNECTION - PLAN
3/4" = 1'-0"

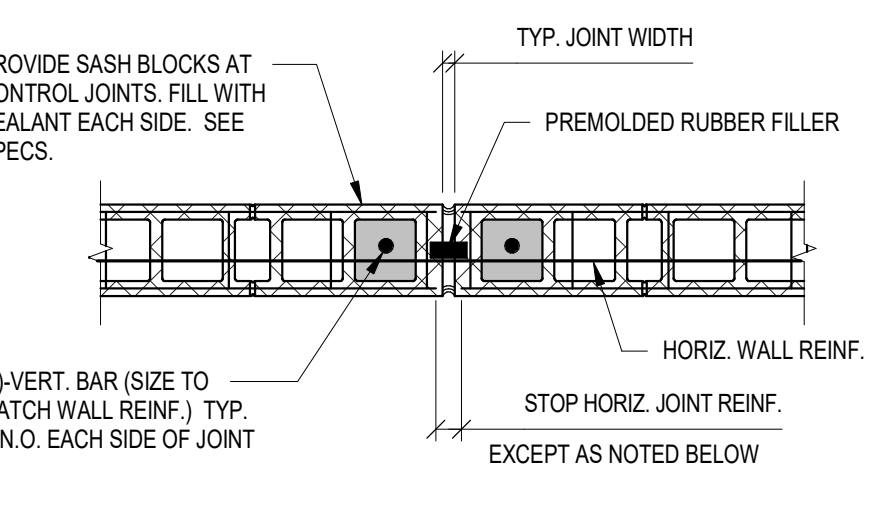


D5 TYPICAL AT MOMENT CONNECTION - SECTION
3/4" = 1'-0"

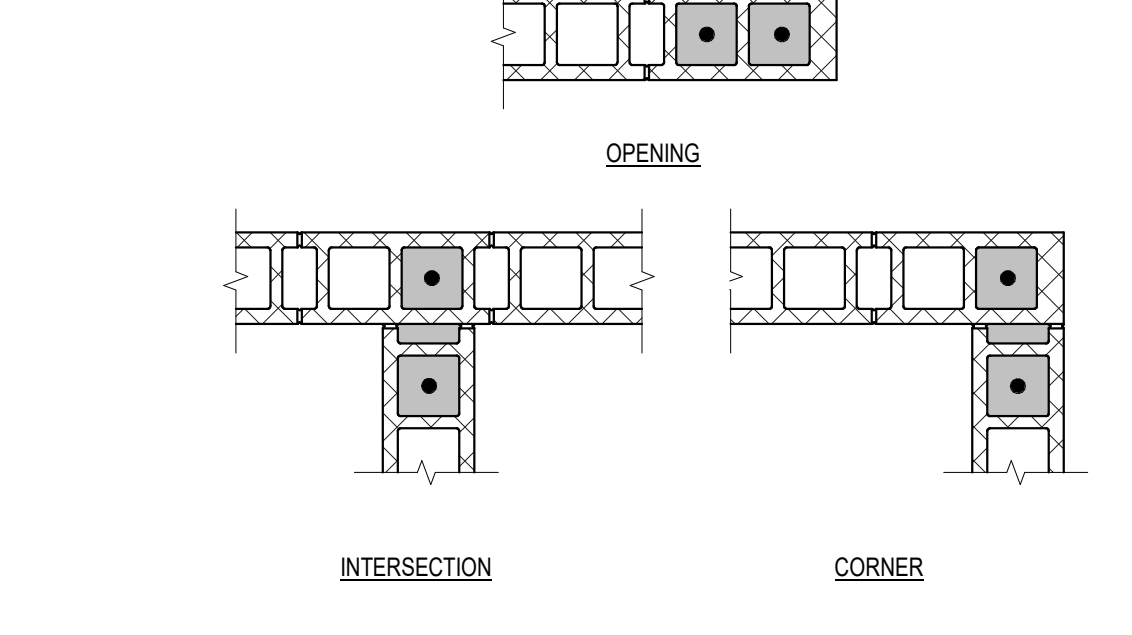
D6 TYP. ANCHOR ROD DETAIL
3/4" = 1'-0"



C3 TYP. MASONRY BOND BEAM AT CORNERS
3/4" = 1'-0"

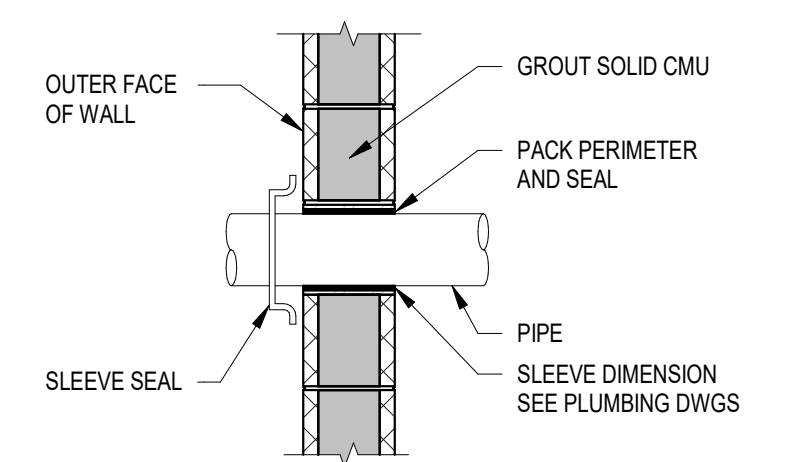


C4 TYP. MASONRY CONTROL JOINT DETAIL
3/4" = 1'-0"

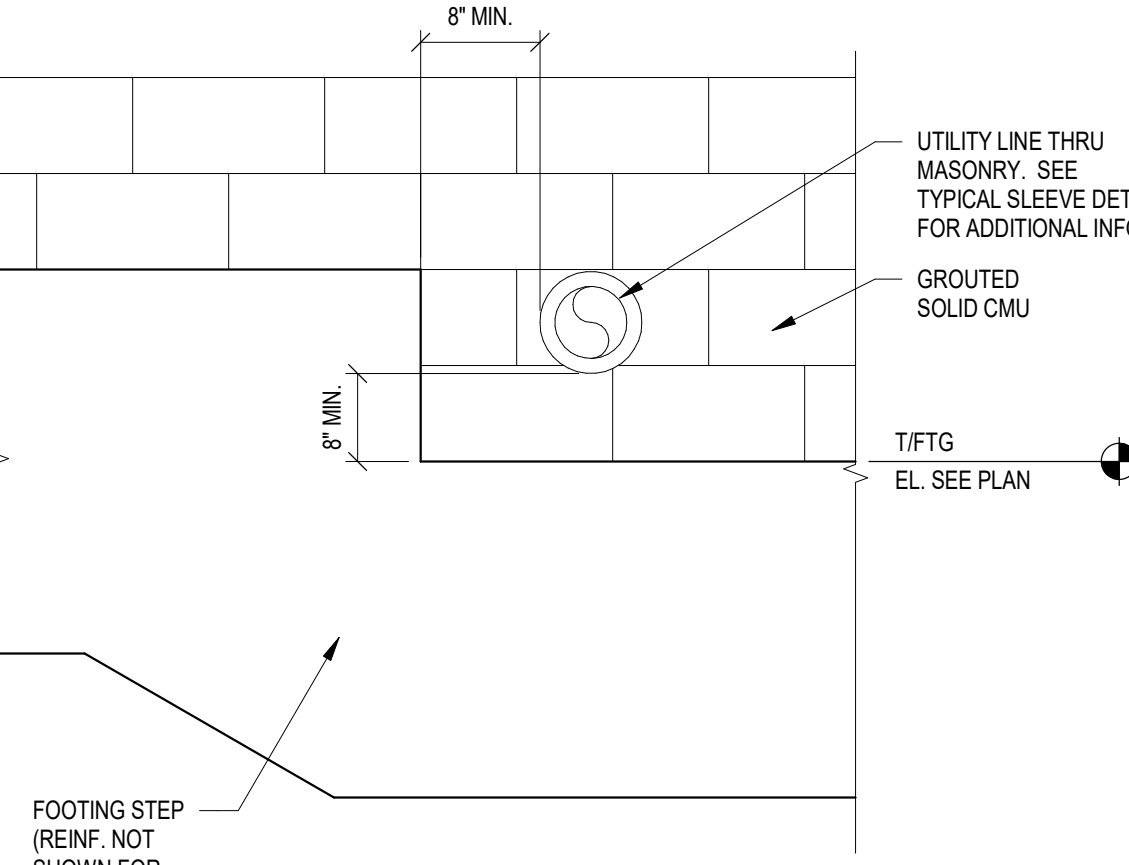


C5 TYP. MASONRY REINFORCEMENT DETAILS
3/4" = 1'-0"

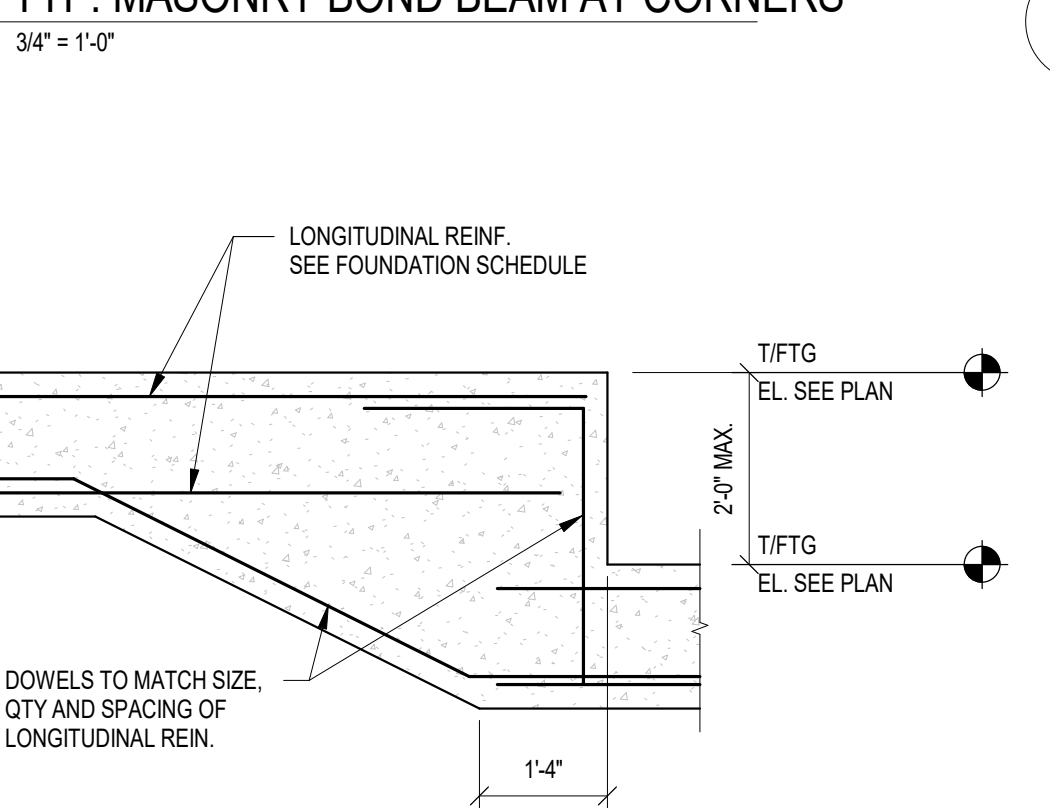
C6 TRUSS PROFILES
3/4" = 1'-0"



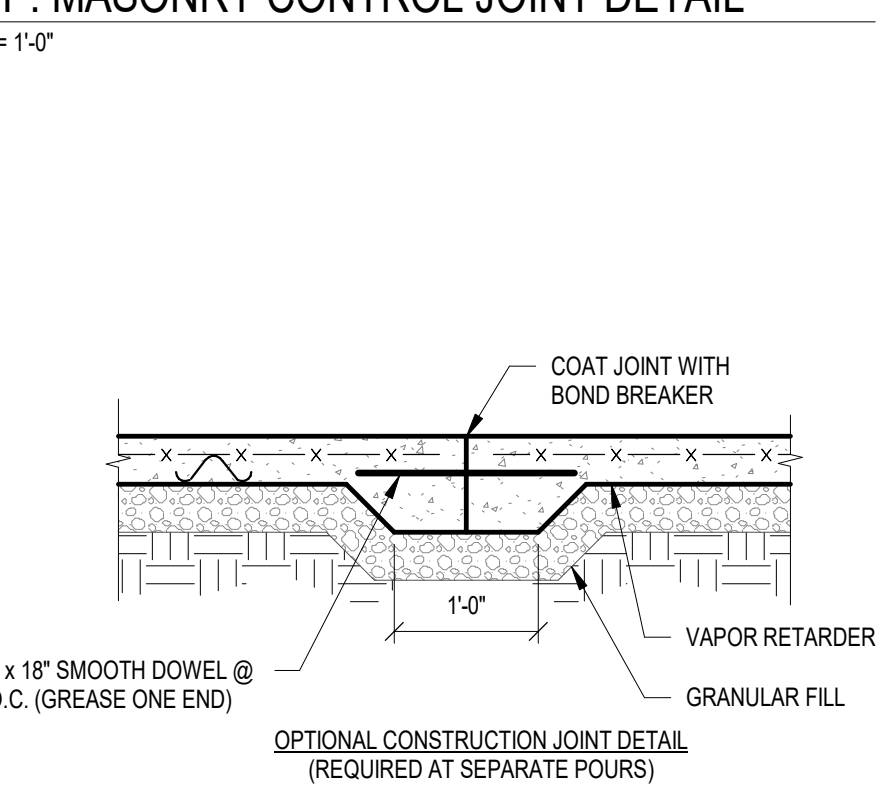
B1 TYP. SLEEVE DETAIL
3/4" = 1'-0"



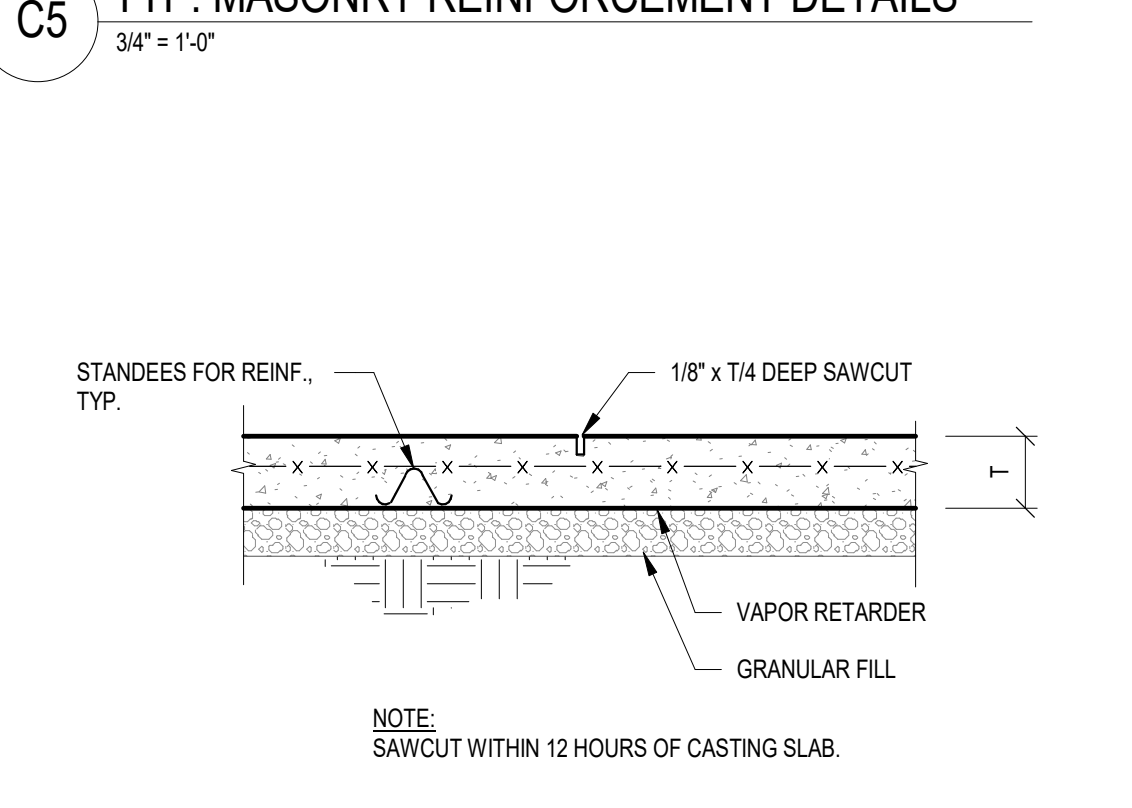
B2 TYP. UTILITY LINE ABOVE FOUNDATION DETAIL
3/4" = 1'-0"



B3 TYP. FOOTING STEP DETAIL
1/2" = 1'-0"



B4 TYPICAL SLAB JOINT DETAILS
3/4" = 1'-0"



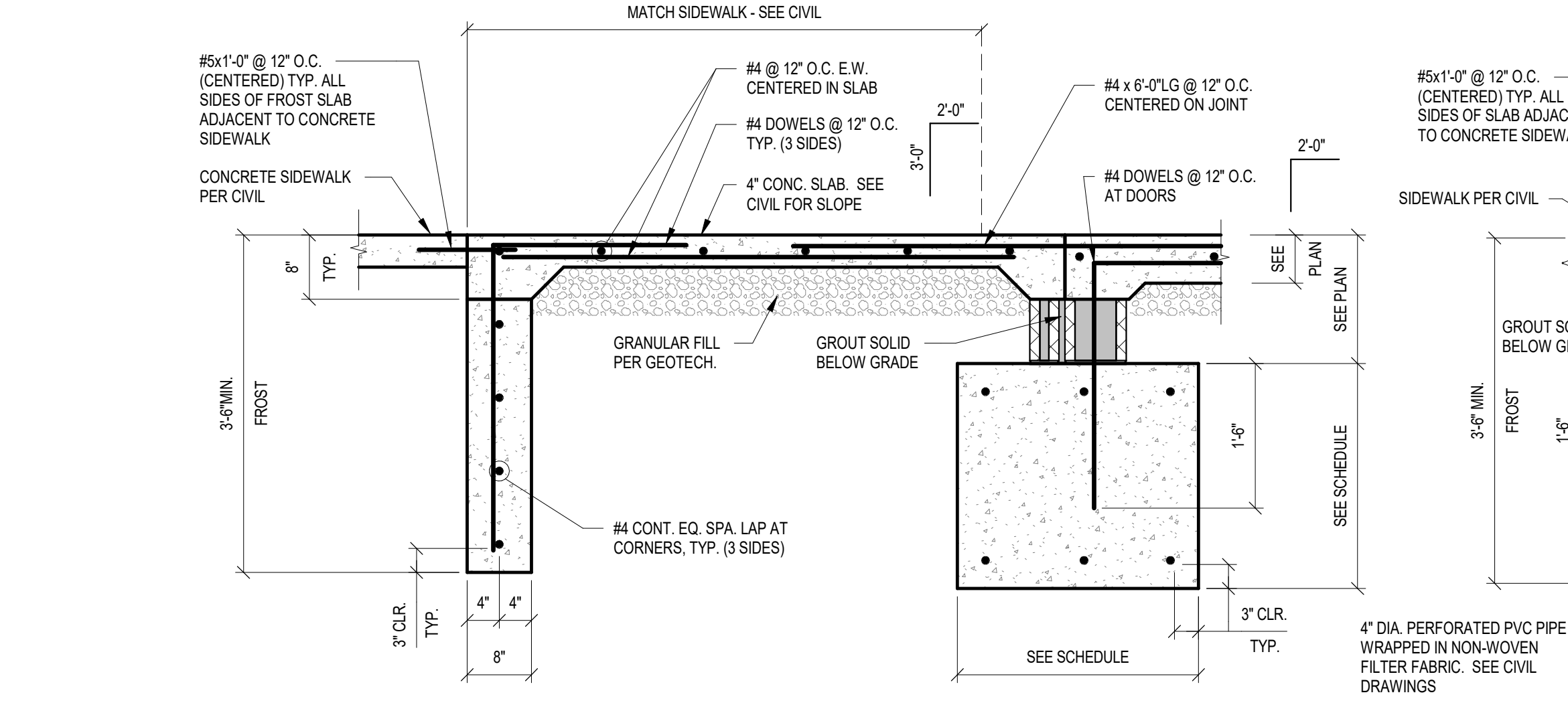
B5 TYPICAL CONTRACTION JOINT DETAIL
3/4" = 1'-0"

CONTINUOUS FOUNDATION SCHEDULE

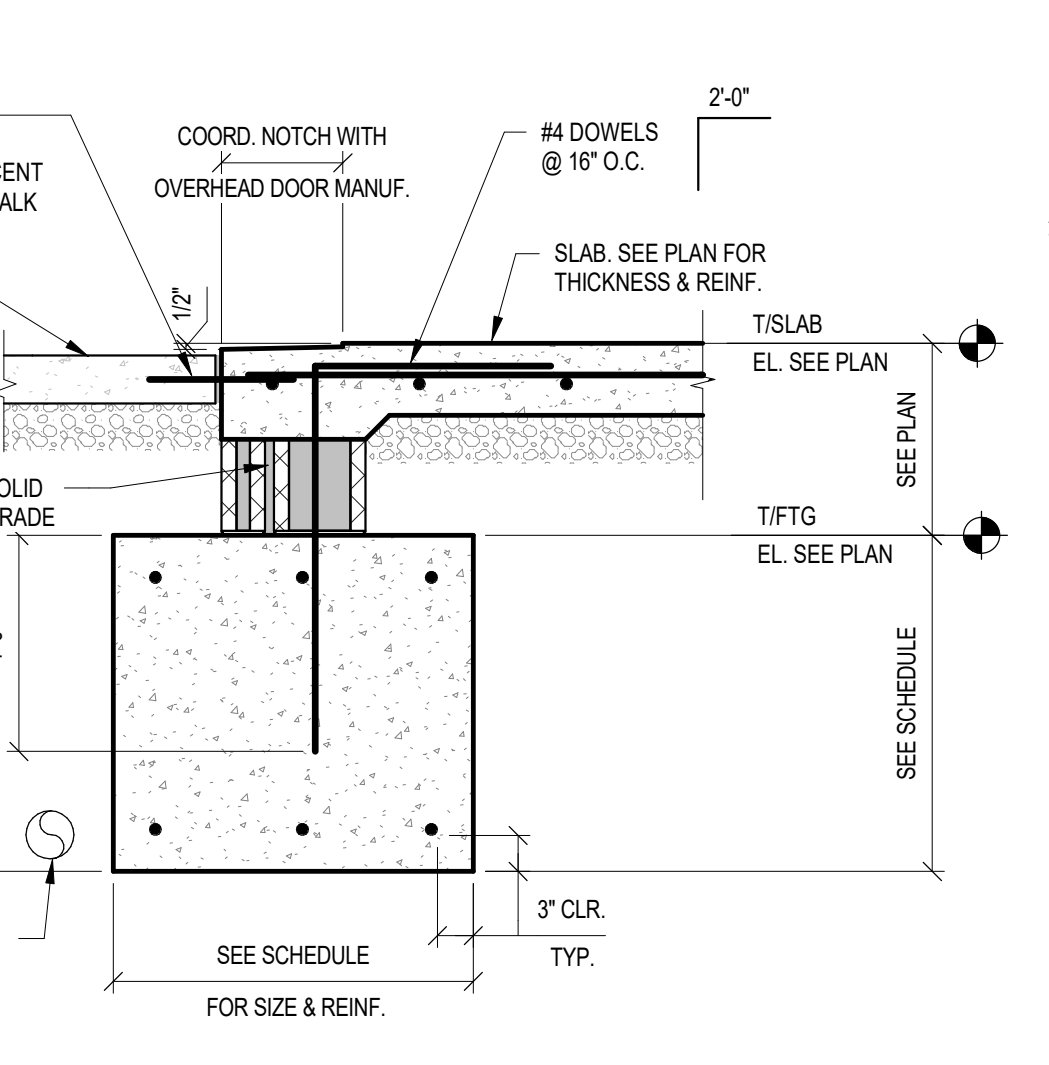
MARK	WIDTH	THICKNESS	LENGTH	REINFORCING
WF2.5'	2'-6"	2'-8"		(3)#6 CONT. TOP & BOT.

SPREAD FOUNDATION SCHEDULE

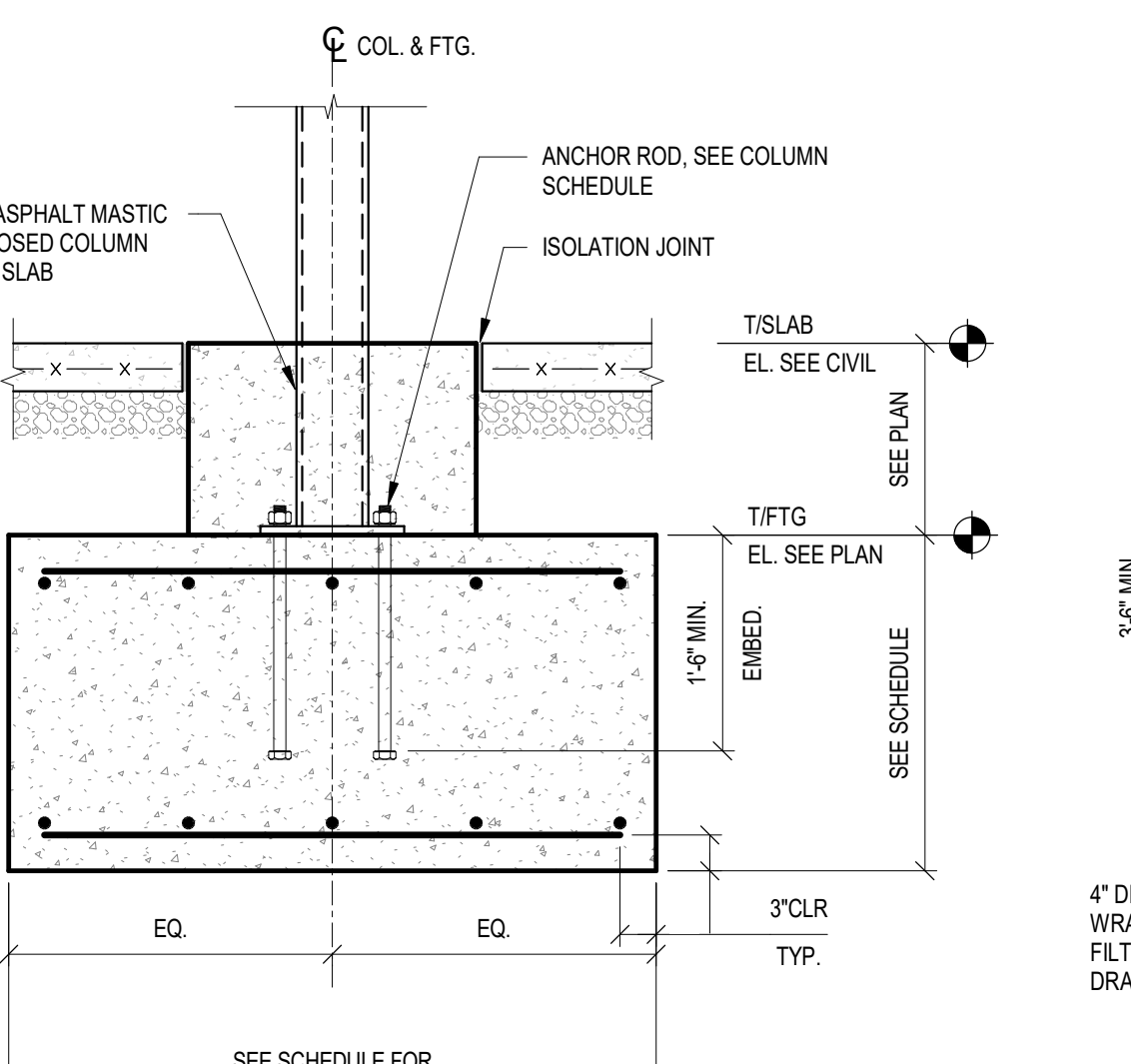
MARK	LENGTH	WIDTH	THICKNESS	REINFORCING
F5.0'	5'-0"	5'-0"	2'-8"	(6)#6 E.W. TOP & BOT.



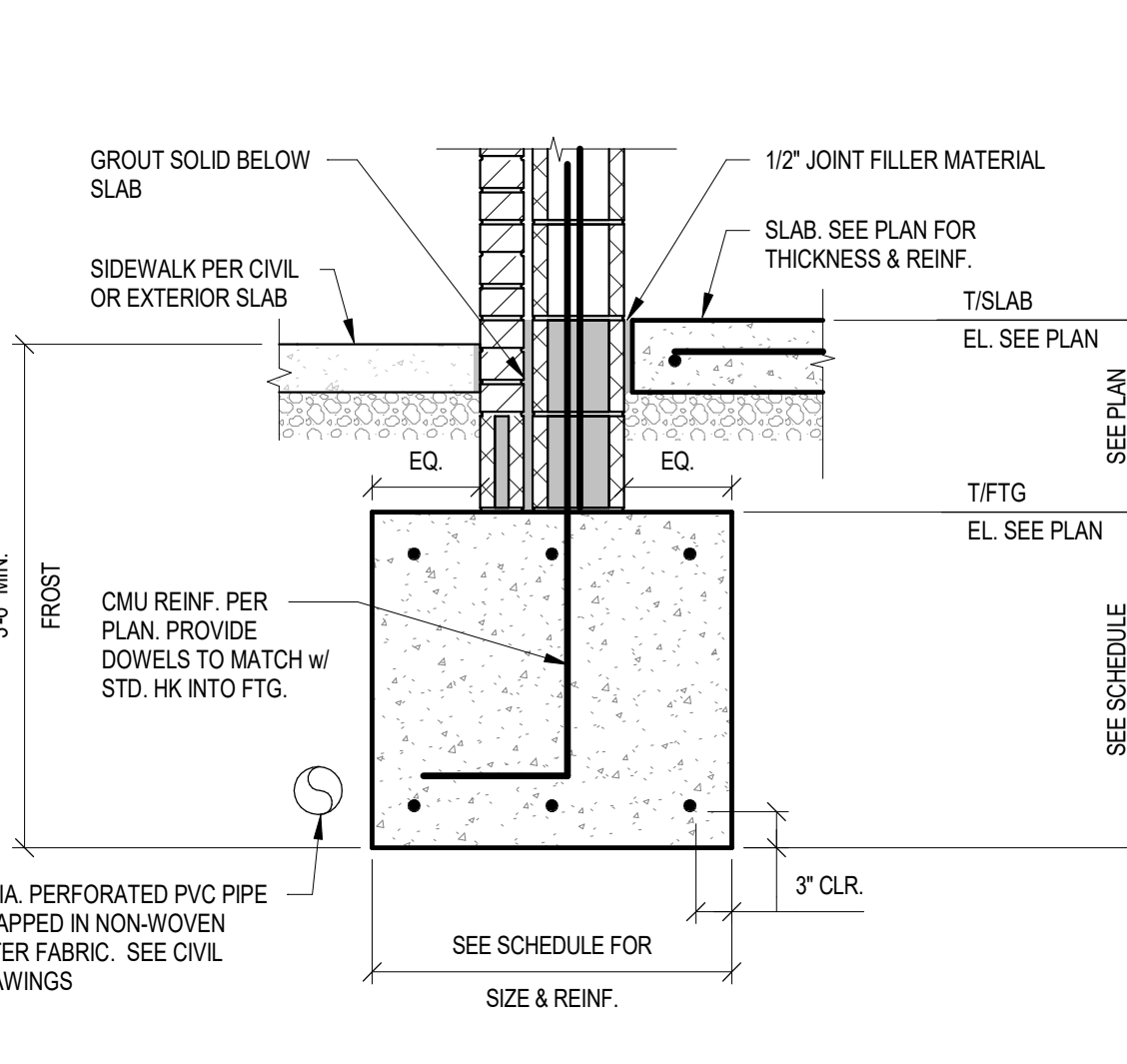
A2 TYP. FROST SLAB DETAIL
3/4" = 1'-0"



A4 SECTION
3/4" = 1'-0"



A5 SECTION
3/4" = 1'-0"



A6 SECTION
3/4" = 1'-0"

DESCRIPTION	DATE	REV.

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

SECTIONS AND DETAILS

PERMIT	DATE:
	01/06/2023
BID	DATE:
	01/06/2023
CONSTRUCTION	DATE:
RECORDED	DATE:
PROJECT MANAGER	DESIGNER
RG	CDD / JAG

JOB NO.
2020377.06

S-501

GENERAL NOTES

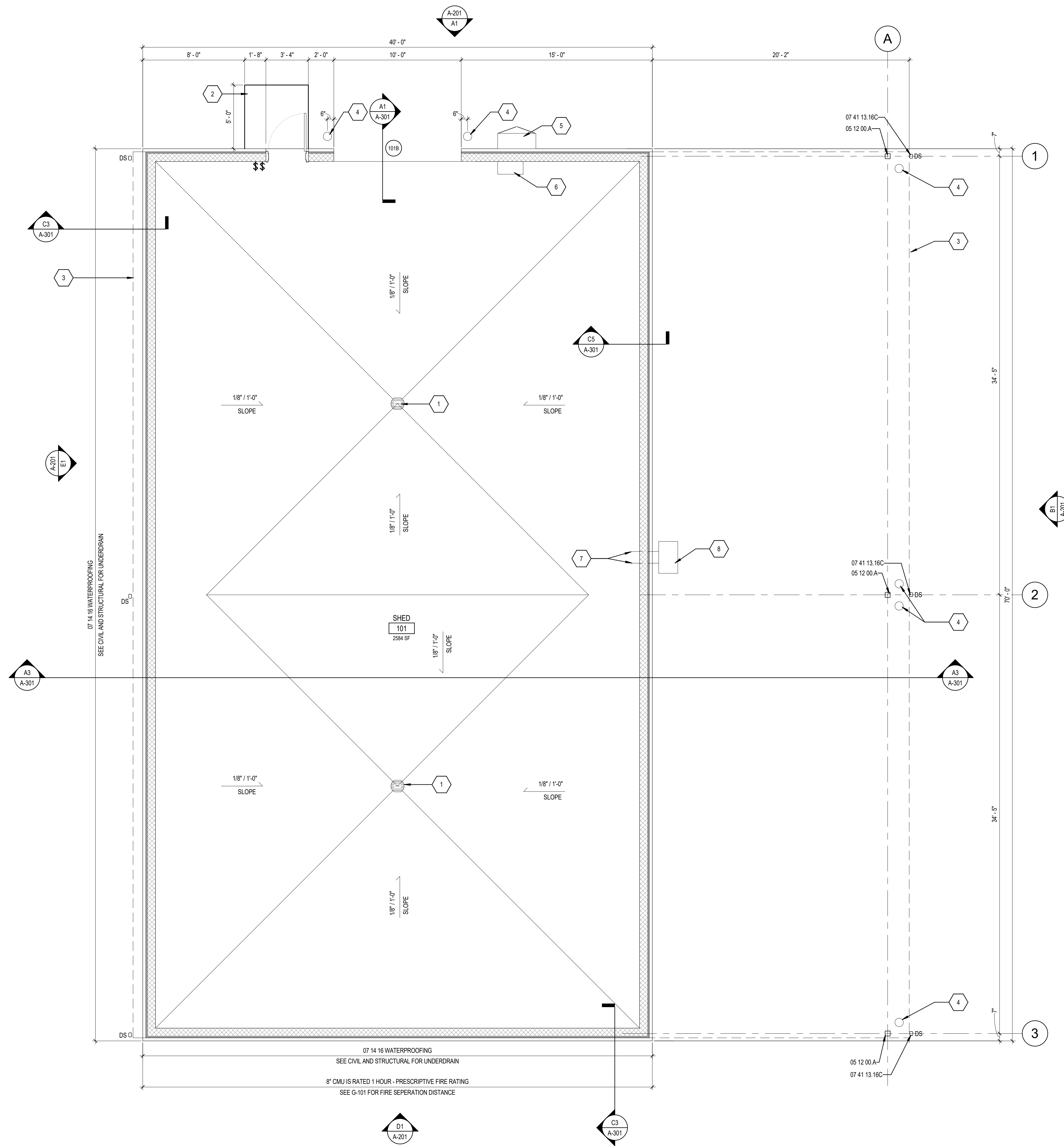
1. DIMENSIONS ARE TAKEN AT 3'-0" A.F.F.
2. EXTERIOR DIMENSIONS ARE TO EXTERIOR FACE OF MASONRY AND COLUMN CENTERLINES.
3. INTERIOR DIMENSIONS ARE TO FINISHED FACE OF WALLS AND COLUMN CENTERLINES.
4. PAINT ALL EXPOSED CMU, STRUCTURAL STEEL, HOLLOW METAL DOORS AND FRAMES, EXPOSED CONDUITS, PIPES AND DECKING. SEE SPECIFICATIONS 09 91 23 AND 09 91 13. COLORS TO BE SELECTED.

SHEET KEYNOTES

- 1 FLOOR DRAIN. SEE PLUMBING DRAWINGS.
- 2 FROST SLAB. SEE CIVIL AND STRUCTURAL DRAWINGS.
- 3 ROOF ABOVE.
- 4 BOLLARD. REFER TO CIVIL AND STRUCTURAL DRAWINGS FOR MORE INFORMATION.
- 5 NEW SELF-CONTAINED METER BASE. SEE ELECTRICAL DWGS.
- 6 NEW MAIN PANEL. SEE ELECTRICAL DWGS.
- 7 SEAL WALL PENETRATION WATERTIGHT. SEE ELECTRICAL & CIVIL DWGS.
- 8 FUTURE DUAL STATION LEVEL 2 EV CHARGER. SEE ELECTRICAL & CIVIL DWGS.

REFERENCE NOTES

- | | |
|--------------|---|
| 05 12 00.A | STRUCTURAL STEEL COLUMN - REFER TO STRUCTURAL DWGS. |
| 07 41 13.16C | DOWNSPOUT |



A2 FLOOR PLAN
 1/4" = 1'-0"

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

FLOOR PLAN

DATE:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
2020377.06

A-101

GENERAL NOTES

SHEET KEYNOTES

REFERENCED KEYNOTES

- 07 41 13 16 STANDING-SEAM METAL ROOF PANELS
- 07 41 13 16B SNOW GUARD
- 07 41 13 16C DOWNSPOUT
- 07 41 13 16D GUTTER
- 07 41 13 16E RIDGE CAP

LEGEND

- VTR VENT THROUGH ROOF - SEE MECHANICAL DRAWINGS.
- DS 07 41 13 16 DOWNSPOUT
- 07 41 13 16 GUTTER

DESCRIPTION

DATE

REV.

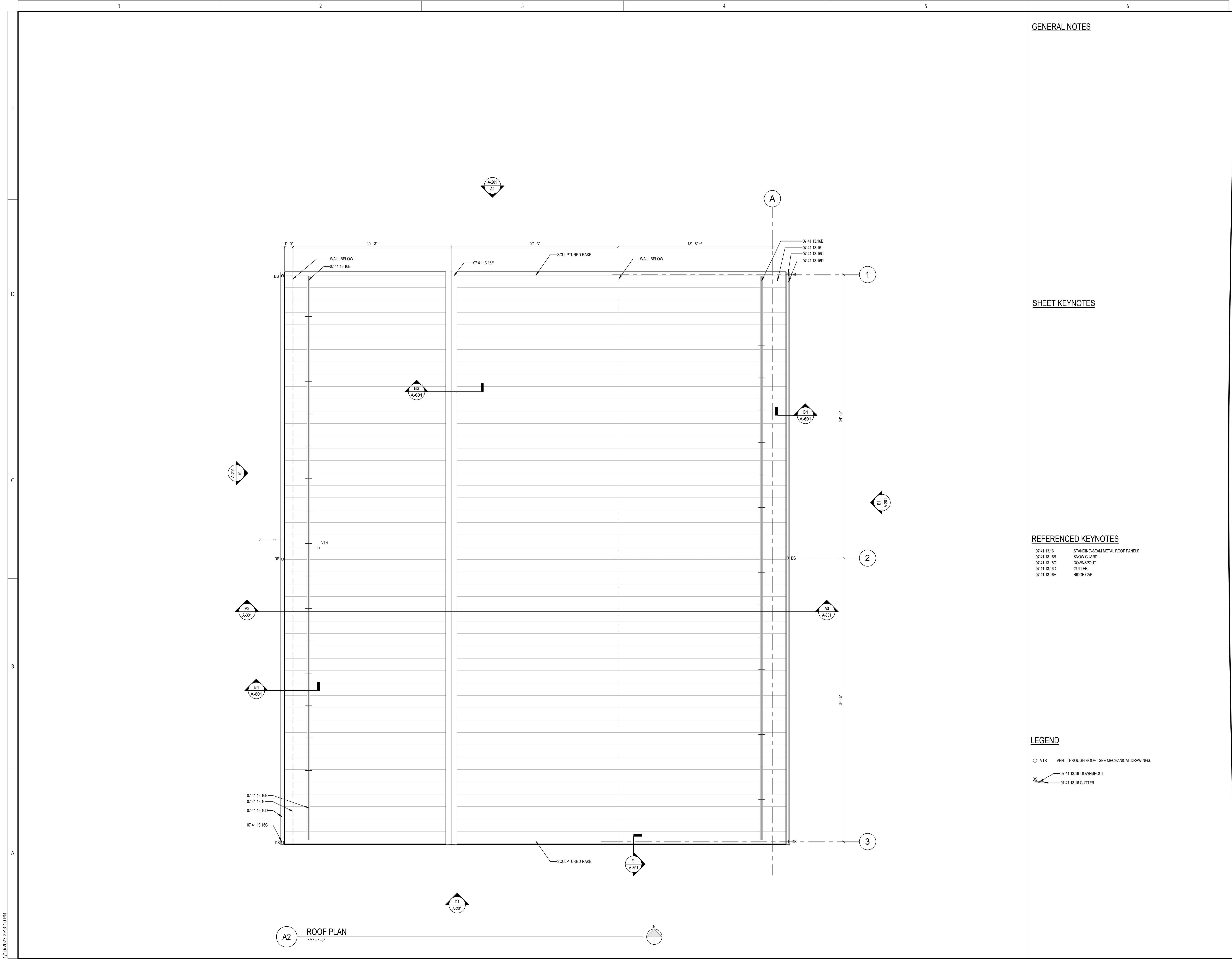
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ROOF PLAN

DATE:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	---/---/---
RECORDED	---/---/---
PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
2020377.06

A-102



A2 ROOF PLAN
 1/4" = 1'-0"

1/10/2023 2:43:10 PM

GENERAL NOTES

- REFLECTED CEILING PLAN SHOWS COLD FORMED METAL TRUSSES AND LIGHTING SYSTEMS ONLY. SEE SPECIFIC DISCIPLINE DRAWINGS FOR ADDITIONAL SYSTEM INFORMATION.
- SEE ELECTRICAL FOR HEIGHTS OF SUSPENDED LIGHTS.


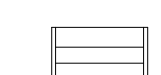
SHEET KEYNOTES

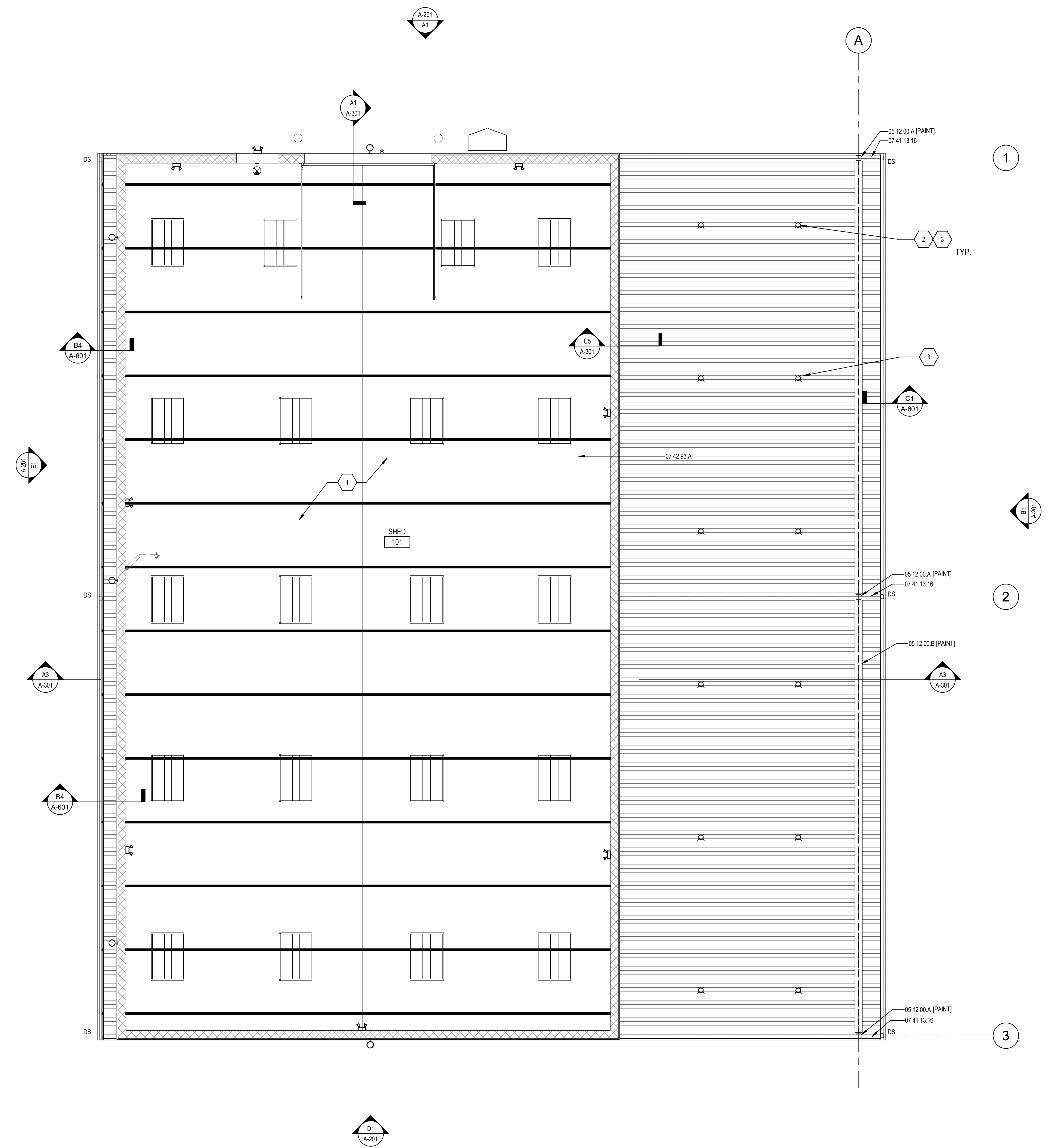
- NO CEILING PAINT EXPOSED STRUCTURE AND DECK. SEE INTERIOR PAINT SPECIFICATION 09 91 23. COLOR TO BE SELECTED.
- PROVIDE METAL FRAMING (BOX-OUT FRAMING), AS REQUIRED, TO SUPPORT THE LIGHT FIXTURES PER MANUF. RECOMMENDED INSTALLATION DETAILS.
- COORDINATE LIGHT LOCATIONS WITH ELECTRICAL - MAKE SURE THEY DO NOT INTERFERE WITH TRUSS LOCATIONS.

REFERENCED KEYNOTES

- | | |
|-------------|---|
| 05 12 00 A | STRUCTURAL STEEL COLUMN - REFER TO STRUCTURAL DWGS. |
| 05 12 00 B | STRUCTURAL STEEL BEAM - REFER TO STRUCTURAL DWGS. |
| 07 41 13.16 | STANDING-SEAM METAL ROOF PANELS |
| 07 42 93 A | METAL SOFFIT PANELS |

LEGEND

- | | |
|--|---|
|  METAL SOFFIT
07 42 93 |  LIGHTING EQUIP.
SEE ELECTRICAL
DRAWINGS |
|--|---|



A2 REFLECTED CEILING PLAN
 1/4" = 1'-0"

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

REFLECTED CEILING PLAN

DATE:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	---
RECORDED	---
PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
2020377.06

A-103

GENERAL NOTES

1. PAINT ALL EXPOSED CMU, STRUCTURAL STEEL, HOLLOW METAL DOORS AND FRAMES, AND DECKING. SEE SPECIFICATIONS 09 91 23 AND 09 91 13. COLORS TO BE SELECTED.

REFERENCED KEYNOTES

04 20 00.A01	CLAY MASONRY VENEER (TYPE 1)
05 12 00.A	STRUCTURAL STEEL COLUMN - REFER TO STRUCTURAL DWGS.
05 12 00.B	STRUCTURAL STEEL BEAM - REFER TO STRUCTURAL DWGS.
07 41 13.16	STANDING-SEAM METAL ROOF PANELS
07 41 13.16B	SNOW GUARD
07 41 13.16C	DOWNSPOUT
07 41 13.16D	GUTTER
07 41 13.16E	RIDGE CAP
07 42 13	METAL WALL PANELS
07 42 93.A	METAL SOFFIT PANELS
08 11 13.A	HOLLOW METAL DOOR AND FRAME
08 36 13.A	2" INSULATED SECTIONAL DOOR

ELEVATION KEYNOTES

1. NEW SELF CONTAINED METER BASE. SEE ELECTRICAL DWGS.
2. OUTDOOR WALL MTD TRAPEZOID LED LIGHT FIXTURE. SEE ELECTRICAL DWGS.
3. TIE DOWNSPOUTS TO STORM SEWER - SEE CIVIL
4. PROVIDE 1-HOUR UL FIRE PENETRATION FIRE STOPPING AT CONDUIT/LIGHTING OPENING.

DESCRIPTION

DATE

REV.

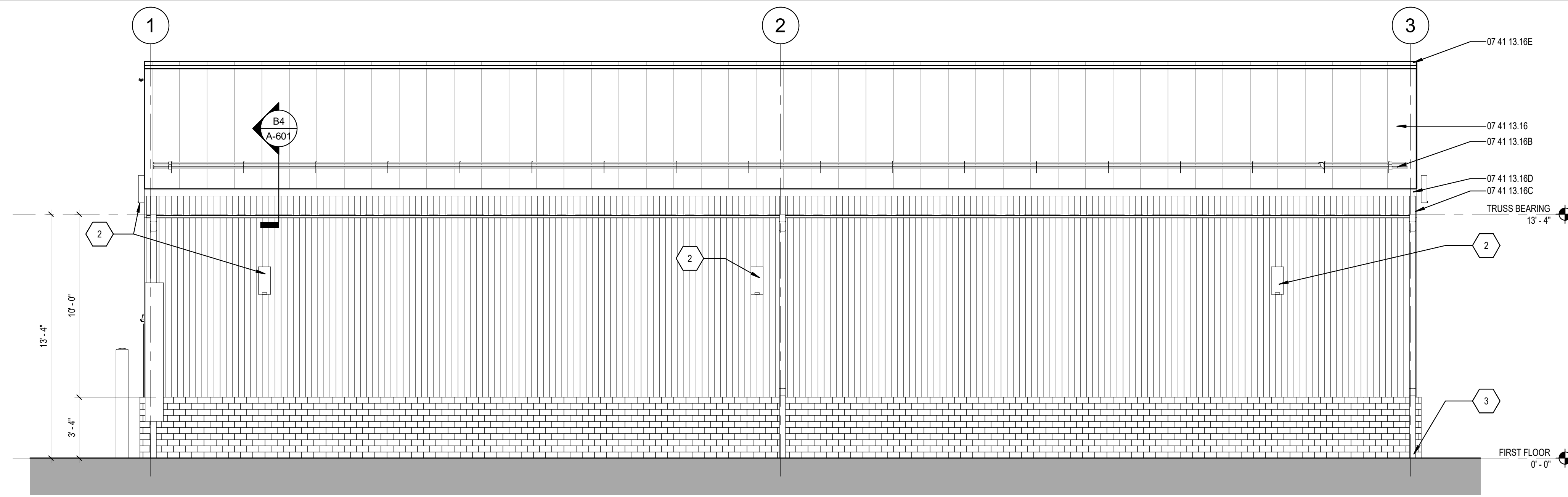
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

EXTERIOR ELEVATIONS

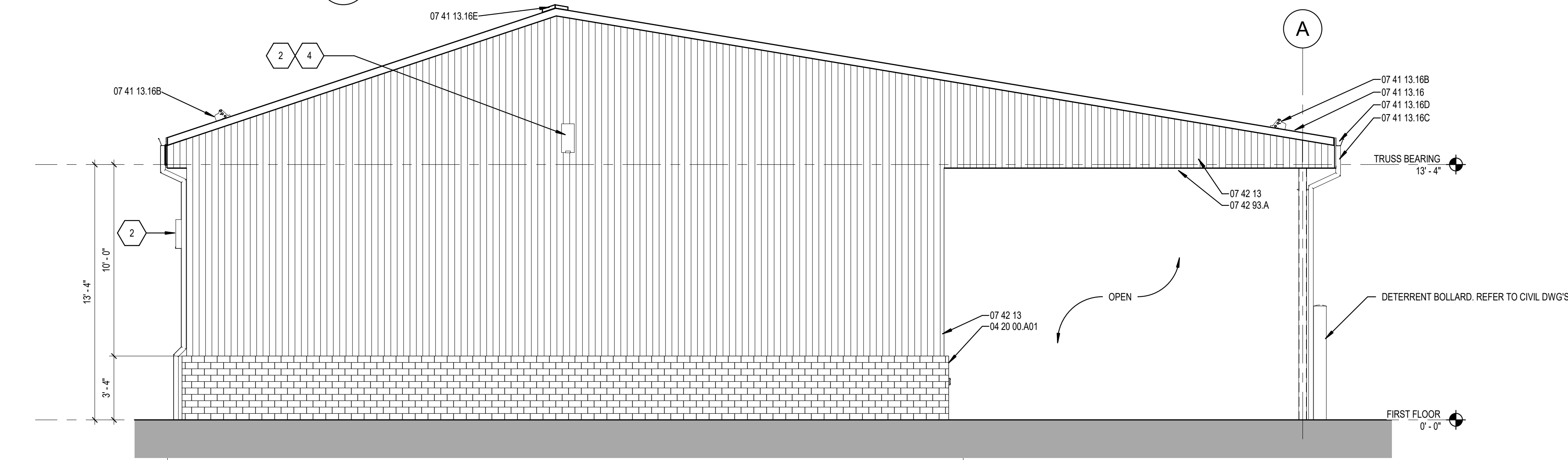
DATE:	01/06/2022
PERMIT:	01/06/2022
BID:	-/-/-/-/-
CONSTRUCTION:	-/-/-/-/-
RECORDED:	-/-/-/-/-
PROJECT MANAGER:	DESIGNER:
RG:	AS:

JOB NO.
2020377.06

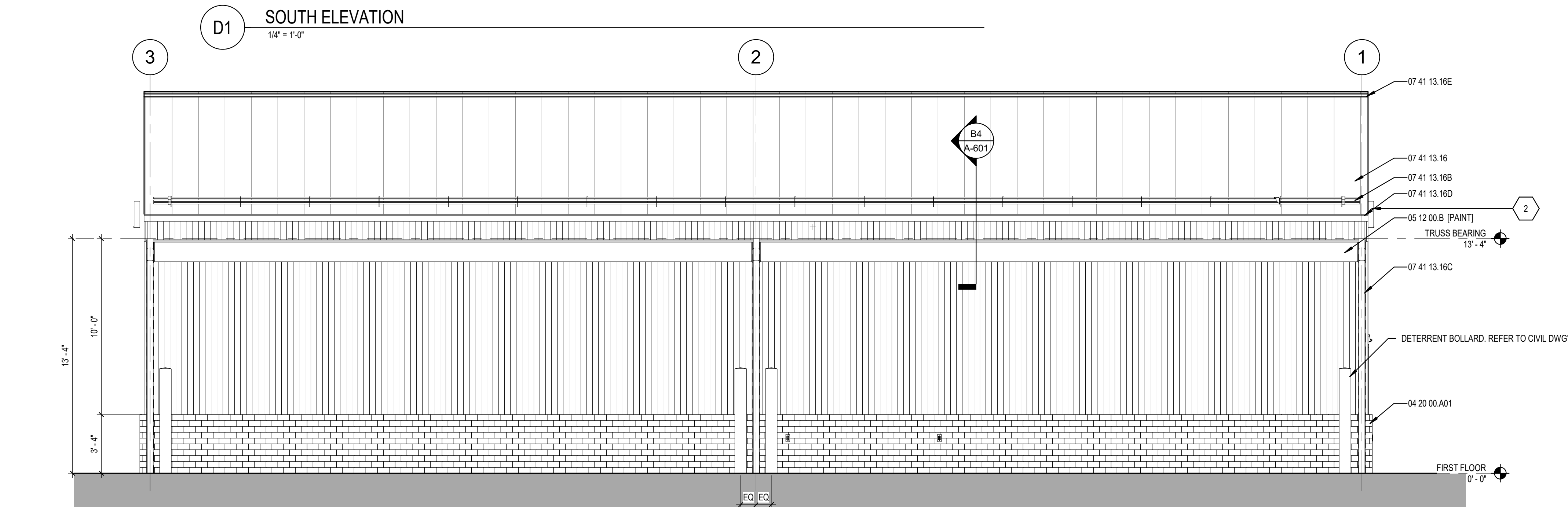
A-201



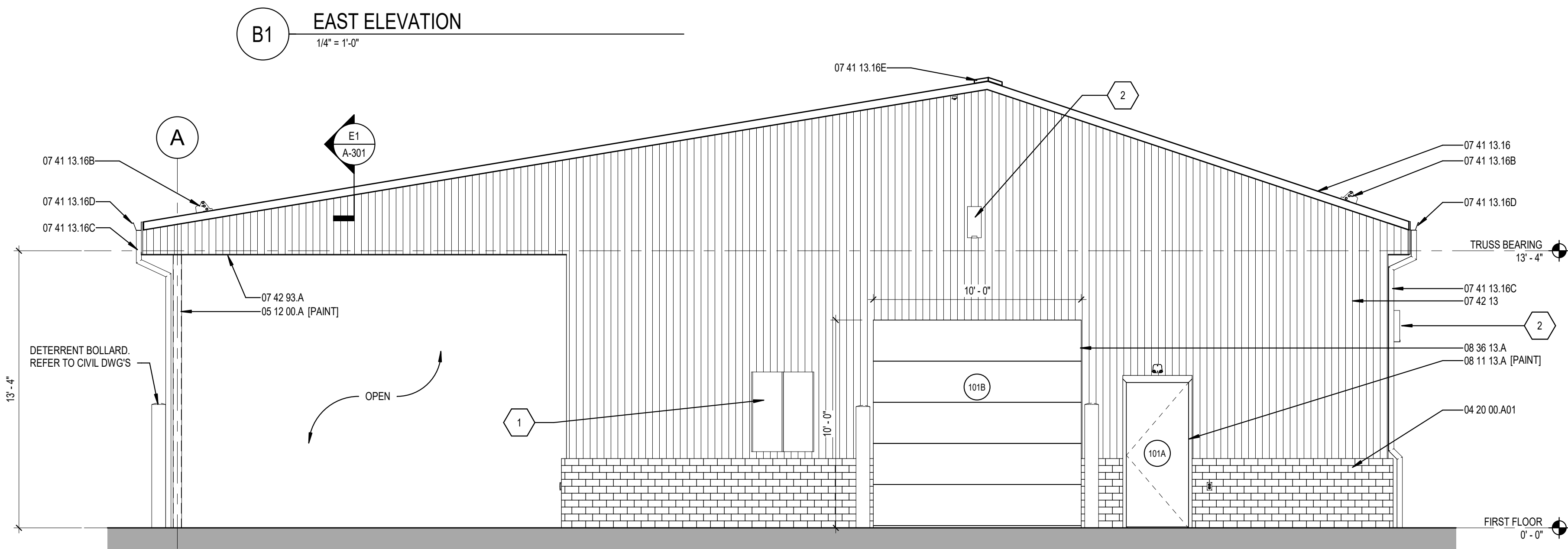
E1 WEST ELEVATION
 1/4" = 1'-0"



D1 SOUTH ELEVATION
 1/4" = 1'-0"



B1 EAST ELEVATION
 1/4" = 1'-0"



A1 NORTH ELEVATION
 1/4" = 1'-0"

GENERAL NOTES

REFERENCED KEYNOTES

- 03 30 00 A01 CONCRETE SLAB ON GRADE (R)
- 03 30 00 A02 CONCRETE SLAB ON GRADE (F)
- 03 30 00 C VAPOR BARRIER
- 03 30 00 D JOINT FILLER
- 03 30 00 E CONCRETE FOOTING - REFER TO STRUCTURAL DWGS.
- 04 20 00 A01 CLAY MASONRY VENEER (TYPE 1)
- 04 20 00 C12 STANDARD CMU (8x8x16)
- 04 20 00 C16 STANDARD CMU (8x8x16)
- 04 20 00 C26 BOND BEAM CMU (8x8x16)
- 04 20 00 D GROUT FILL
- 04 20 00 E COMPRESSIBLE FILLER
- 04 20 00 G24 WEEPS (1" O.C.)
- 04 20 00 H EMBEDDED FLASHING
- 05 31 00 A METAL DECK - REFER TO STRUCTURAL DWGS.
- 05 44 00 A COLD-FORMED METAL ROOF TRUSSES
- 07 14 16 A COLD FLUID-APPLIED WATERPROOFING
- 07 25 00 A WEATHER BARRIERS
- 07 41 13 16 STANDING-SEAM METAL ROOF PANELS
- 07 41 13 16A TRUSS BEARING
- 07 41 13 16F RAKE ANGLE
- 07 42 13 METAL WALL PANELS
- 07 42 13 E METAL WALL PANEL BASE FLASHING
- 07 42 13 F METAL WALL 7/8" HAT CHANNEL
- 07 42 93 A METAL SOFFIT PANELS
- 07 42 93 C METAL SOFFIT HAT CHANNEL
- 08 36 13 A 2" INSULATED SECTIONAL DOOR
- 32 13 13 CONCRETE PAVING - REFER TO CIVIL DWGS.

BUILDING SECTION KEYNOTES

REV.	DATE	DESCRIPTION

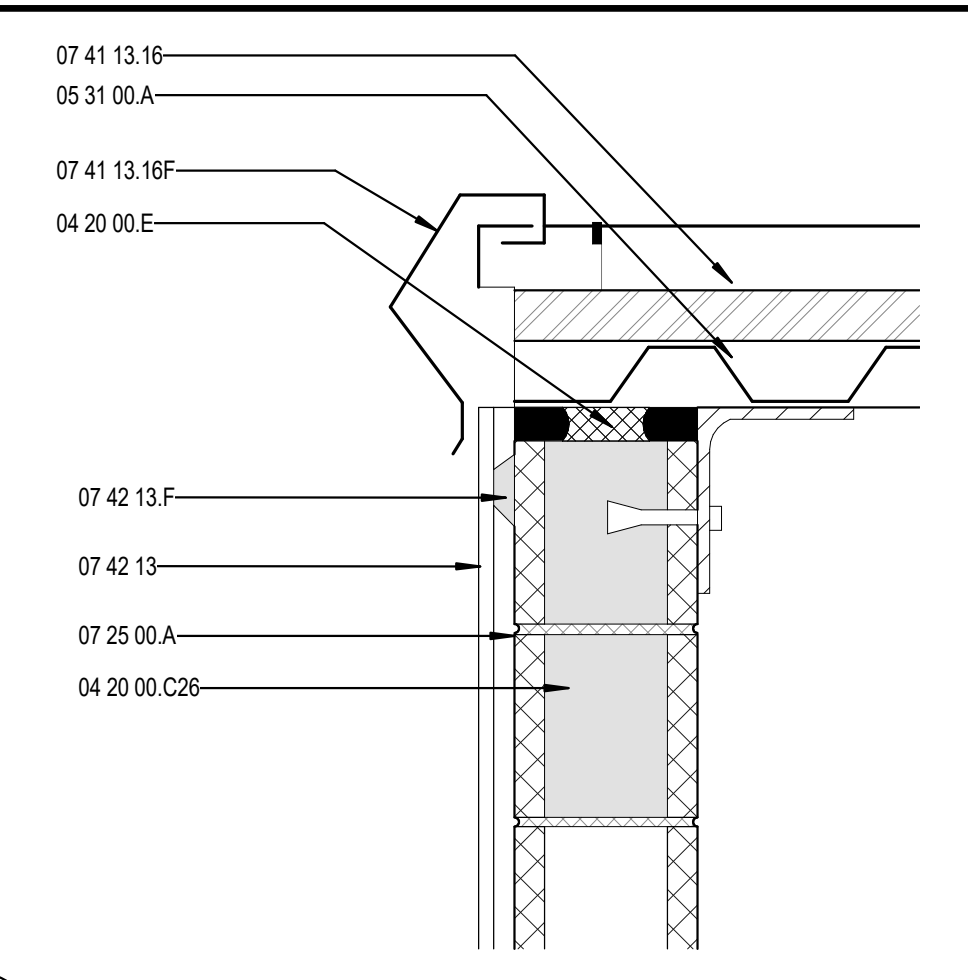
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

BUILDING & WALL SECTIONS

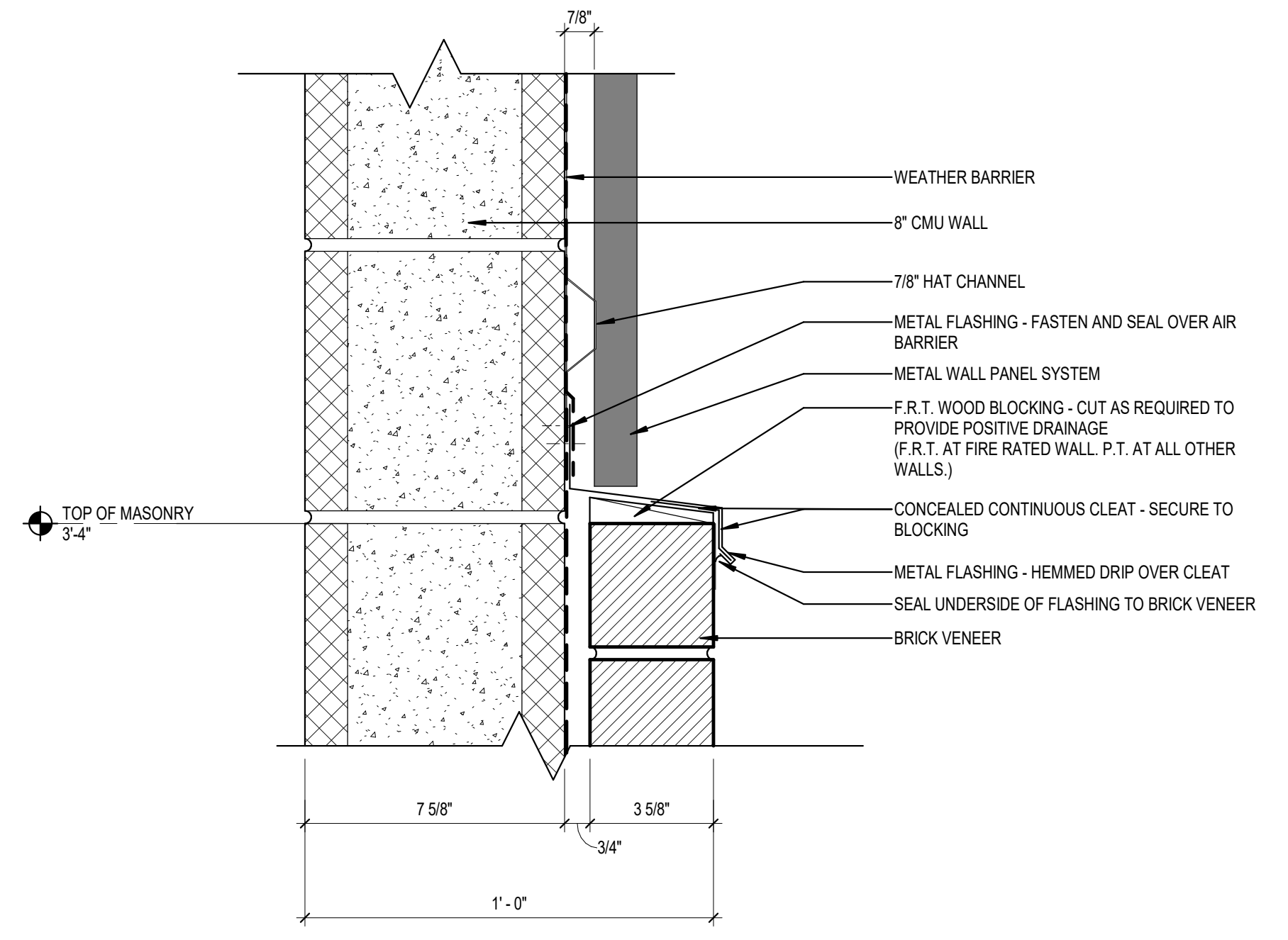
	DATE:
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	---
RECORDED	---
PROJECT MANAGER	DESIGNER
RG	AS

JOB NO.
2020377.06

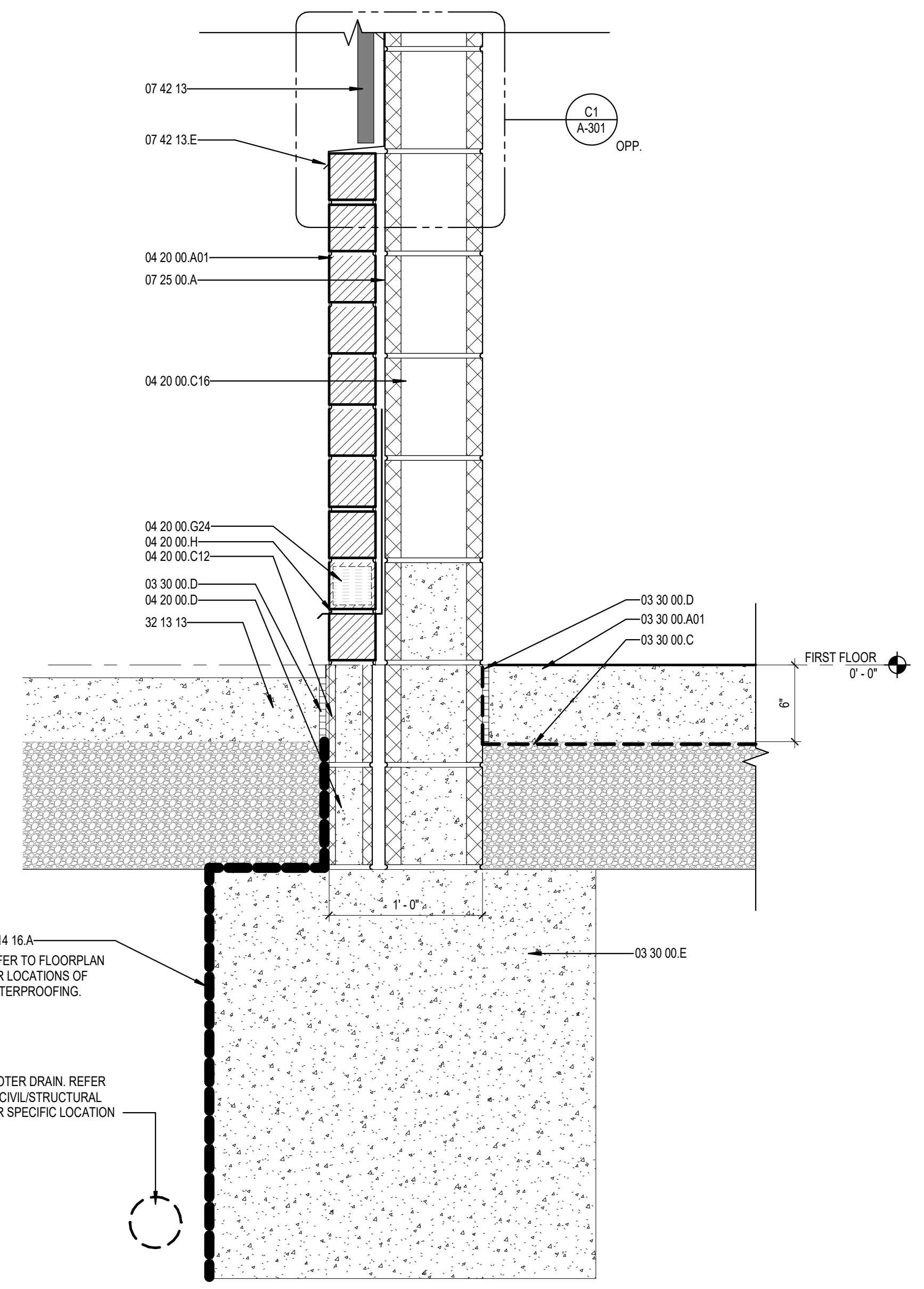
A-301



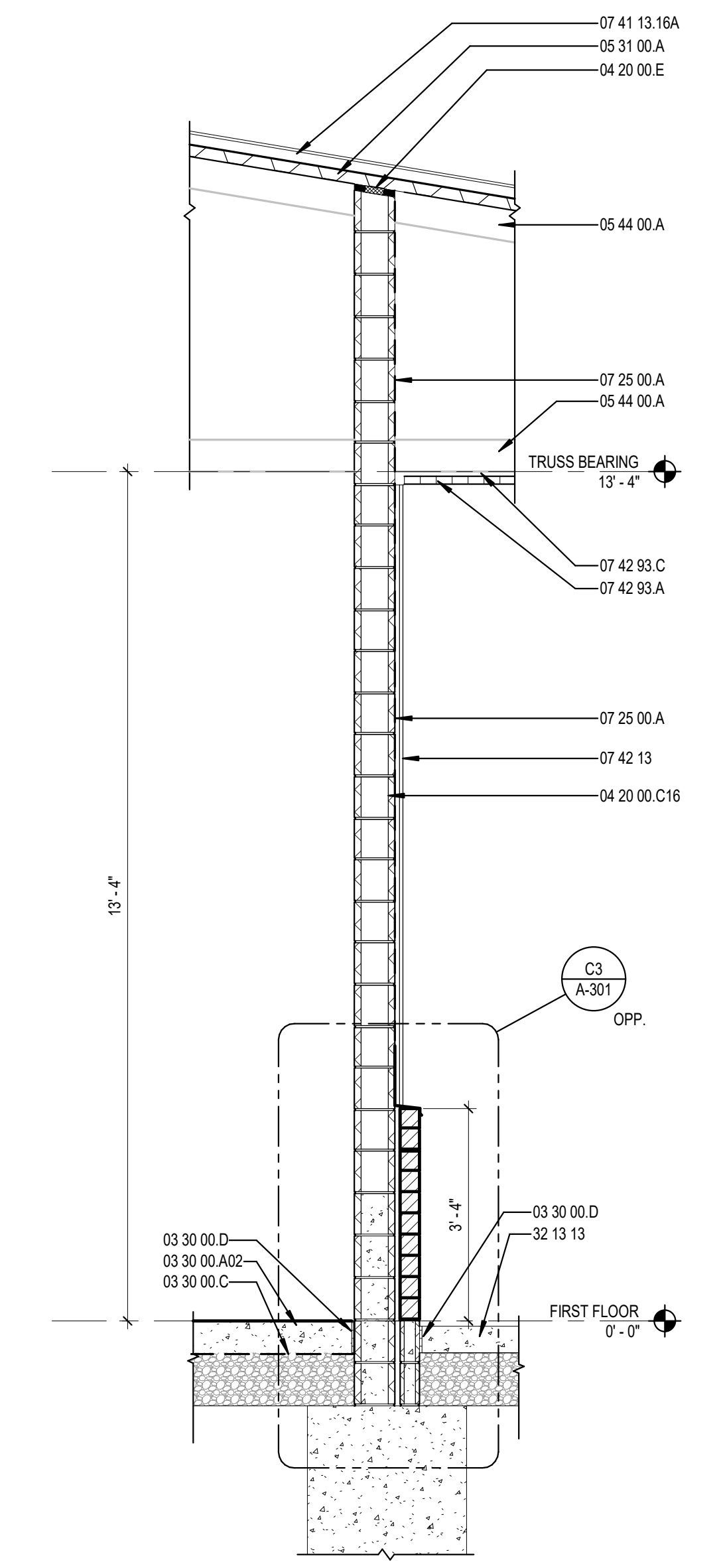
E1 END WALL SECTION
 1 1/2" = 1'-0"



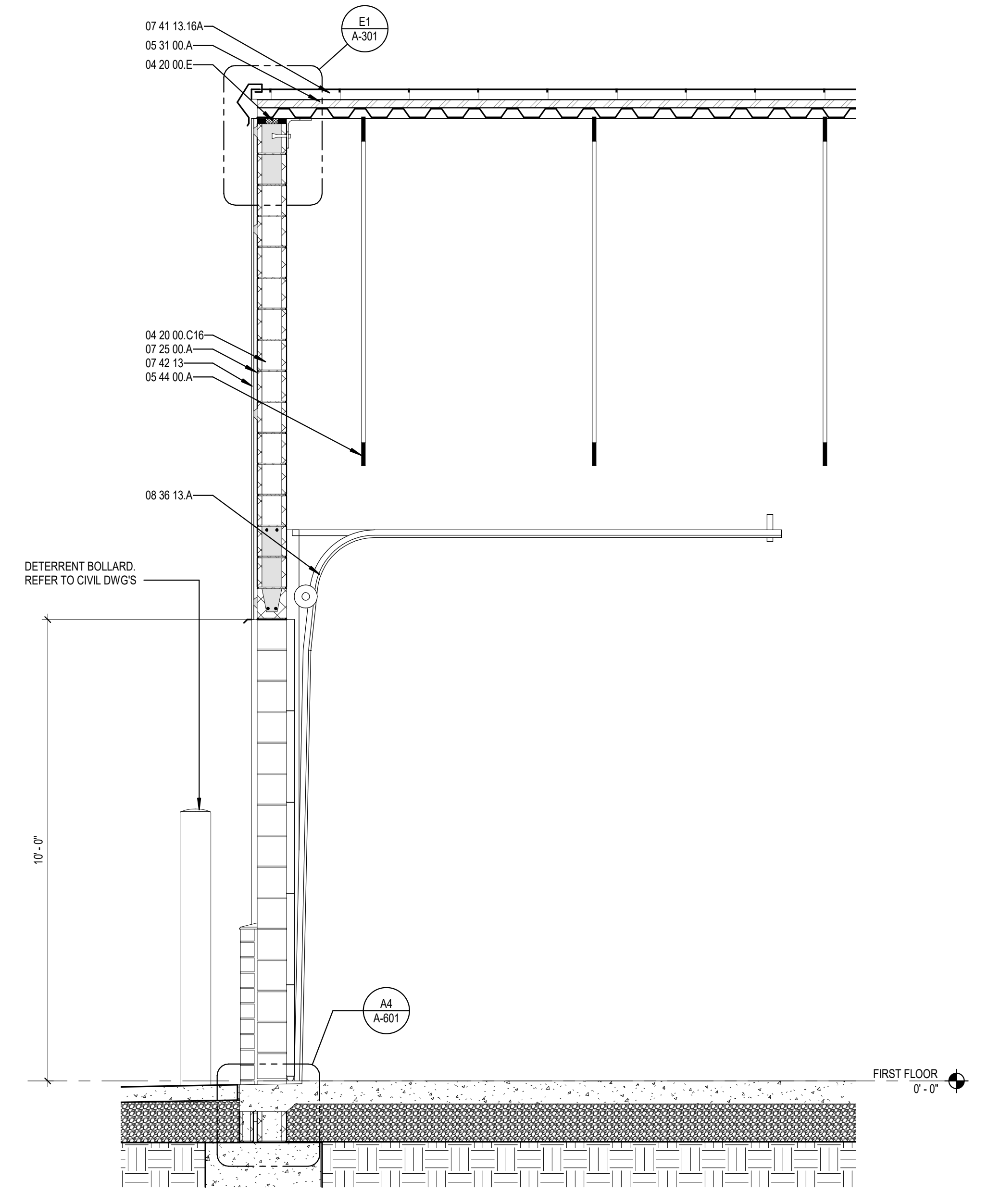
C1 TYPICAL METAL WALL TO MASONRY WALL FLASHING DETAIL
 3" = 1'-0"



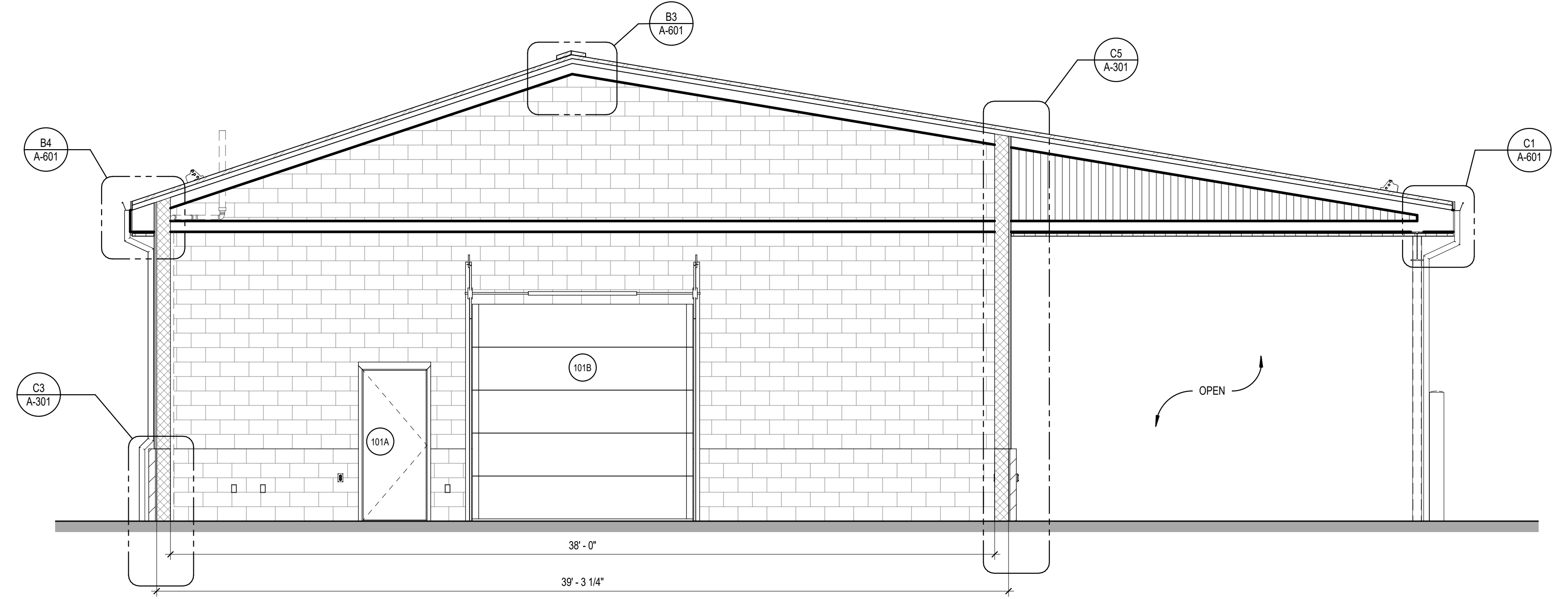
C3 BOTTOM OF WALL DETAIL
 1 1/2" = 1'-0"



C5 WALL SECTION
 1/2" = 1'-0"



A1 SECTION AT GARAGE DOOR
 1/2" = 1'-0"



A3 BUILDING SECTION
 1/4" = 1'-0"

1/10/2023 2:45:14 PM

GENERAL NOTES

REFERENCED KEYNOTES

SHEET KEYNOTES

DESCRIPTION
DATE
REV.

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

DETAILS AND SCHEDULES

DATE:	01/06/2022
PERMIT:	01/06/2022
BID:	
CONSTRUCTION:	
RECORDED:	
PROJECT MANAGER:	DESIGNER:
RG:	AS:

JOB NO.
2020377.06

A-601

DOOR SCHEDULE															
DOOR NO.	ROOM NO.	ROOM NAME	TYPE	DOOR					FRAME				COMMENTS		
				NO. OF PANELS	WIDTH	HGT	THICK	MTL	GLAZING	TYPE	MTL	FIRE RATING		HW SET	HEAD
101A	101	SHED	B	1	3'-0"	7'-0"	1 3/4"	HM	A	HM	01	C5	A5B5	D5	
101B	101	SHED	A	1	10'-0"	10'-0"	2"	STL	NA	STL		MFG	MFG	A1A3	AA

DOOR AND FRAME SCHEDULE NOTES

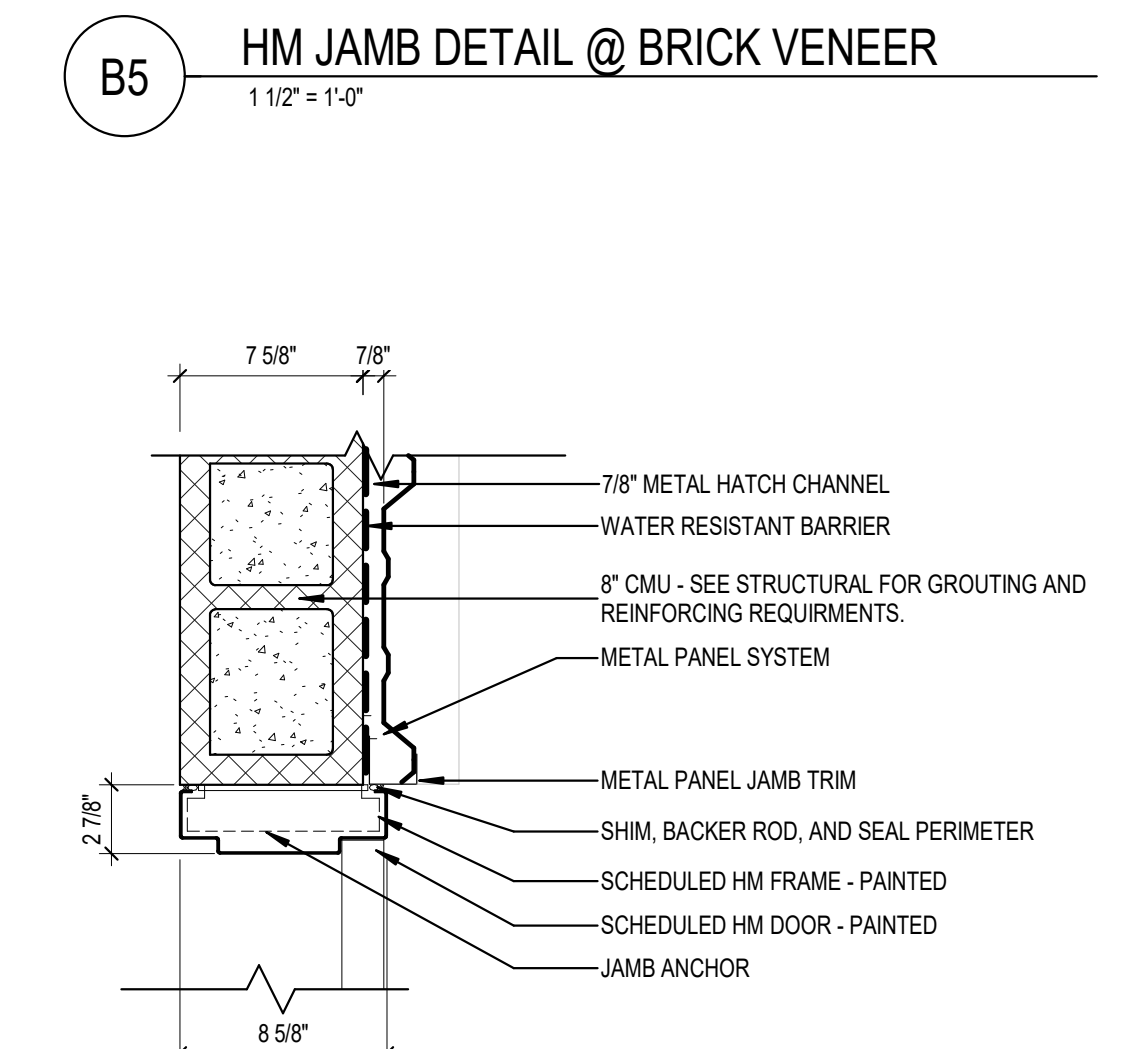
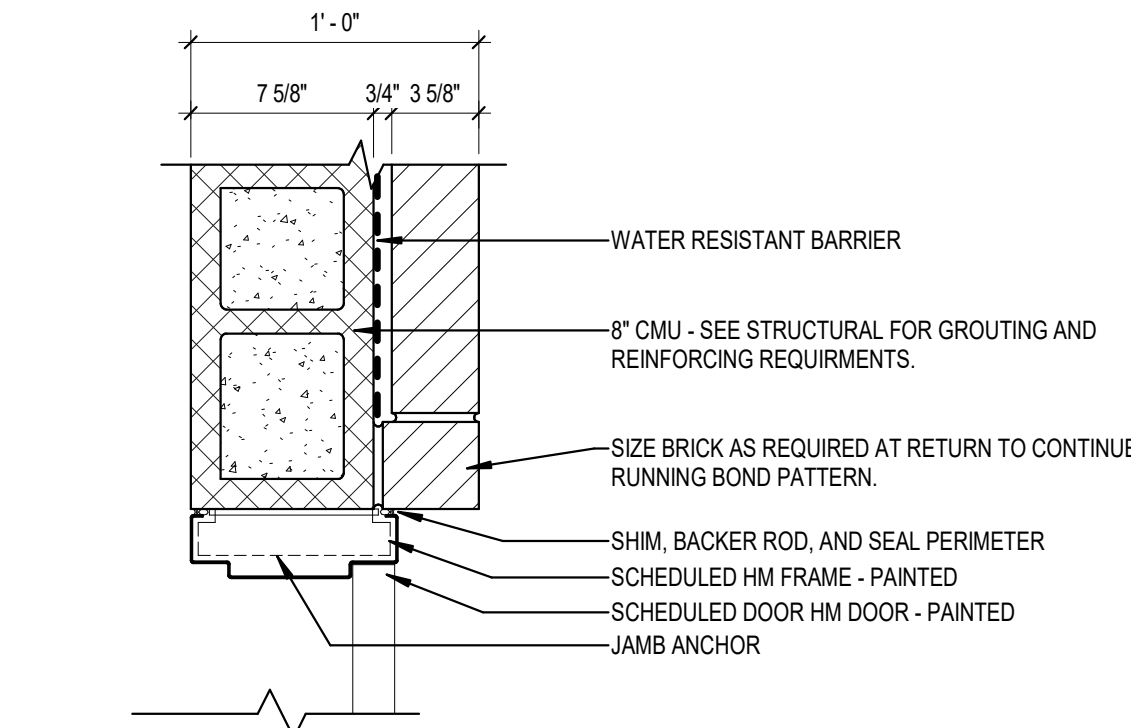
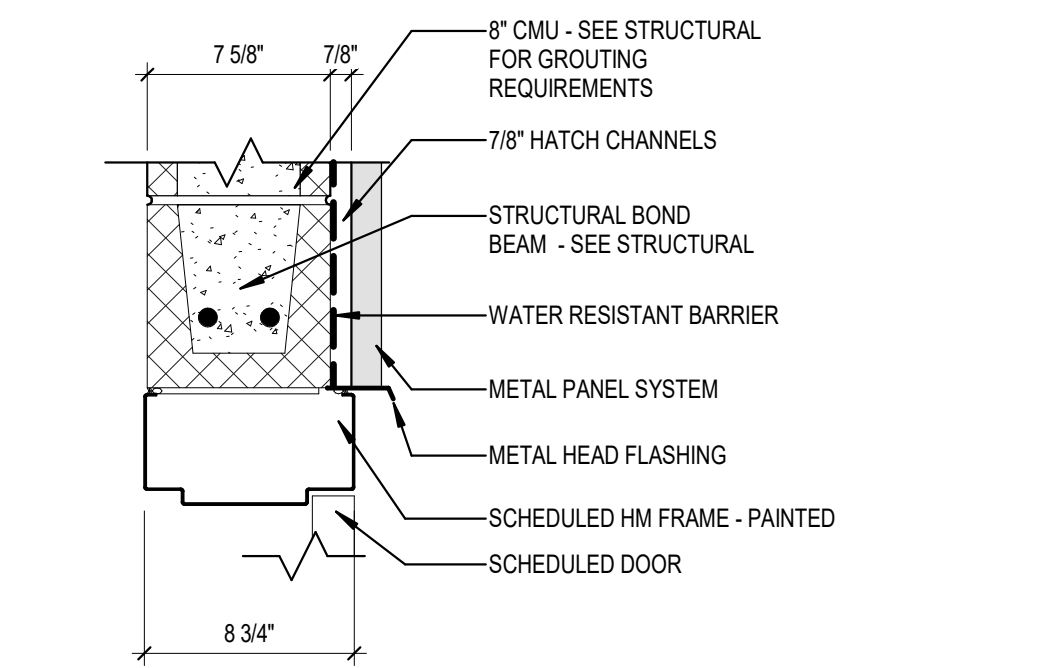
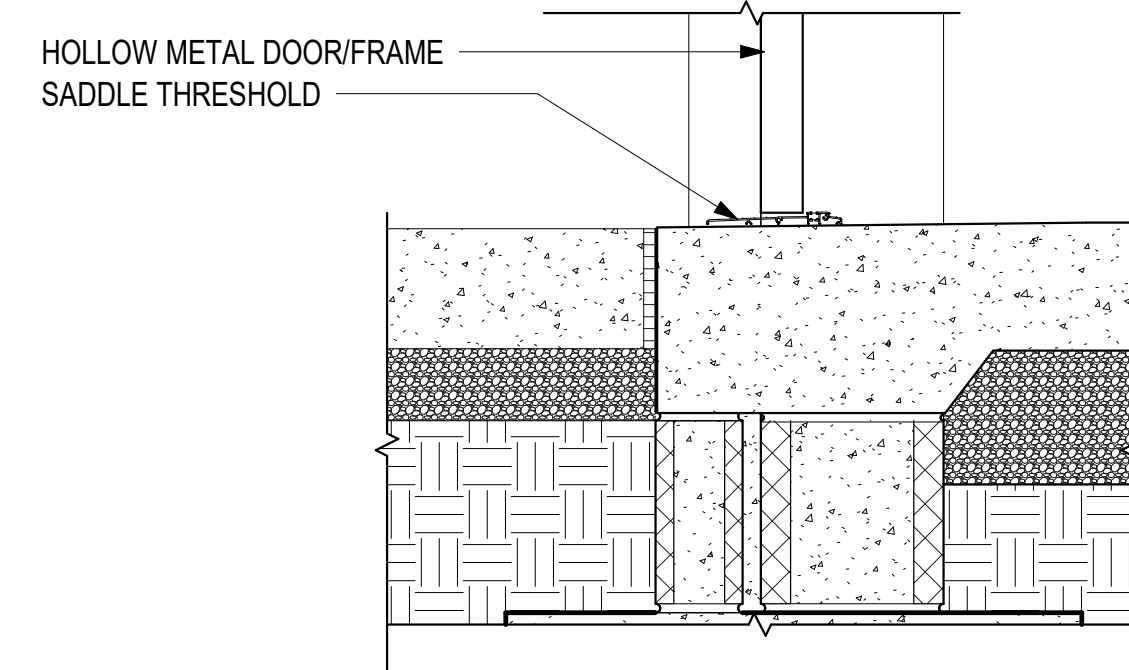
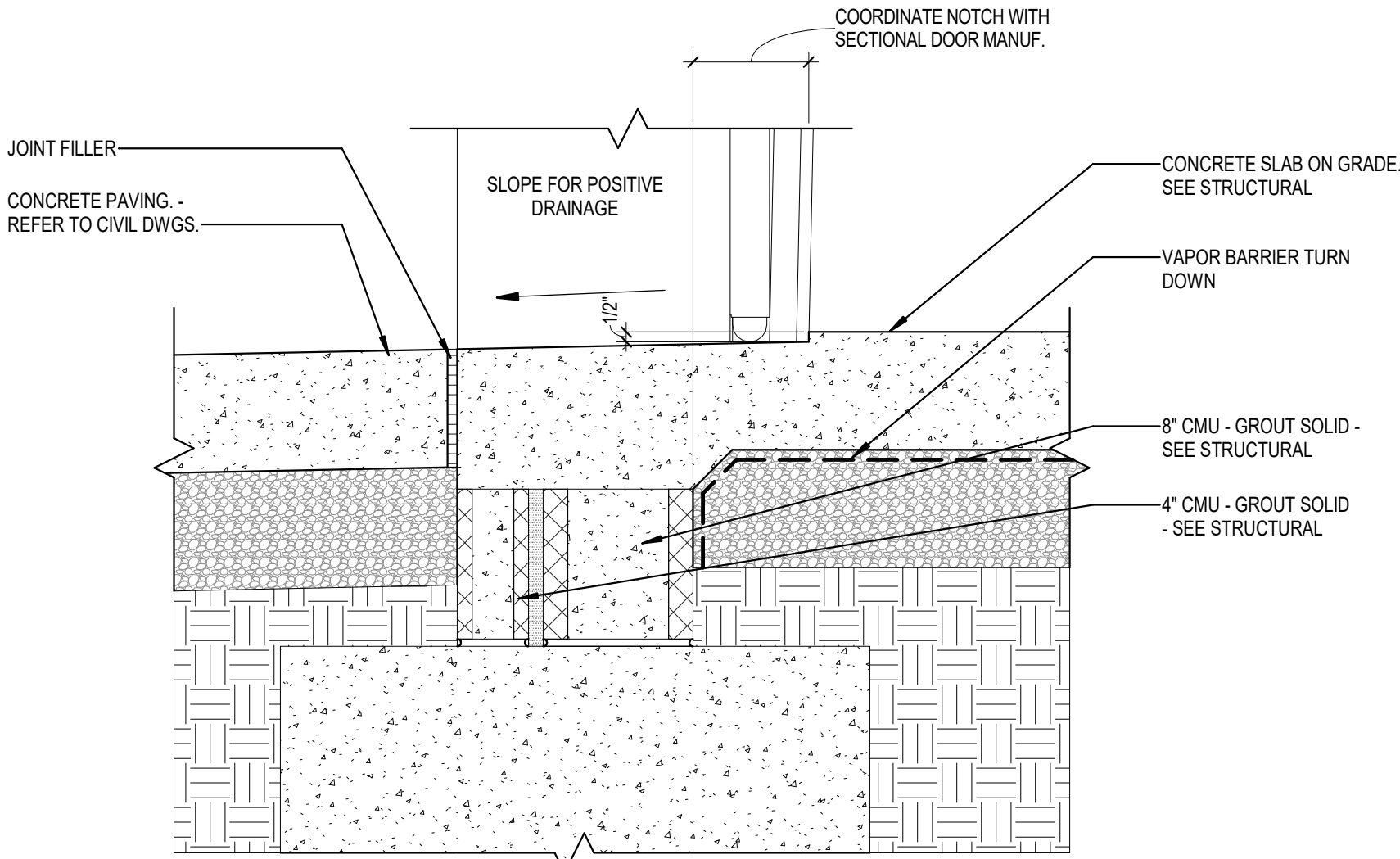
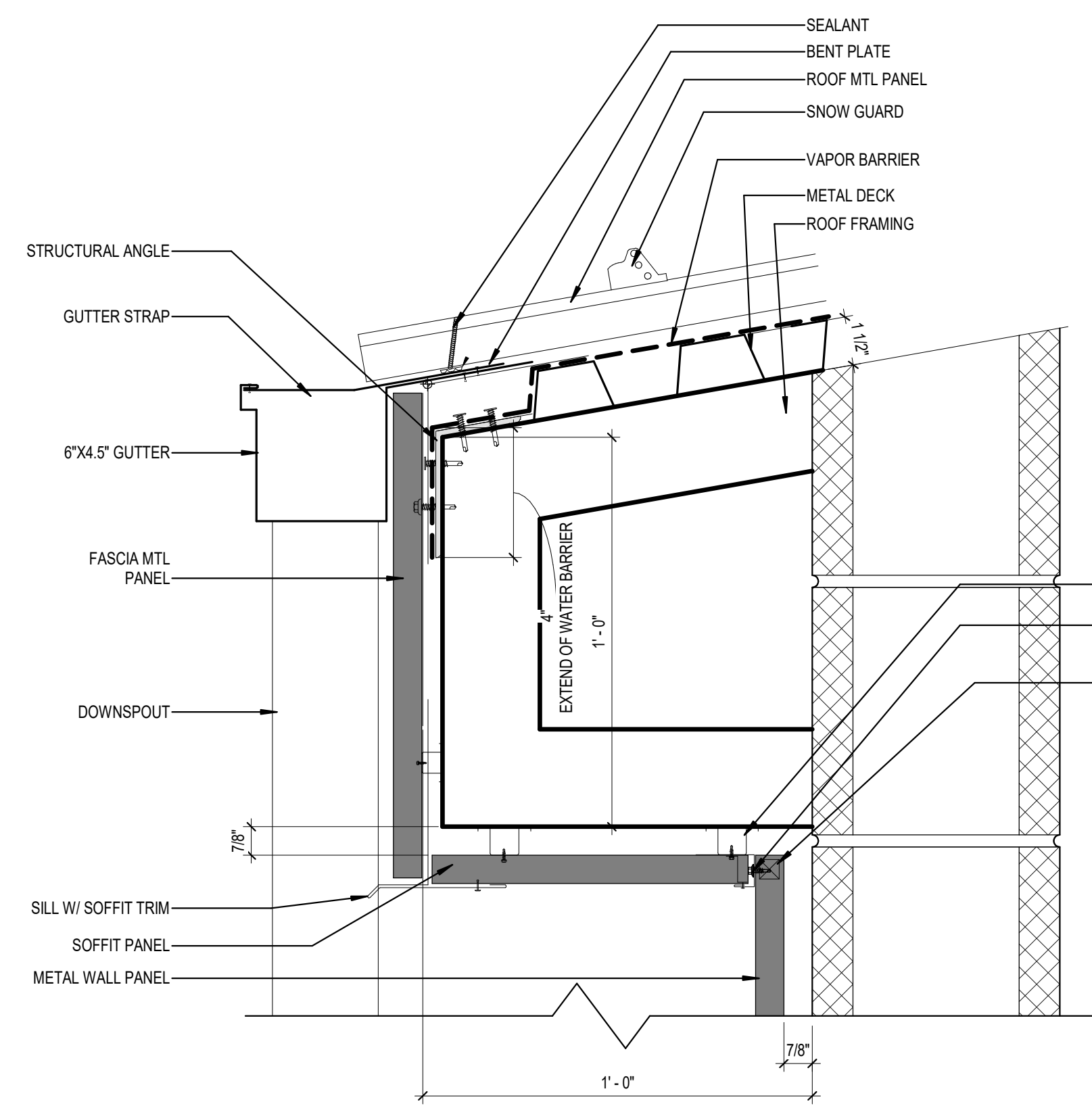
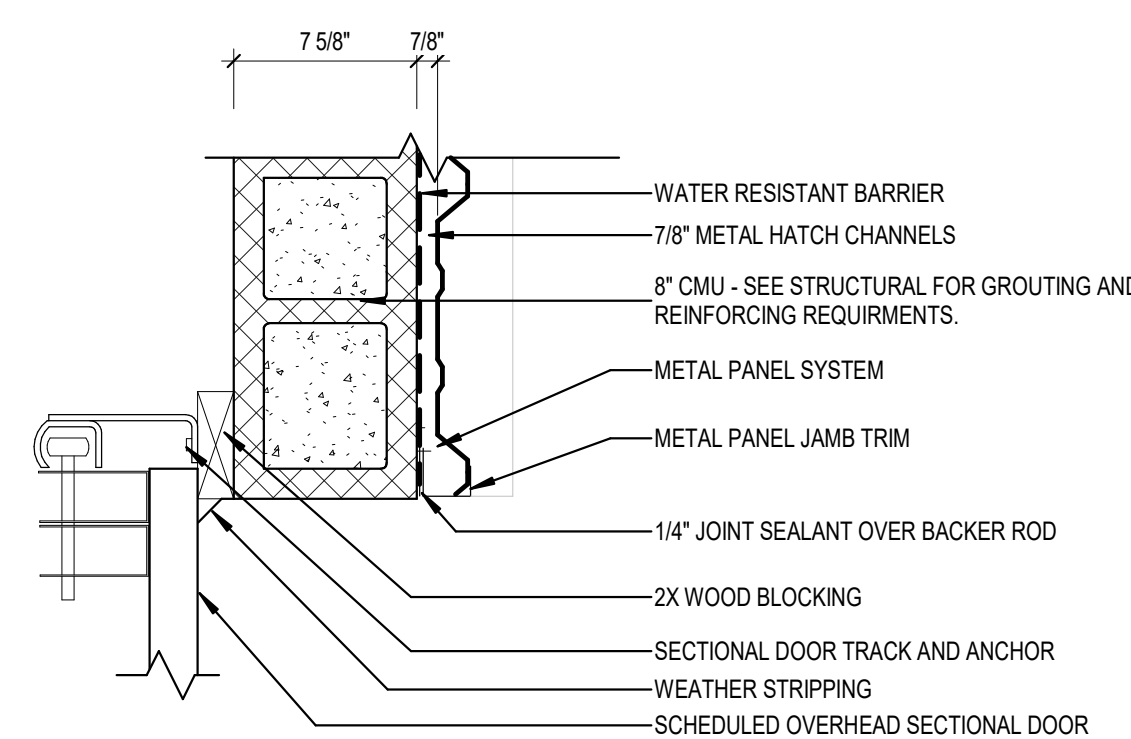
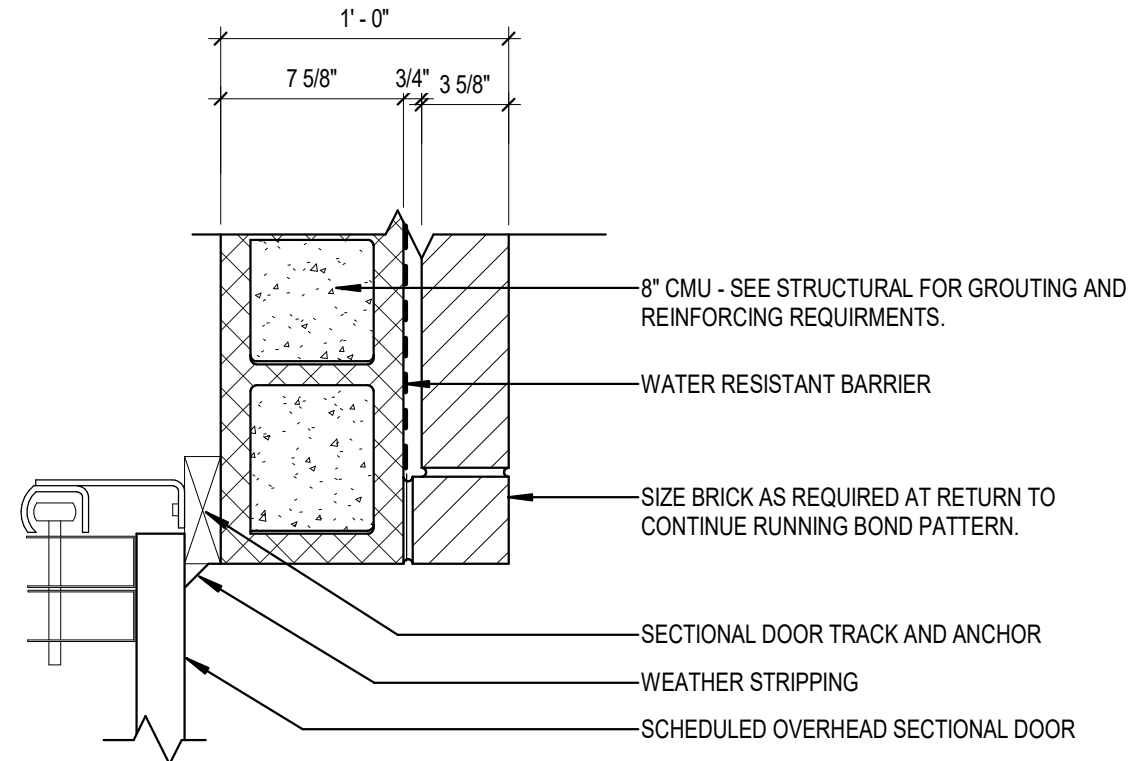
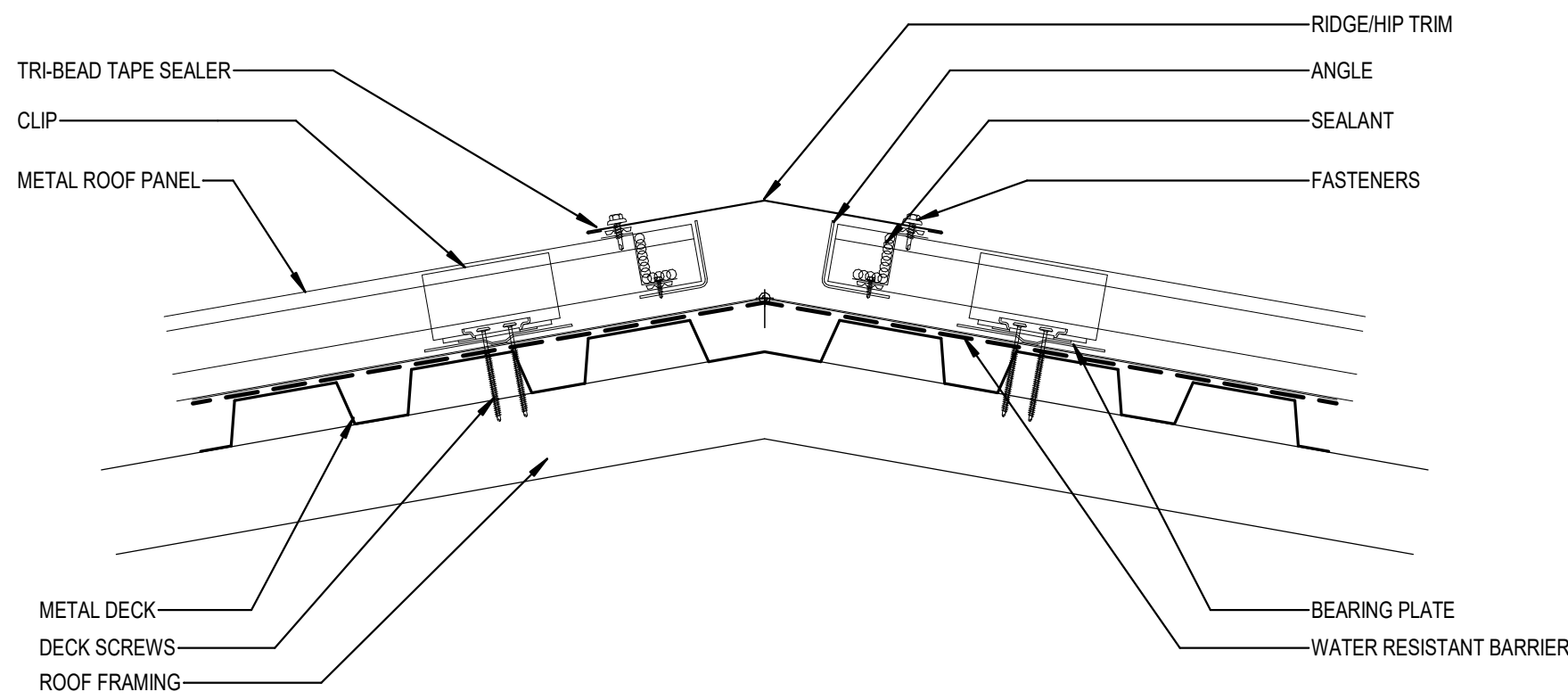
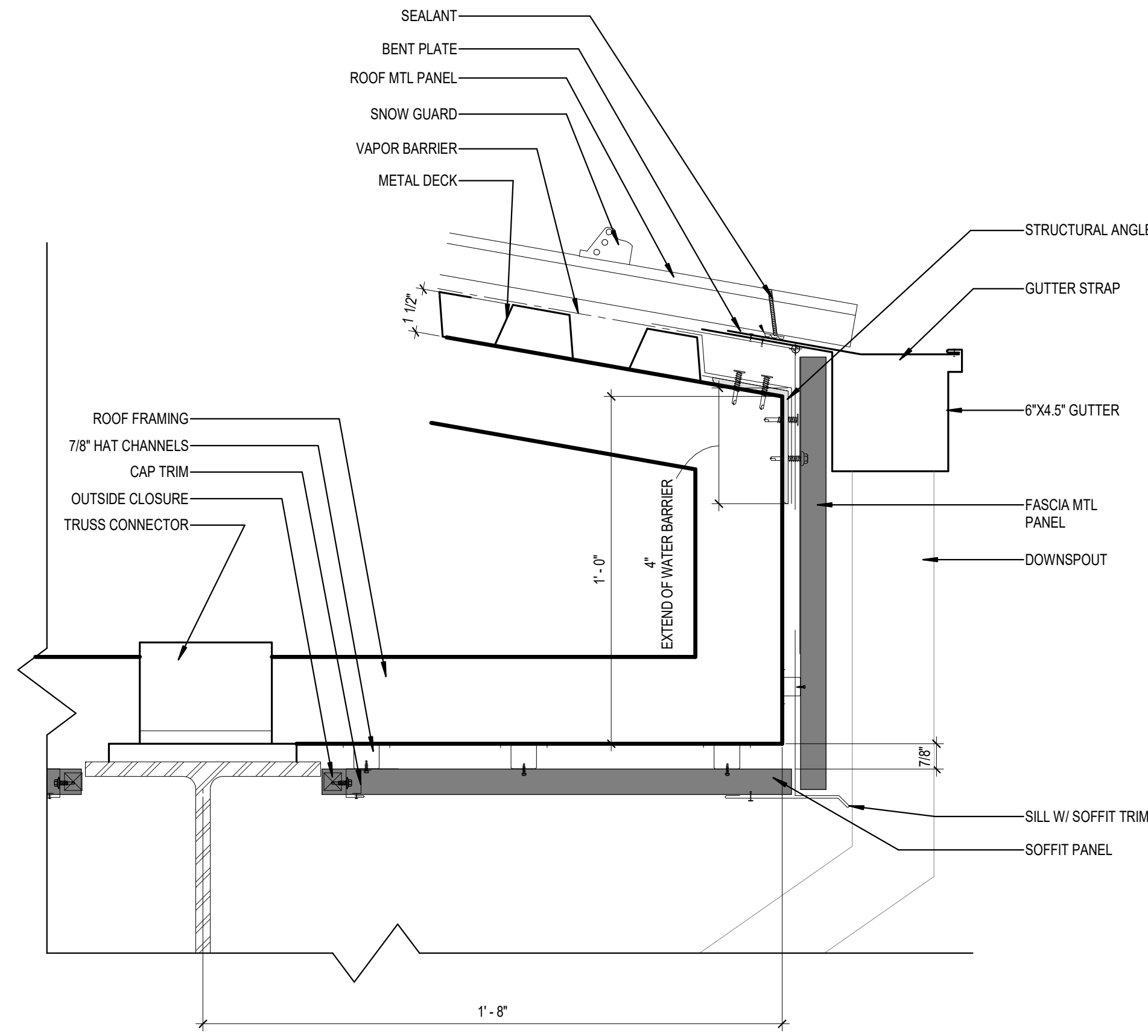
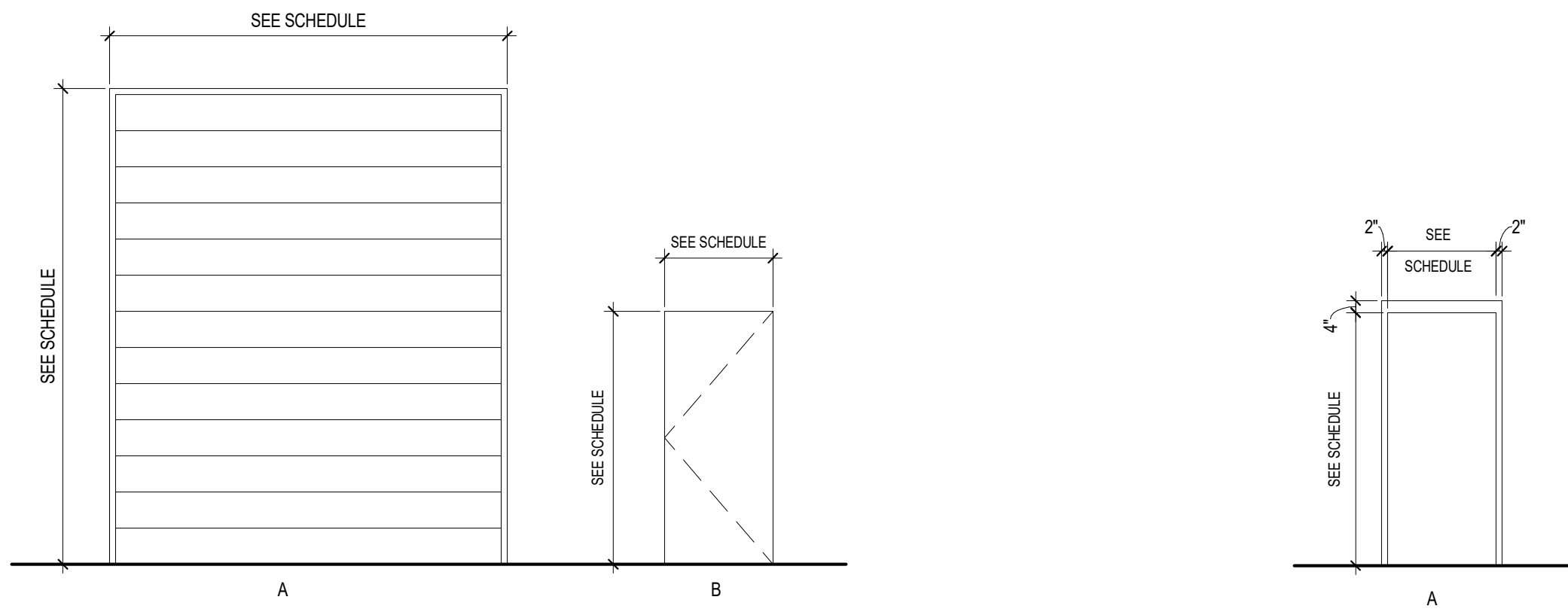
GENERAL NOTES:
 A. MOUNTING HEIGHT FOR DOOR HARDWARE SHALL BE BETWEEN 34" AND 48"
 B. PAINT ALL HOLLOW METAL DOORS AND FRAMES AS SPECIFIED. PAINT COLOR TO BE SELECTED.
 C. HARDWARE FINISH: 628 OR EQUAL, UNLESS OTHERWISE NOTED.

HARDWARE SCHEDULE					
QTY.	DESCRIPTION	MODEL NUMBER	FINISH	MANUFACTURER	COMMENTS
3	HINGES	TA214 (4-1/2" X 4-1/2") NRP	302	MCKINNEY	
1	MORTISE LOCKSET	8204 LNL	281	SARGENT	
1	CLOSER	281 PS	EN	SARGENT	
1	GASKETING	160 1/4 X 3/8" 2 X 84"		NATIONAL GUARD	
1	DOOR SWEEP	200 NA 36"		NATIONAL GUARD	
1	SADDLE THRESHOLD	424 36" FA	AL	NATIONAL GUARD	

GENERAL HARDWARE NOTES:
 A. COORDINATE KEYING REQUIREMENTS WITH OWNER. USE OWNER'S PREFERRED INTERCHANGEABLE CORE AND KEYING SYSTEM. ALL HARDWARE PRODUCTS LISTED ARE BASIS OF DESIGN PRODUCTS. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE SCHEDULED PRODUCTS OR A COMPARABLE PRODUCT BY ANOTHER MANUFACTURER.
 B. COMPARABLE PRODUCTS SHALL BE APPROVED BY THE MANUFACTURER IN WRITING, AND SHALL MEET THE PERFORMANCE AND PHYSICAL CHARACTERISTICS OF THE BASIS OF DESIGN PRODUCT.

DOOR SCHEDULE - LEGEND

AL ALUMINUM
 HM HOLLOW METAL



PLAN KEYNOTES

1. RUN VENT PIPE AS HIGH AS POSSIBLE ABOVE FINISHED FLOOR BEFORE OFFSET TO 3" VENT THROUGH ROOF.
2. 4" SANITARY VENT SHALL NOT EXCEED 16 FEET FROM COMBINATION WASTE AND VENT MAN.
3. COORDINATE WITH CIVIL PLANS FOR CONNECTION TO SITE SANITARY.

PLUMBING ABBREVIATIONS

SAN	SANITARY PIPING
V	SANITARY VENT PIPING
GCO	GROUND CLEANOUT
FD	FLOOR DRAIN
VTR	VENT THRU ROOF

PLUMBING SYMBOLS

---	-SAN-	UNDERGROUND SANITARY PIPING
---	-SAN-	ABOVE GROUND SANITARY PIPING
---	-SAN-	SANITARY VENT PIPING
⌋		RISER DOWN - ELBOW
⌋		RISER UP - ELBOW

D5 SANITARY AND VENT ISOMETRIC
N.T.S.

PLUMBING FIXTURE SCHEDULE

SYM.	MFR.	MODEL NO.	DESCRIPTION	CONNECTIONS				
				CW	TW	HW	WASTE	VENT
FCO	ZURN	Z1400	ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY WITH GAS AND WATER TIGHT ABS TAPERED THREAD PLUG AND ROUND SCORRIATED CAST IRON EXTRA HEAVY DUTY SECURED TOP.	-	-	-	4"	-
FD-1	ZURN	Z1736	12" DIAMETER EXTRA HEAVY DUTY FLOOR DRAIN, TYPE 304 STAINLESS STEEL BODY WITH INTEGRAL ANCHOR FLANGE AND DEEP FLANGE GRATE WITH PLAIN FINISH AND SEDIMENT BUCKET, PROVIDE AND INSTALL MODEL Z1072 Z SHIELD BARRIER TRAP SEAL.	-	-	-	4"	2"
GCO	ZURN	Z1400	ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY WITH GAS AND WATER TIGHT ABS TAPERED THREAD PLUG AND ROUND SCORRIATED CAST IRON EXTRA HEAVY DUTY SECURED TOP.	-	-	-	4"	-

GENERAL NOTES AND SPECIFICATIONS

1. THE ENTIRE INSTALLATION SHALL CONFORM WITH THE LATEST EDITION OF THE OHIO PLUMBING CODE AND ALL OTHER LOCAL CODES AND ORDINANCES.
2. COORDINATE THE INSTALLATION OF ALL PLUMBING MATERIALS WITH ALL OTHER TRADES ON THE PROJECT INCLUDING: FIRE PROTECTION, ELECTRICAL, MECHANICAL, AND GENERAL TRADES CONTRACTORS. PARTICIPATE IN COORDINATION DRAWING PREPARATION.
3. SEE THE ARCHITECTURAL PLANS AND ELEVATION SHEETS FOR THE EXACT LOCATION AND HEIGHT OF ALL PLUMBING FIXTURES, INCLUDING THE ADA COMPLIANT FIXTURES.
4. THE DESIGN INTENT OF THIS PROJECT IS FOR THE SPACE ABOVE THE CEILING IN THE AREAS TO BE USED AS A RETURN AIR PLENUM. CAST IRON PIPE MUST BE USED IN THE PLENUM SPACE INSTEAD OF PVC. OSFC DOES NOT ALLOW INSULATED PVC PIPING IN ANY PLENUM SPACE.
5. SEE DIVISION 7 SPECIFICATION FOR FIRE STOPPING DETAILS AT FIRE WALLS.

BASIC MATERIALS AND METHODS

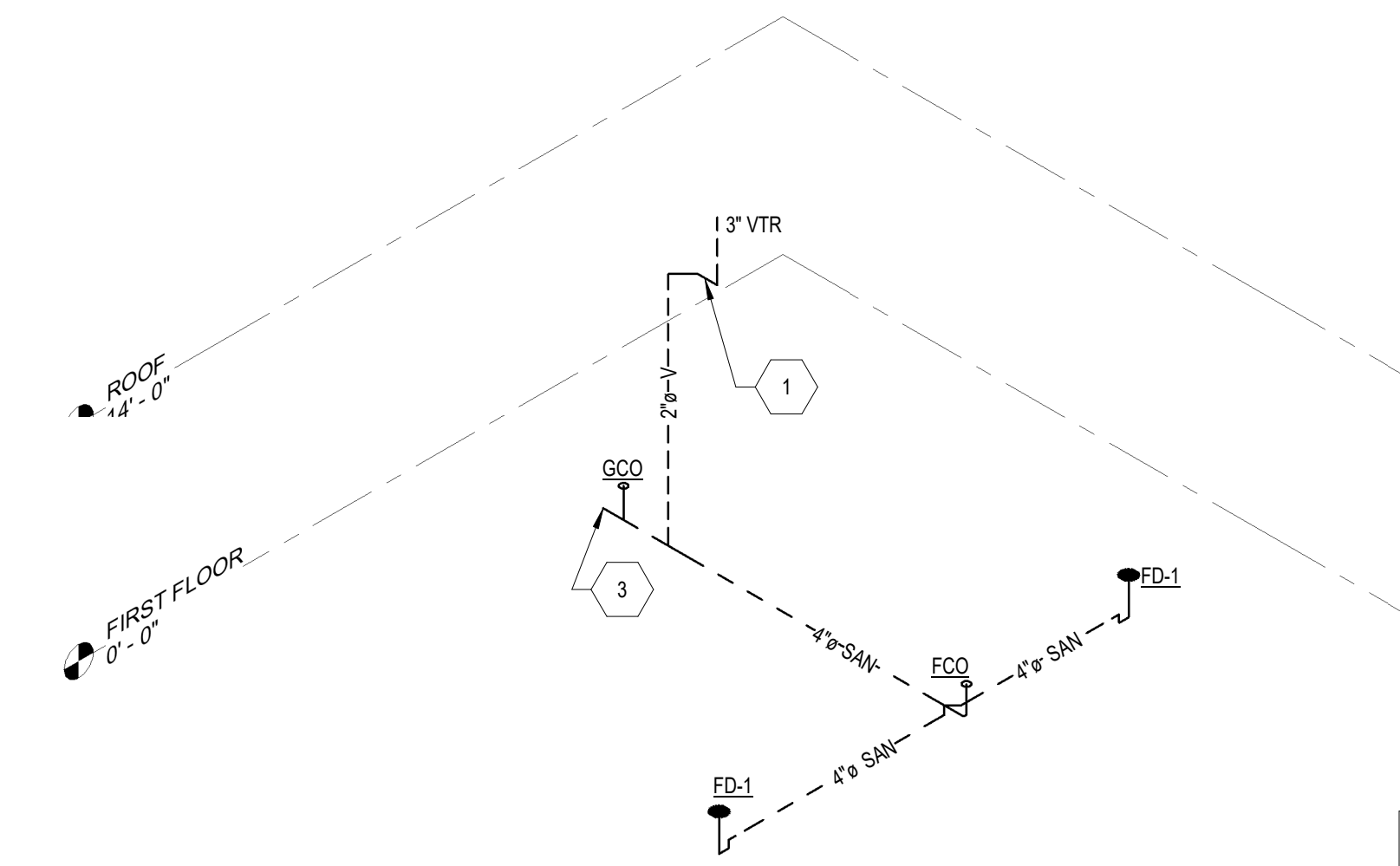
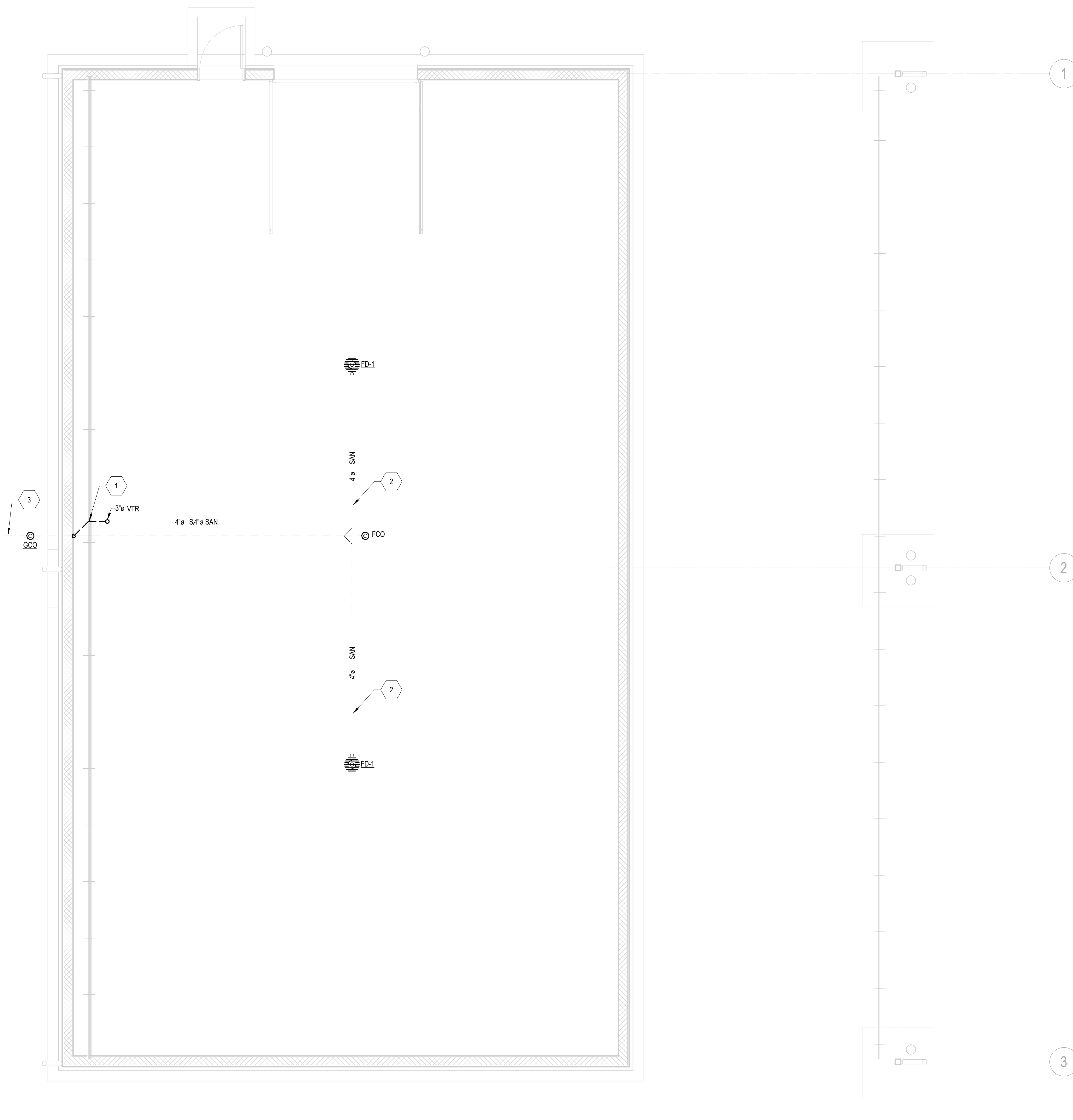
1. REFER TO INDIVIDUAL SECTIONS FOR SPECIFIC DUCTWORK, PIPING, FITTING, JOINING MATERIALS AND METHODS.
2. FURNISH AND INSTALL MANUFACTURED ESCUTCHEONS FOR EXPOSED CEILING PENETRATIONS. INSTALL DIELECTRIC SEPARATION BETWEEN ALL DISSIMILAR METALS TO PREVENT GALVANIC CORROSION.
3. FURNISH AND INSTALL SLEEVES FOR FLOOR SLAB AND ROOF PENETRATIONS WITH A MINIMUM SIZE TWO SIZES LARGER THAN PIPE OR INSULATION. STEEL PIPE: ASTM A53, TYPE 3, SCH. 40 GALV. PLAIN ENDS. PVC PLASTIC PIPE: ASTM D1785, SCH. 40.
4. INSTALL PIPING, LEVEL AND PLUMB (UNLESS NOTED OTHERWISE) AND FREE OF SAGS AND BENDS. TIGHT TO SLABS, TRUSSES, JOISTS, COLUMNS, WALLS, AND OTHER BUILDING COMPONENTS. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE LAY-IN CEILINGS FOR PANEL REMOVAL.
5. REFER TO INDIVIDUAL SECTIONS FOR PAINTING REQUIREMENTS.
6. HANGERS AND SUPPORTS: PROVIDE ALL PIPE SUPPORTS REQUIRED. HORIZONTAL RUNS OF PIPE IN BUILDING SHALL BE RIGIDLY ATTACHED TO BUILDING STRUCTURE WITH ADJUSTABLE SWIVEL COUPLINGS AND ROD TYPE HANGERS. PERFORATED STRAP HANGERS ARE NOT PERMITTED IN ANY PART OF THE WORK. PIPE HANGERS SHALL BE LOCATED NEAR CHANGES OF DIRECTION AND AT POINTS REQUIRED TO PROPERLY SUPPORT PIPING AND ACCESSORIES. SPACING OF HANGERS AND SUPPORTS SHALL BE INSTALLED AS REQUIRED BY THE APPLICABLE MECHANICAL AND/OR PLUMBING CODE OR MANUFACTURER (WHICH EVER IS MORE STRINGENT).

FIRESTOPPING AND SEALING PENETRATIONS

1. CONTRACTOR SHALL FURNISH AND INSTALL FIRESTOPPING FOR SEALING AROUND DUCT AND PIPE PENETRATIONS THROUGH FIRE OR SMOKE BARRIERS AND FLOORS.
2. PROVIDE A FIRESTOPPING WORKSHEET TO ANY AGENCIES WHICH GOVERN THE PROJECT.
3. PROVIDE SHOP DRAWING OF EACH CONDITION REQUIRING PENETRATION SEALS AND THE PROPOSED UL SYSTEMS MATERIALS, ANCHORAGE, METHODS OF INSTALLATION, AND ACTUAL ADJACENT CONSTRUCTION. SUBMITTAL PACKAGE SHALL ALSO INCLUDE A COPY OF THE UL ILLUSTRATION OF EACH PROPOSED SYSTEM INDICATING MANUFACTURER APPROVED MODIFICATIONS (IF APPLICABLE) AND THE MANUFACTURERS SPECIFICATIONS, RECOMMENDATIONS, INSTALLATIONS INSTRUCTIONS AND MAINTENANCE INSTRUCTIONS.

PIPING

1. PROVIDE PIPING PER THE CONTRACTOR DOCUMENTS AND AS FOLLOWS:
 - A. SANITARY, VENT, AND STORM PIPING, ALL PIPE SIZES:
 1. BELOW GRADE: SOLID WALL SCH. 40 PVC WITH SOLVENT WELD FITTINGS.
 2. ABOVE GRADE: HUBLESS SCH. 40 CAST IRON SOIL PIPING WITH HEAVY DUTY HUBLESS PIPE COUPLINGS OR SOLID WALL SCH. 40 PVC WITH SOLVENT WELD FITTINGS.



A2 FIRST FLOOR PLUMBING
1/4" = 1'-0"

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OH 44705

PLUMBING PLAN

DATE:	
PERMIT	01/06/2022
BID	01/06/2022
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	BRF

JOB NO.
2020377.06

P-101

ELECTRICAL SYMBOLS

Table of electrical symbols and their descriptions. Columns include symbol, description, and notes. Symbols include various receptacles, switches, lighting fixtures, and control panels.

ABBREVIATIONS

Table of abbreviations and their meanings. Includes terms like AC, ADH, AFF, AFG, BAS, BB, BC, BFC, BFG, BKR, BOF, CKT, CLG, DE, DED, EC, EF, EMB, EMV, EPO, ETR, EWC, EXT, FAACP, FAAP, FACP, FLR, FPC, FSEC, GC, GFCIGFI, GND, HPF, HVAC, IG, LTG, MC, MCA, MFR, MOCP, NEC, NF, NFPA, NIC, NL, OFE, PC, PRT, RF, RL, SF, SM, SPD, SR, T-STAT, TCC, UC, UON, WG, WP, XFMR.

GENERAL NOTES

- GENERAL CONSTRUCTION NOTES
1. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR SHAFTS SHALL BE SEALED IN ACCORDANCE WITH SPECIFICATIONS.
2. ROUTING OF ALL SURFACE MOUNTED EXPOSED CONDUIT IN UNFINISHED AREAS OR WHERE NOTED ON THE DRAWINGS SHALL BE COORDINATED WITH AND SHALL BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION. ALL EXPOSED CONDUIT SHALL BE RIGID IN TYPE EMT OR GMC.
3. FIELD VERIFY EXACT LOCATION OF EQUIPMENT WITH ASSOCIATED EQUIPMENT INSTALLER PRIOR TO ROUGH-IN. EXACT ELECTRICAL REQUIREMENTS SHALL BE VERIFIED IN THE FIELD WITH THE EQUIPMENT'S NAMEPLATE DATA. E.C. SHALL MAKE APPROPRIATE ADJUSTMENTS TO ASSOCIATED BREAKERS/DISCONNECT SWITCHES, BRANCH CIRCUIT WIRING, AND SIZE FUSES PER MANUFACTURER'S RECOMMENDATIONS.
4. THE PHRASE "PROVIDED BY" USED WITHIN THESE DOCUMENTS SHALL EXPLICITLY REPRESENT "FURNISHED AND INSTALLED BY".
5. PROVIDE A LAYOUT OF EACH ELECTRICAL ROOM WITH THE ACTUAL DIMENSIONS OF ALL EQUIPMENT TO BE ORDERED/SHOWN. SUBMIT LAYOUT WITH THE ELECTRICAL DISTRIBUTION EQUIPMENT SHOP DRAWINGS FOR REVIEW AND APPROVAL. ALL LAYOUTS SHALL SHOW HOW THE EQUIPMENT WILL FIT INTO THE ROOM AND MUST INCORPORATE THE WORKING CLEARANCES TO BE MAINTAINED PER NEC.
6. PROVIDE A LAYOUT OF THE OUTDOOR EQUIPMENT ENCLOSURE WITH THE ACTUAL DIMENSIONS OF ALL EQUIPMENT TO BE ORDERED SHOWN (CONTACT UTILITY COMPANY FOR DIMENSIONS TO BE USED FOR THE PADMOUNTED TRANSFORMER). SUBMIT LAYOUT WITH THE GENERATOR EQUIPMENT SHOP DRAWINGS FOR REVIEW AND APPROVAL. ALL LAYOUTS SHALL SHOW HOW THE EQUIPMENT WILL FIT INTO THE AREA AND MUST INCORPORATE THE WORKING CLEARANCES TO BE MAINTAINED PER NEC AND NFPA. E.C. SHALL VERIFY WITH THE GENERATOR MANUFACTURER FOR THE EQUIPMENT BEING FURNISHED TO ENSURE THAT THE UNIT HAS AN INTERNAL "SCOOP" WHICH DIRECTS THE AIR FLOW FOR VENTILATION REQUIRED FOR PROPER COOLING OF THE UNIT. IF THE UNIT IS NOT PROVIDED WITH THIS INTERNAL FEATURE, COORDINATE WITH G.C. THE ADDITIONAL SPACE REQUIRED WITHIN THE OUTDOOR ENCLOSURE FOR PROPER AIR CIRCULATION.
7. ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT SHALL BE INSTALLED ON A 4" CONCRETE HOUSEKEEPING PAD PROVIDED BY THE E.C.
8. PROVIDE VIBRATION INSULATORS BENEATH EACH TRANSFORMER TO ELIMINATE NOISE OR THE TRANSFERENCE OF VIBRATION TO ADJACENT ITEMS/AREAS.
9. ALL WIRING SHALL BE INSTALLED IN CONDUIT. ALL CONDUIT SHALL BE A MINIMUM OF 3/4" DIA. CIRCUITS SHALL BE REARRANGED AS REQUIRED TO MAINTAIN THE MOST BALANCED LOADS ON EACH PHASE WITHIN EACH PANEL. E.C. SHALL PROVIDE A TYPED PANELBOARD SCHEDULE AND INSTALL ON INSIDE COVER OF EACH PANEL.
10. ANY DEVICES THAT ARE TO BE INSTALLED BACK-TO-BACK IN A COMMON WALL SHALL BE SEPARATED BY 8" MINIMUM TO MINIMIZE SOUND TRANSFER.
11. DRAWINGS ARE DIAGRAMATIC AND INDICATE GENERAL ARRANGEMENT ONLY. COORDINATE INSTALLATION WITH OTHER TRADES TO VERIFY THE ACTUAL SPACE CONDITIONS, HEADROOM, ETC. THAT IS TO BE MAINTAINED. NO ADDITIONAL PAYMENT WILL BE APPROVED FOR FAILURE TO COMPLY.
12. BRANCH CIRCUITS SERVING ISOLATED GROUND RECEPTACLES SHALL INCLUDE AN ADDITIONAL ISOLATED GROUNDING CONDUCTOR FROM THE RECEPTACLE AND WILL TERMINATE ON THE ISOLATED/INSULATED GROUND BAR IN PANEL SERVING THEM.
13. COORDINATE ALL LOCATIONS OF FLOOR BOXES, RECEPTACLES, AND OTHER DEVICE BACKBOXES WITH CASEWORK AND FURNITURE LAYOUTS. REFER TO THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND FIELD VERIFY EXACT LOCATIONS AND CONDUIT ROUTING METHODS WITH ARCHITECT PRIOR TO ROUGH-IN.
14. WIRE SIZE OF BRANCH CIRCUITS SHALL BE ADJUSTED TO COMPENSATE FOR VOLTAGE DROP BASED UPON ACTUAL CONDUIT ROUTING. E.C. SHALL MAINTAIN VOLTAGE DROP AS RECOMMENDED BY NEC (NOT TO EXCEED 3%).
15. E.C. SHALL PROVIDE 3/4" MINIMUM EMPTY CONDUIT WITH PULLWIRE FOR CONTROL WIRING BETWEEN HVAC EQUIPMENT AND REMOTE LOCATED CONTROL PANELS. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR.
16. ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH A SEPARATE NEUTRAL CONDUCTOR. NEUTRALS SHALL NOT BE SHARED PER 2017 NEC 200.4(B).
17. ALL AREAS THAT HAVE TOGGLE-TYPE LIGHT SWITCHES AND RECEPTACLES MOUNTED BESIDE DOOR OPENINGS AT 48" TO CENTERLINE MAY BE FURNISHED WITH A COMMON BACKBOX WITH BARRIERS BETWEEN THE DEVICES AND A COMMON FACEPLATE PER NEC. 404.4(B).
18. E.C. SHALL COORDINATE WITH THE FOLLOWING PRIOR TO ROUGH-IN: FOODSERVICE VENDOR AND FOODSERVICE DRAWINGS, TECHNOLOGY VENDOR AND TECHNOLOGY DRAWINGS, MECHANICAL PLUMBING CONTRACTOR AND MECHANICAL PLUMBING DRAWINGS. E.C. SHALL PROVIDE ALL EQUIPMENT, DEVICES, WIRING AND CONDUITS AS SHOWN OR IMPLIED ON THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
19. E.C. SHALL CONNECT CORD AND PLUS COMPONENTS SHIPPED LOOSE WITH ANY EQUIPMENT FURNISHED BY OTHER TRADES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
20. REFER TO MECHANICAL 700 SERIES DRAWINGS FOR ELECTRICAL SCOPE REQUIRED TO COMPLETE BUILDING AUTOMATION SYSTEM. INCLUDE BAS INTERFACE WITH ELECTRICAL EQUIPMENT AS INDICATED.



520 South Main Street, Suite 2331
Akron, Ohio 44311
Tel: 330.572.2100
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Table with columns: REV, DATE, DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET N.E.
CANTON, OH 44705

ELECTRICAL LEGEND

Table with columns: PERMIT, CONSTRUCTION, RECORDED, PROJECT MANAGER, DESIGNER. Includes dates and initials.

JOB NO. 2020377.06

E-001

GENERAL NOTES

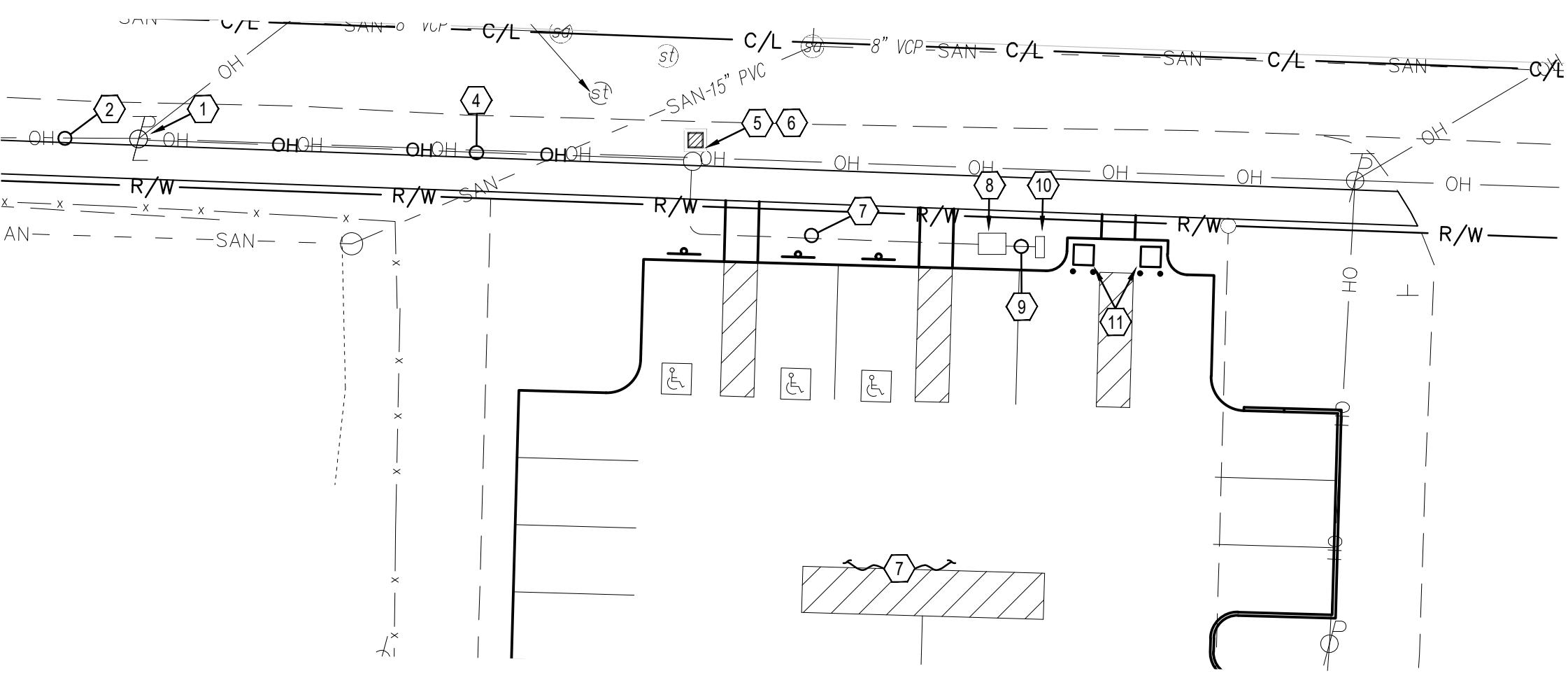
- THE E.C. SHALL VISIT AND EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK. NO ADDITIONAL PAYMENTS WILL BE APPROVED REGARDING ADDITIONAL WORK REQUIRED BECAUSE OF EXISTING CONDITIONS. SUBMITTAL OF A BID WILL ACKNOWLEDGE THE ACCEPTANCE OF THIS RESPONSIBILITY.
- CONTRACTOR SHALL BE RESPONSIBLE DETERMINE IF CONFLICTS EXIST WITH THE PROPOSED IMPROVEMENTS. CONTRACTOR SHALL NOTIFY THE OWNER IN ORDER TO RESOLVE ANY CONFLICTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING PROPERTY RESULTING FROM THE CONSTRUCTION ACTIVITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING CONDUITS, CONTROL WIRING, ETC., WHETHER SHOWN HEREON OR NOT, AND TO PROTECT THEM FROM DAMAGE.
- REVEAL ANY ELECTRICAL DEVICE OR ITEM THAT IS EXISTING TO REMAIN WHOSE WIRING IS INTERRUPTED DUE TO RENOVATION IN ADJACENT AREA.
- ANY ELECTRICAL DEVICE THAT IS TO REMAIN THAT IS LOCATED ON OR IN A WALL OR CEILING BEING REMOVED SHALL BE RELOCATED AS DIRECTED BY G.C. IN FIELD AND RECONNECTED AS REQUIRED.
- EXISTING UTILITIES AND CONDITIONS ARE SHOWN FROM FIELD DATA AND EXISTING DOCUMENTS. ALL FIELD CONDITIONS SHALL BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCING WORK.
- EXISTING ELECTRICAL CONDUIT, WIRING, ETC. DAMAGED DURING RENOVATION SHALL BE REPLACED TO MATCH EXISTING.
- REMOVE ALL WIRING COMPLETE FOR EQUIPMENT/DEVICES. DO NOT ABANDON ABOVE IN PLACE OR IN CEILING.
- WHERE STRUCTURAL OPENINGS ARE NOT AVAILABLE, THE E.C. SHALL CORE DRILL OR CUT AND CHASE WALLS AND FLOORS AS REQUIRED FOR NEW CONDUITS AND RACEWAYS. E.C. SHALL SEAL OPENINGS WATERPROOF OR FIREPROOF, TO RATING OF STRUCTURE PENETRATED. ALL OPENINGS WITH MATERIALS AS DIRECTED BY THE ARCHITECT AND FINISH TO MATCH SURROUNDING AREAS. ALL OPENINGS REQUIRED SHALL BE APPROVED BY THE ARCHITECT PRIOR TO DEMOLITION OR CORE DRILLING.
- ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR SHAFTS SHALL BE SEALED IN ACCORDANCE WITH SPECIFICATIONS.
- ALL CONDUIT BELOW GRADE TO BE 1" SCHED 80 PVC AND TO BE MADE WATER TIGHT.
- TRANSITION FROM PVC BELOW GRADE TO GRC ABOVE GRADE.
- ALL WIRING TO BE COPPER THIN-2.
- MINIMUM SIZE CONDUCTORS SHALL BE #8AWG WITH #10G.
- CONTRACTOR TO MAINTAIN PEDESTRIAN AND VEHICULAR FLOW OF SIDEWALKS AND DRIVEWAYS/LOTS THROUGHOUT CONSTRUCTION.
- ALL SPLICES BELOW GRADE IN SPLICE BOX TO BE RAYCHEM GEL ENCLOSURE.
- CONTRACTOR TO ROUTE TRENCHING & EXCAVATING TO MINIMIZE DAMAGE TO EXISTING LANDSCAPING.
- CONTRACTOR TO REMOVE EXCESS EXCAVATION MATERIALS FROM SITE.
- UPDATE PANELBOARD LEGENDS.
- EXISTING LIGHTS TO BE OPERATIONAL AT END OF EACH DAY. PROVIDE TEMPORARY PROVISIONS AS REQUIRED.
- AREA IS HEAVY WITH PIPING, UTILITIES, ETC. ADJUST DEPTH AND ROUTE OF NEW CONDUIT AND TRENCHING AS REQUIRED TO AVOID CONFLICTS.
- CONTRACTOR TO VERIFY MAXIMUM DEMAND LOADS ON ALL PANELS AND VERIFY NO OVERLOADS BEFORE ADDING LIGHTING LOADS. CONTACT ENGINEER IF OVERLOAD IS POSSIBLE PRIOR TO CONSTRUCTION.

PLAN KEYNOTES - BASE (4)

- EXISTING UTILITY POLE TO REMAIN. TYP.
- EXISTING UTILITY LINES, OVERHEAD TO REMAIN. TYP.
- EXISTING BUILDING TO REMAIN.
- EXISTING PAVING TO REMAIN UNTO.
- PARKING AREA, NO ELECTRICAL SCOPE. SHOWN FOR REFERENCE.
- PROPOSED NEW BUILDING. REFER TO BUILDING PLANS FOR ADDITIONAL INFORMATION.
- PROPOSED PARKING. WORK IS PART OF AN ALTERNATE #3. REFER TO ALTERNATE #3 PLANS.
- REWORK OVERHEAD POWER LINES FOR NEW DIP POLE BY POWER COMPANY.
- PROPOSED NEW DIP POLE BY POWER COMPANY. COORDINATE WITH SAME.
- PROPOSED NEW SERVICE DROP FOR PROPOSED BUILDING. COORDINATE WITH POWER COMPANY.
- PROPOSED UNDERGROUND SERVICE ENTRANCE TO PROPOSED BUILDING. REFER TO RISER DIAGRAM FOR ADDITIONAL INFORMATION. COORDINATE WITH POWER COMPANY.
- PROPOSED NEW MAIN PANEL. REFER TO PLANS FOR ADDITIONAL INFORMATION.
- FUTURE LEVEL 2 EV CHARGER. REFER TO PLANS FOR ADDITIONAL INFORMATION.

ALTERNATE BID ITEMS

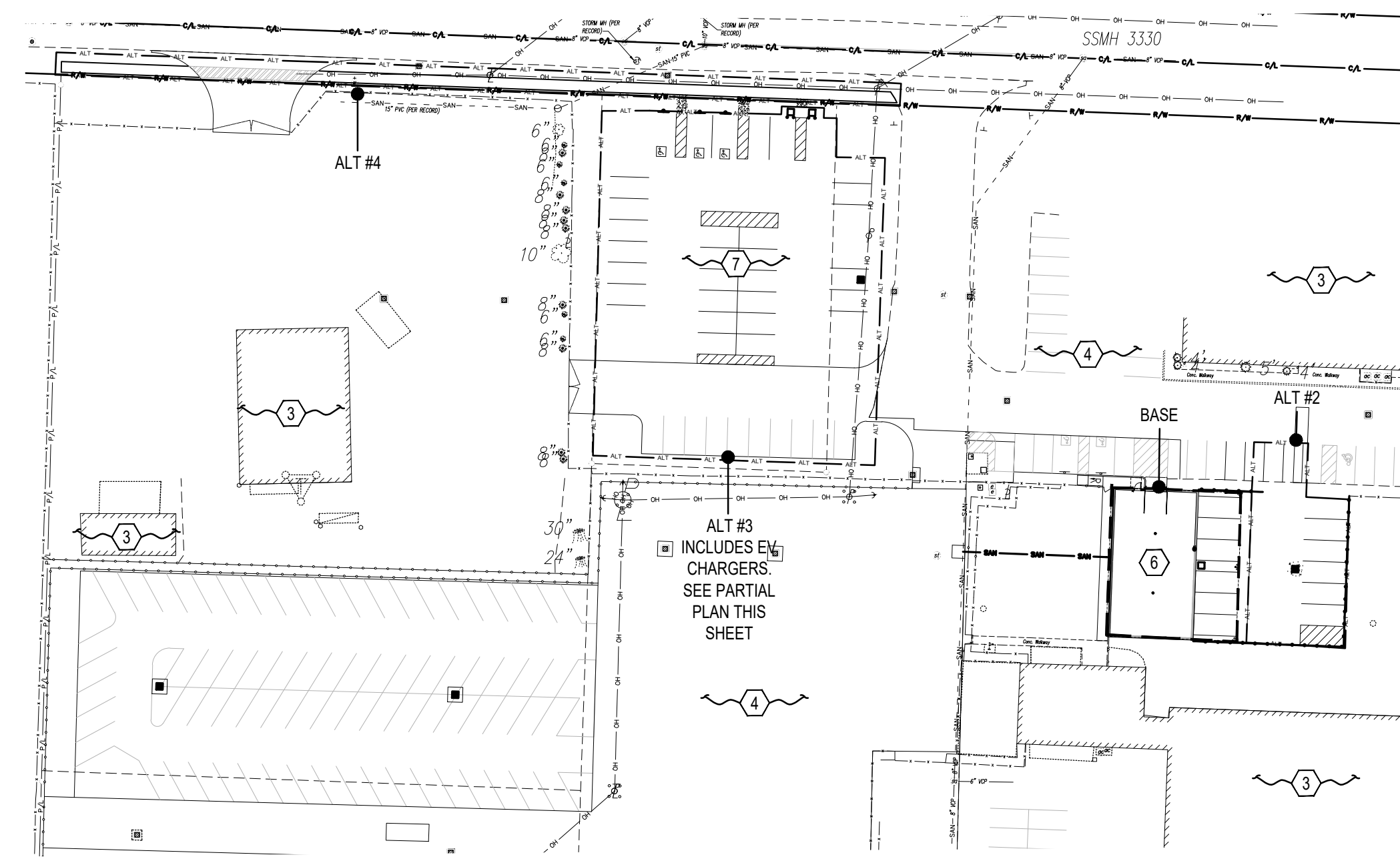
- SUMMARY OF ALTERNATE BID ITEMS. REFER TO SPECS FOR COMPLETE DESCRIPTION.
- ALTERNATE BID ITEM #1:
PROPOSED ASPHALT PARKING LOT ADDITION TO AUCTION CAR LOT. (NO ELECTRICAL WORK)
- ALTERNATE BID ITEM #2:
PROPOSED ASPHALT PARKING LOT ADDITION TO PROPOSED BUILDING. (NO ELECTRICAL WORK)
- ALTERNATE BID ITEM #3:
PROPOSED ASPHALT PARKING LOT WITH ADA SPACES AND FUTURE EV STALLS. (ELECTRICAL WORK; PROVIDE NEW SERVICE FOR EV STALLS)
- ALTERNATE BID ITEM #4:
PROPOSED RIGHT OF WAY CONCRETE WALK PER CITY OF CANTON STANDARDS. (NO ELECTRICAL WORK)



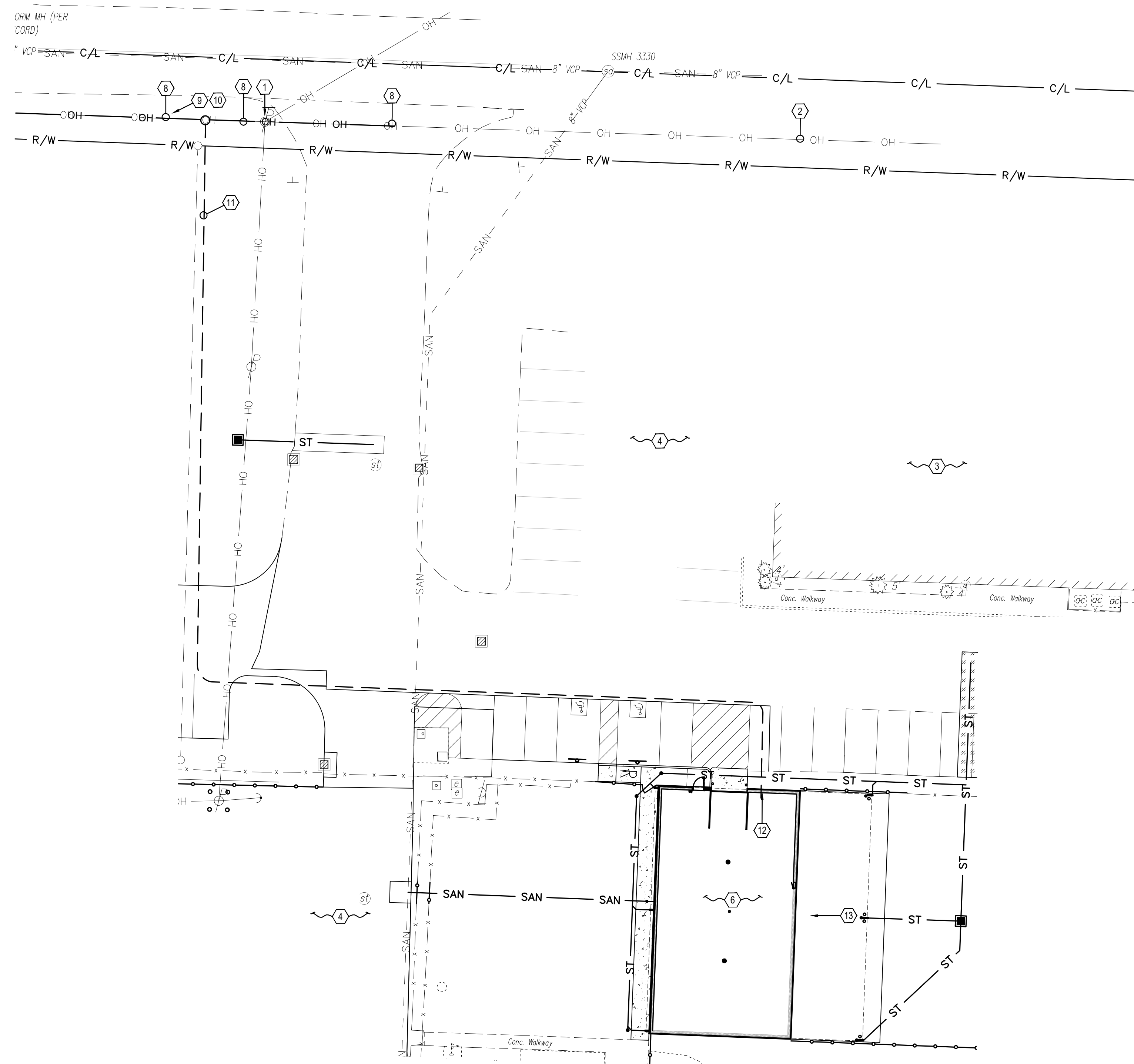
D1 PARTIAL ELECTRICAL SITE PLAN - ALTERNATE #3
1"=20'

ALTERNATE #3 PLAN KEYNOTES (4)

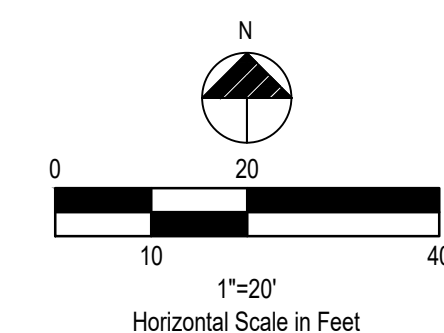
- EXISTING UTILITY POLE TO REMAIN. TYP.
- EXISTING UTILITY LINES, OVERHEAD TO REMAIN. TYP.
- PROPOSED PARKING. REFER TO CIVIL PLANS FOR SCOPE.
- REWORK OVERHEAD POWER LINES FOR NEW DIP POLE BY POWER COMPANY.
- PROPOSED LOCATION OF NEW DIP POLE. COORDINATE WITH POWER COMPANY.
- PROPOSED NEW SERVICE DROP FOR PROPOSED FUTURE EV CHARGERS. COORDINATE WITH POWER COMPANY.
- PROPOSED UNDERGROUND SERVICE LATERAL. COORDINATE WITH POWER COMPANY.
- PROPOSED NEW PADMOUNT TRANSFORMER. COORDINATE WITH POWER COMPANY. REFER TO ALTERNATE DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION.
- PROPOSED SERVICE ENTRANCE CONDUCTORS. REFER TO ALTERNATE #3 RISER DIAGRAM FOR ADDITIONAL INFORMATION.
- PROPOSED NEW MAIN POWER PEDESTAL. REFER TO ALTERNATE #3 DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION.
- FUTURE LEVEL 3 EV CHARGER. REFER TO ALTERNATE #3 DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION.



D3 PARTIAL ELECTRICAL SITE PLAN - BASE/ALTERNATES
1"=60'



A3 PARTIAL ENLARGED ELECTRICAL SITE PLAN - BASE
1"=20'



UTILITIES SHOWN ON SURVEY WERE LOCATED BASED ON FIELD MARKING PROVIDED BY OURS. REQUEST #A207700537 AND #A207700538.

REV	DATE	DESCRIPTION
	11/03/2022	75% CONSTRUCTION DOCUMENT SET SUBMISSION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
2436 30TH STREET NE.
CANTON, OHIO 44705

ELECTRICAL SITE PLAN
NORTH

ISSUED FOR:	
PERMIT	01/08/2023
BID	01/08/2023
CONSTRUCTION	noted
RECORD	noted
PROJECT MANAGER	DESIGNER
RG	DC

JOB NO.
2020377.06

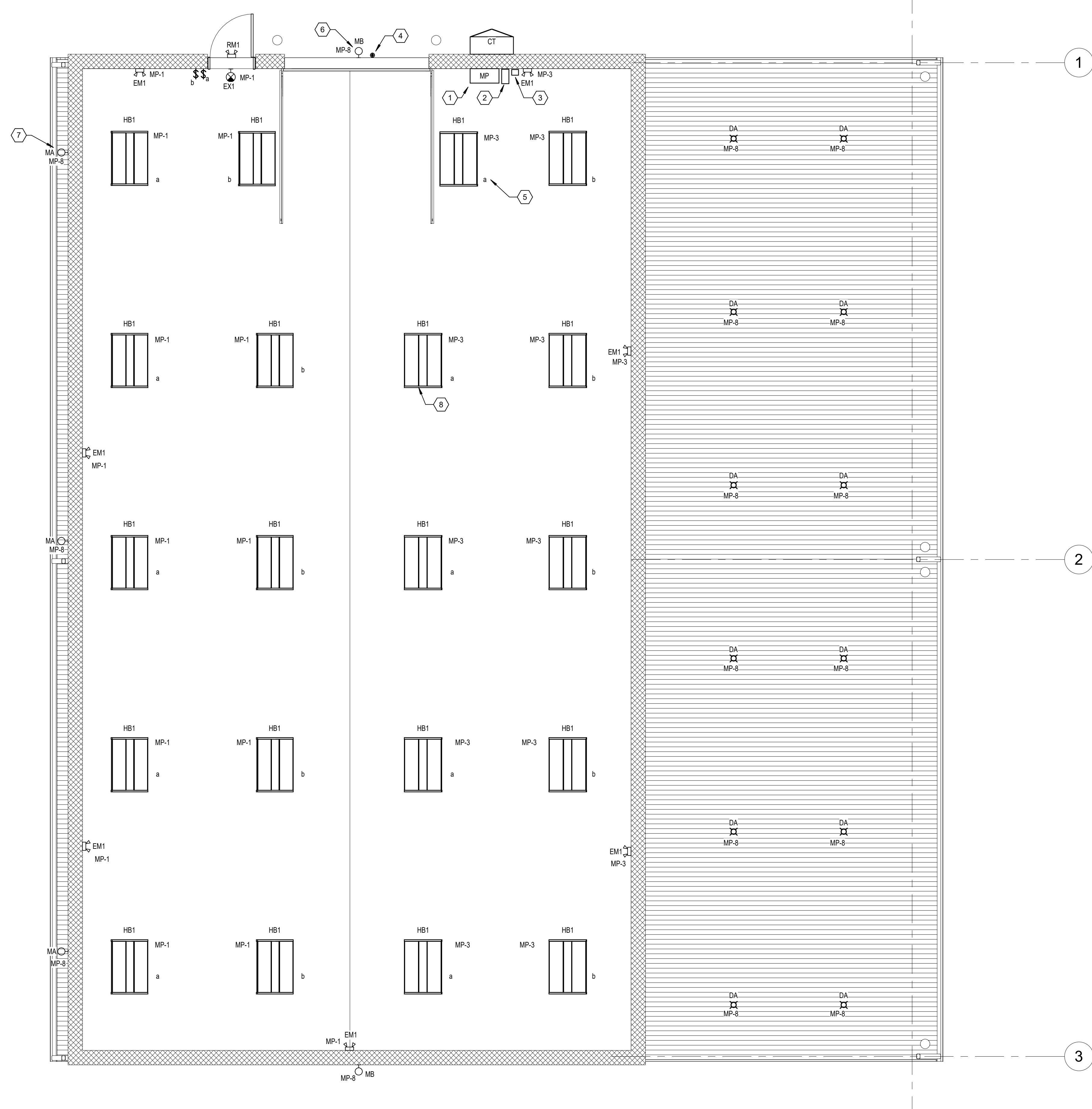
ES-101

GENERAL NOTES

- A. PHASING - SEE PROJECT MANUAL FOR SPECIFIC PHASING INSTRUCTIONS. COORDINATE SHUT-DOWN OF ANY UTILITY IN ADVANCE WITH THE OWNER.
- B. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR SHAFTS SHALL BE SEALED IN ACCORDANCE WITH SPECIFICATIONS.
- C. PROVIDE A NEW BLANK COVERPLATE OVER ALL UNUSED BACKBOXES.
- D. DRAWINGS ARE DIAGRAMATIC AND INDICATE GENERAL ARRANGEMENT ONLY. COORDINATE INSTALLATION WITH OTHER TRADES TO VERIFY THE ACTUAL SPACE CONDITIONS, HEADROOM, ETC. THAT IS TO BE MAINTAINED. NO ADDITIONAL PAYMENT WILL BE APPROVED FOR FAILURE TO COMPLY.
- E. WIRE ALL EXIT SIGNS AND EMERGENCY BATTERY PACKS AHEAD OF LOCAL SWITCHING.

SHEET NOTES

1. NEW MAIN PANEL. REFER TO RISER DIAGRAM AND SCHEDULE FOR ADDITIONAL INFORMATION.
2. NEW LIGHTING CONTACTOR. REFER TO SITE LIGHTING CONTROL DIAGRAM.
3. NEW TIMECLOCK. REFER TO SITE LIGHTING CONTROL DIAGRAM.
4. PHOTOCELL. INSTALLED PER MANUFACTURERS REQUIREMENTS. REFER TO SITE LIGHTING CONTROL DIAGRAM.
5. LOWER CASE LETTER DENOTES SWITCHING ARRANGEMENT, TYP.
6. MOUNT AT 14'-0" TYP.
7. MOUNT AT 6'-0" TYP OF 3.
8. FIXTURE MOUNTED FROM GIRDER, TYP.



LIGHTING FIXTURE SCHEDULE

FIXTURE TAG	LAMP	DESCRIPTION	VOLTAGE	WATTS	MANUFACTURER	CATALOG NUMBER	COLOR TEMP.	FIXTURE COLOR	MOUNTING	REMARKS
DA	LED	6" DIA. LED DOWNLIGHT WITH SPRUN ALUMINUM OWER REFLECTOR, LENSED UPPER OPTICAL CHAMBER, UNIVERSAL MOUNTING BRACKET, MEDIUM BEAM, SELF FLANGED, SEMI SPECULAR FINISH, UNIVERSAL VOLTAGE.	120VOLT	28 VA	COOPER PORTFOLIO	LD8820D10 EU8810208940 6LBM1H	4000		RECESSED	PROVIDE ADDITIONAL BRACING BETWEEN TRUSSES AS REQUIRED TO SUPPORT LIGHTS.
EM1	LED	LED BATTERY PACK INJECTION MOLDED, COLOR STABLE, HIGH IMPACT THERMOPLASTIC HOUSING, SEALED NICKEL CADMIUM BATTERY, ADJUSTABLE LED HEADS AND DUAL VOLTAGE OPERATION.	120VOLT	5 VA	SURE LITES	APSL4ED	NA	WHITE	WALL	
EX1	LED	SINGLE FACE COMBINATION EXIT, AC ONLY, RED UNIFORMELY ILLUMINATED FACE, POLYCARBONATE HOUSING, UNIVERSAL, ARROWS AND MTC, WHITE FINISH (U.O.N.) AND UL 924 LISTED. PROVIDE WEATHER-PROOF RATED TYPE FOR EXTERIOR APPLICATIONS.	120VOLT	5 VA	SURELITE	APC-H-7-R-SQ	NA	WHITE	WALL	
HB1	LED	PREMIUM FULL BODY LED HIGH BAY WITH PAINTED STEEL HOUSING, 122K L70, DAMP LISTED, 80 CR, CHAIN MOUNT KIT AND UNIVSAL VOLTAGE.	120VOLT	87 VA	CONTRACTOR LIGHTING AND SUPPLY	20LEDFBH904KMVDIAV2	4000	WHITE	SUSPENDED, CHAIN	6" CHAIN HUNG, PROVIDE ADDITIONAL BRACING BETWEEN TRUSSES AS REQUIRED TO SUPPORT LIGHTS.
MA	LED	OUTDOOR WALL MTD TRAPEZOID LED FIXTURE W/ DIE-CAST SINGLE PIECE AL HOUSING, TYPE 4 SPILL CONTROL DISTRIBUTION, CORROSION RESISTANCE, UL LISTED FOR WET LOCATIONS, AND 20" F STARTING ELECTRONIC BALLAST. CUSTOM FINISH OF LUMINAIRE SHALL BE SELECTED BY ARCHITECT. 4000K COLOR TEMPERATURE.	120 V	38 VA	COOPER	IST SA1 600 740 USL4 BZ	4000	BRONZE	SURFACE, WALL	
MB	LED	OUTDOOR WALL MTD TRAPEZOID LED FIXTURE W/ DIE-CAST SINGLE PIECE AL HOUSING, TYPE 4 SPILL CONTROL DISTRIBUTION, CORROSION RESISTANCE, UL LISTED FOR WET LOCATIONS, AND 20" F STARTING ELECTRONIC BALLAST. CUSTOM FINISH OF LUMINAIRE SHALL BE SELECTED BY ARCHITECT. 4000K COLOR TEMPERATURE.	120 V	38 VA	COOPER	IST SA1 1000 740 USL4 BZ	4000	BRONZE	SURFACE, WALL	
RM1	LED	LED REMOTE EMERGENCY BATTERY HEADS, INJECTION MOLDED THERMOPLASTIC, FLAME RESISTANT, IMPACT RESISTANT, WET LISTED.	120VOLT	5 VA	SURE LITES	APWR2	NA	WHITE	WALL	

LIGHTING FIXTURE SCHEDULE NOTES

1. E.C. SHALL VERIFY CEILING TYPES AND DETERMINE PROPER MOUNTING HARDWARE PRIOR TO ORDERING FIXTURES.
2. BATTERIES FOR SELF-CONTAINED EXIT SIGNS, EMERGENCY EGRESS LIGHTING FIXTURES, REMOTE EMERGENCY LIGHT UNIT, OR EMERGENCY LIGHT UNITS SHALL BE SIZED TO PROVIDE A MINIMUM OF 90 MINUTES OF ILLUMINATION.

DESCRIPTION	
DATE	
REV.	

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ELECTRICAL - LIGHTING PLAN

DATE:	01/06/2023
PERMIT:	01/06/2023
BID:	01/06/2023
CONSTRUCTION:	---
RECORDED:	---
PROJECT MANAGER:	DESIGNER:
RG	DC

JOB NO.
2020377.06

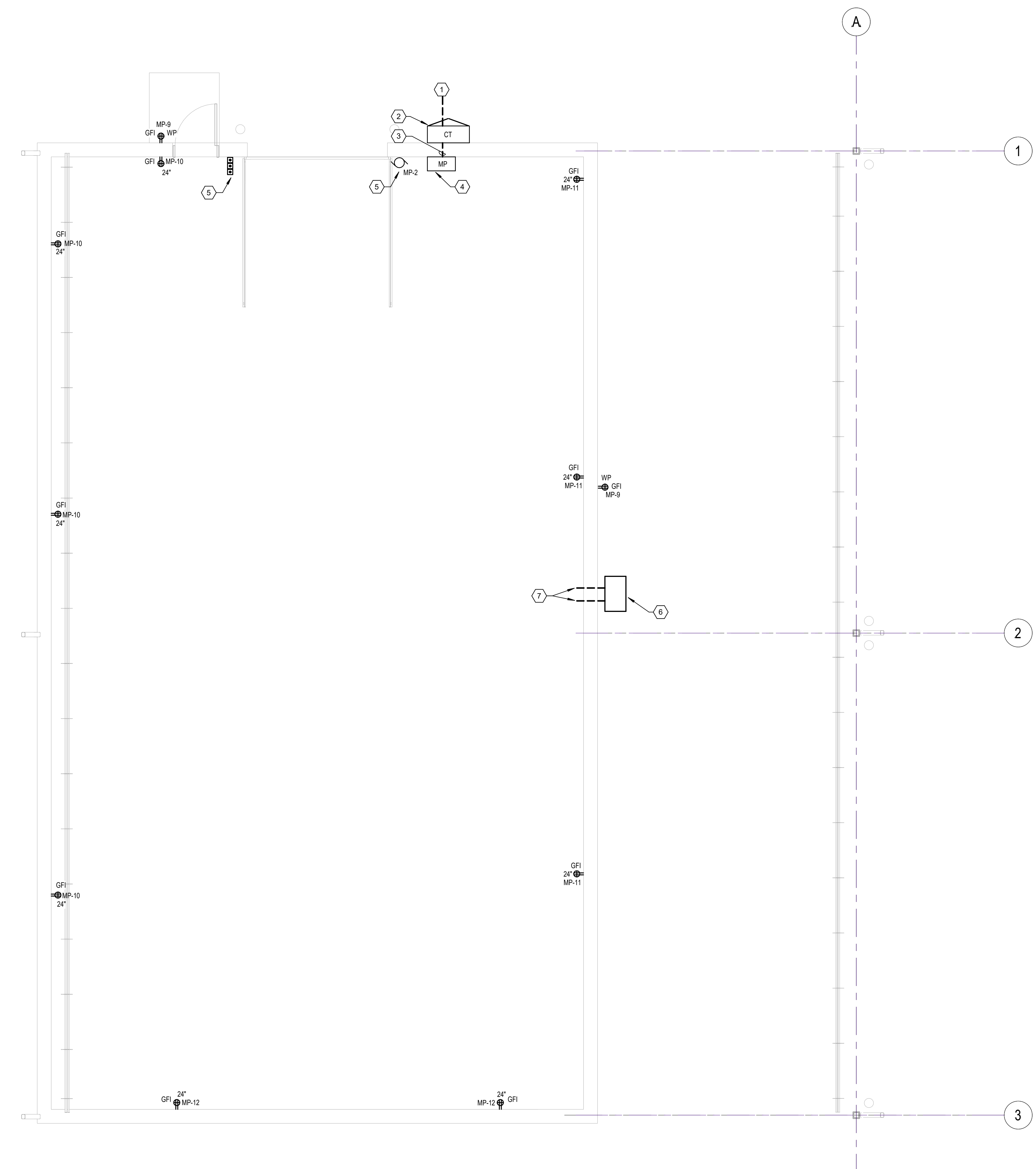
E-101

GENERAL NOTES

- A. PHASING - SEE PROJECT MANUAL FOR SPECIFIC PHASING INSTRUCTIONS. COORDINATE SHUT-DOWN OF ANY UTILITY IN ADVANCE WITH THE OWNER.
- B. WHERE STRUCTURAL OPENINGS ARE NOT AVAILABLE, THE E.C. SHALL CORE DRILL OR CUT AND CHASE WALLS AND FLOORS AS REQUIRED FOR NEW CONDUITS AND RACEWAYS. E.C. SHALL SEAL OPENINGS WATERPROOF OR FIREPROOF, TO RATINGS OF STRUCTURE PENETRATED. ALL OPENINGS WITH MATERIALS AS DIRECTED BY THE ARCHITECT AND FINISH TO MATCH SURROUNDING AREAS. ALL OPENINGS REQUIRED SHALL BE APPROVED BY THE ARCHITECT PRIOR TO DEMOLITION OR CORE DRILLING.
- C. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR SHAFTS SHALL BE SEALED IN ACCORDANCE WITH SPECIFICATIONS.
- D. PROVIDE A NEW BLANK COVERPLATE OVER ALL UNUSED BACKBOXES.
- E. THE PHRASE "PROVIDED BY" USED WITHIN THESE DOCUMENTS SHALL EXPLICITLY REPRESENT FURNISHED AND INSTALLED BY.
- F. ALL WIRING SHALL BE INSTALLED IN CONDUIT. ALL CONDUIT SHALL BE A MINIMUM OF 3/4".
- G. ALL CONDUCTORS SHALL BE COPPER.
- H. CIRCUITS SHALL BE REARRANGED AS REQUIRED TO MAINTAIN THE MOST BALANCED LOADS ON EACH PHASE WITHIN EACH PANEL. E.C. SHALL PROVIDE A TYPED PANELBOARD SCHEDULE AND INSTALL IT ON INSIDE COVER OF EACH PANEL.
- I. DRAWINGS ARE DIAGRAMATIC AND INDICATE GENERAL ARRANGEMENT ONLY. COORDINATE INSTALLATION WITH OTHER TRADES TO VERIFY THE ACTUAL SPACE CONDITIONS, HEADROOM, ETC. THAT IS TO BE MAINTAINED. NO ADDITIONAL PAYMENT WILL BE APPROVED FOR FAILURE TO COMPLY.
- J. WIRE SIZE OF BRANCH CIRCUITS SHALL BE ADJUSTED TO COMPENSATE FOR VOLTAGE DROP BASED UPON ACTUAL CONDUIT ROUTING. E.C. SHALL MAINTAIN VOLTAGE DROP AS RECOMMENDED BY NEC (NOT TO EXCEED 3%).
- K. LABEL RECEPTACLES AND JUNCTION BOXES WITH CIRCUIT/PANEL PER OWNER REQUIREMENTS.
- L. ALL WIRING SHALL BE #12 WITH GROUND WIRE UON (INCREASE TO #10 FOR CIRCUITS OVER 75 FT).
- M. ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH A SEPARATE NEUTRAL CONDUCTOR. NEUTRALS SHALL NOT BE SHARED PER 2017 NEC 210.4 (B).

SHEET NOTES

- 1. NEW PROPOSED UNDERGROUND TO UTILITY POLE. REFER TO ELECTRICAL SITE PLAN FOR CONTINUATION AND DETAILS FOR ADDITIONAL INFORMATION.
- 2. NEW SELF CONTAINED METER BASE. REFER TO ELECTRICAL SITE PLAN FOR CONTINUATION AND DETAILS FOR ADDITIONAL INFORMATION.
- 3. NEW SERVICE ENTRANCE. REFER TO ELECTRICAL RISER DIAGRAM FOR ADDITIONAL INFORMATION.
- 4. NEW MAIN PANEL. REFER TO ELECTRICAL RISER DIAGRAM FOR ADDITIONAL INFORMATION.
- 5. NEW OVERHEAD DOOR OPERATOR (120V, 1PH) WITH INTEGRATED DOOR OPERATOR PUSHBUTTON. CONTRACTOR TO INSTALL AND WIRE BUTTON. VERIFY EXACT REQUIREMENTS WITH MANUFACTURER. COORDINATE ROUGHIN LOCATION IN FIELD PRIOR TO INSTALLATION. CONTRACTOR TO INSTALL ALL REQUIRED COMPONENTS, INCLUDING SENSORS, SWITCHES, ETC AND ALL ASSOCIATED POWER AND CONTROL WIRING FOR COMPLETE WORKING SYSTEM.
- 6. FUTURE DUAL STATION LEVEL 2 EV CHARGER (27.2KW 208V 1PH). STUB (1) 1-1/2" CONDUIT FOR EACH CHARGER AND CAP IT BY CHARGER PARKING LOCATION. PENETRATE BUILDING AND EXTEND CONDUITS TO PANEL. REFER TO RISER DIAGRAM FOR ADDITIONAL INFORMATION. COORDINATE PENETRATION WITH STRUCTURE AND SEAL WATERTIGHT.
- 7.



1 FIRST FLOOR POWER PLAN
 N.T.S.

REV.	DATE	DESCRIPTION

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ELECTRICAL - POWER PLAN

	DATE:
PERMIT	01/06/2023
BID	01/06/2023
CONSTRUCTION	-/-/-
RECORDED	-/-/-
PROJECT MANAGER	DESIGNER
RG	DC

JOB NO.
2020377.06

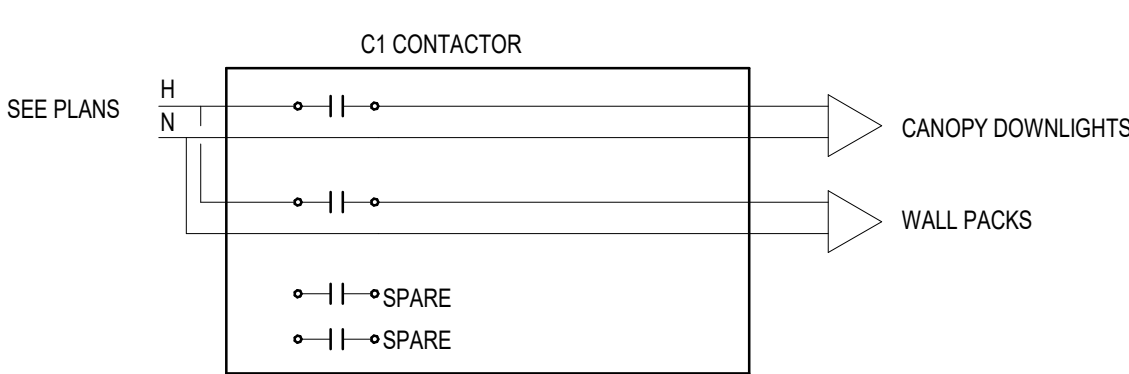
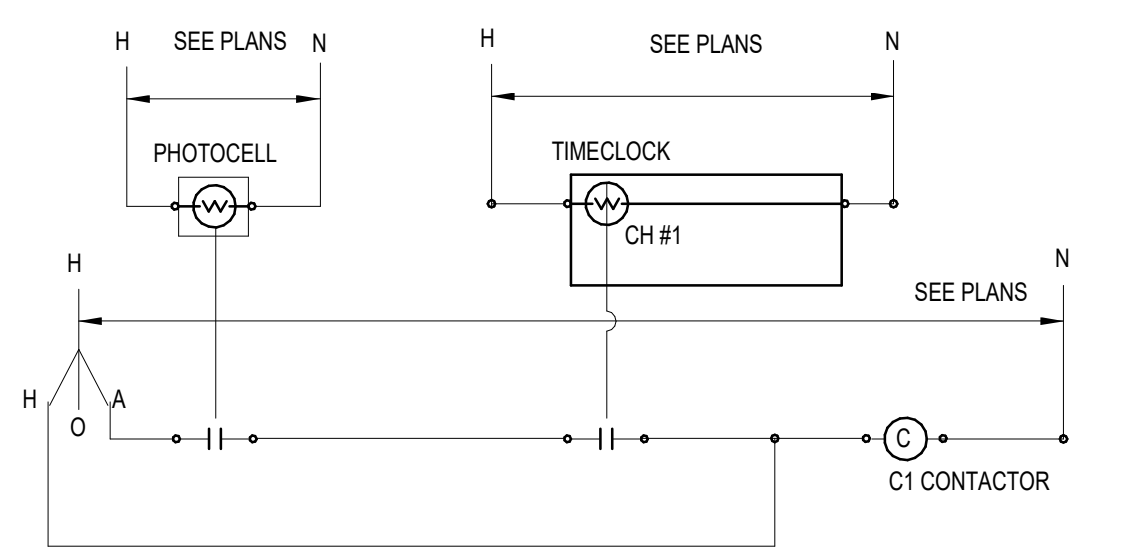
E-201

SERVICE GROUNDING DETAIL KEYNOTES:

- #4 AWG CU AWG GROUNDING ELECTRODE CONDUCTOR(S) SHALL BE CONNECTED TO AN APPROVED GROUNDING ELECTRODE.
- #4 AWG GROUNDING JUMPER BONDED TO SYSTEM.
- SERVICE ENTRANCE CONDUCTORS WITH GROUNDED (NEUTRAL) CONDUCTOR
- #4 AWG CU AWG MAIN BONDING JUMPER.
- #6 AWG SOLID COPPER GROUNDING JUMPER TO BE TERMINATED ON TELEPHONE BACKBOARD.
- INCOMING SERVICE FROM UTILITY COMPANY TRANSFORMER WITH SECONDARY GROUNDING PER UTILITY COMPANY REQUIREMENTS AND TRANSFORMER GROUNDING DETAIL THIS SHEET.
- BOND SERVICE ENTRANCE MADE ELECTRODE GROUND MAT TO SERVICE ENTRANCE OVERCURRENT PROTECTIVE DEVICE VIA TEST WELL PER TECHNICAL SPECIFICATIONS.
- 10' X 34" COPPER CLAD GROUND RODS IN EARTH.
- BOND CONCRETE ENCASED ELECTRODE (REBAR) TO BUILDING STEEL WITH #4 AWG MINIMUM PER NEC 250.52.
- CONCRETE ENCASED ELECTRODE (REBAR) PER NEC 250.52.
- CADWELDED EXOTHERMIC CONNECTION (TYPICAL).
- EFFECTIVELY GROUNDING BUILDING STEEL COLUMN PER NEC 250.52.
- STEEL BASE PLATE.
- BASE PLATE NUT AND ANCHOR BOLT INTO REINFORCED CONCRETE PIER OR FOOTING. ANCHOR BOLT BONDED TO CONCRETE REINFORCING.
- MAIN SERVICE SWITCH OR DISTRIBUTION PANEL BOARD.
- SERVICE ENTRANCE MADE ELECTRODE GROUND MAT (SEE DETAIL THIS SHEET) 10' X 34" COPPER CLAD GROUND RODS IN EARTH. QUANTITY AS REQUIRED TO MEET OR EXCEED NEC 250.56 OR AS OTHERWISE STATED ON THE DRAWINGS AND/OR SPECIFICATIONS WHICHEVER IS MORE RESTRICTIVE.
- ENCLOSURE GROUND.

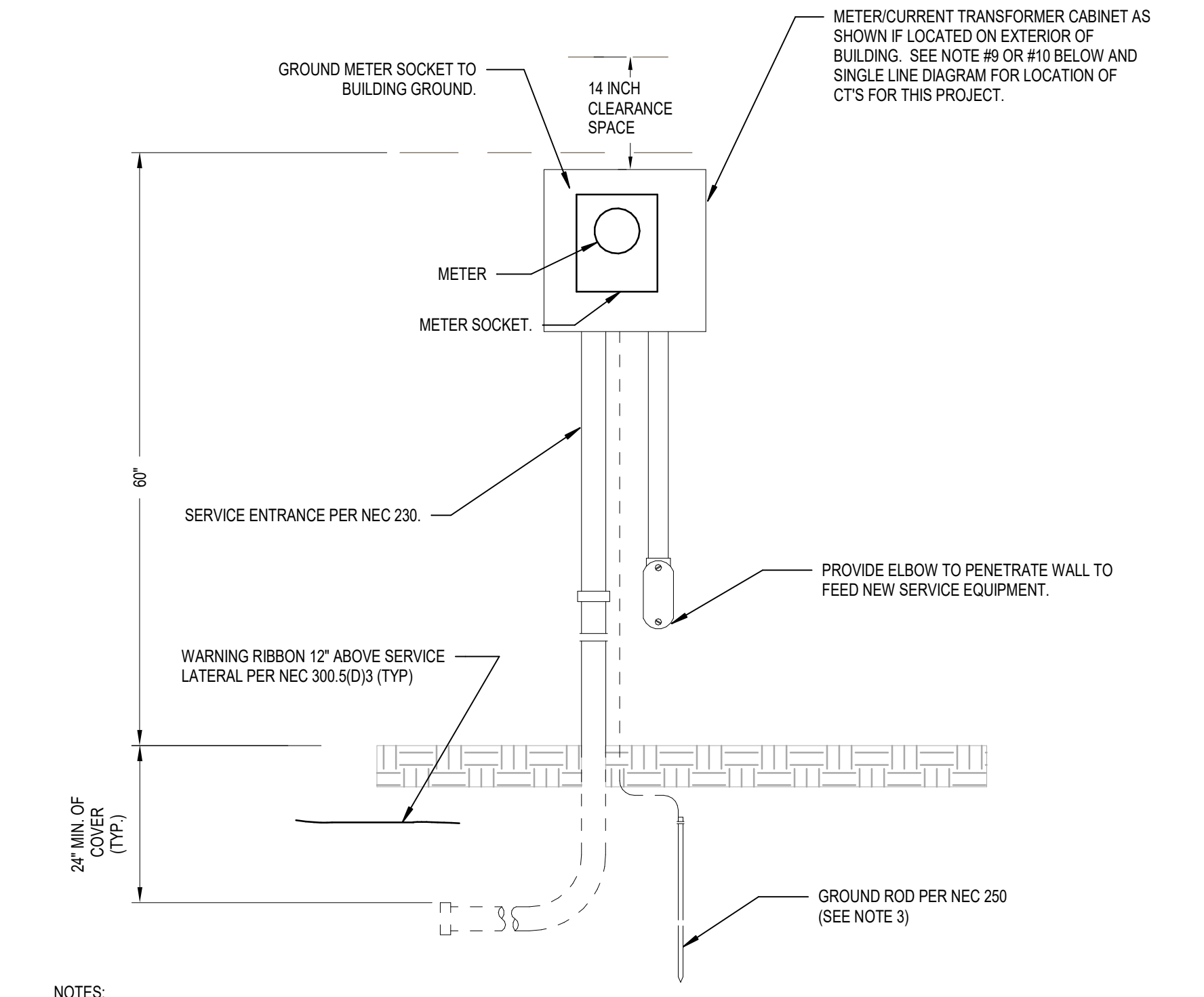
CONTACTOR SCHEDULE						
NUMBER	COIL VOLTAGE	CONTACTOR AMPERAGE	CONTACTOR VOLTAGE	QUANTITY OF POLES	CONTROL	REMARKS
C1	120	20	300	4(2 SPARE)	PHOTOCELL ON/TIMECLOCK OFF (CHANNEL #1)	PARKING LOT LIGHTING

NOTES:
 1. REFER TO SITE LIGHTING CONTROLS DETAIL FOR INDIVIDUAL CIRCUITS CONTROLLED BY CONTACTORS.
 2. PROVIDE NEMA 1 ENCLOSURE SIZED TO ACCOMMODATE THE CONTACTORS LISTED.



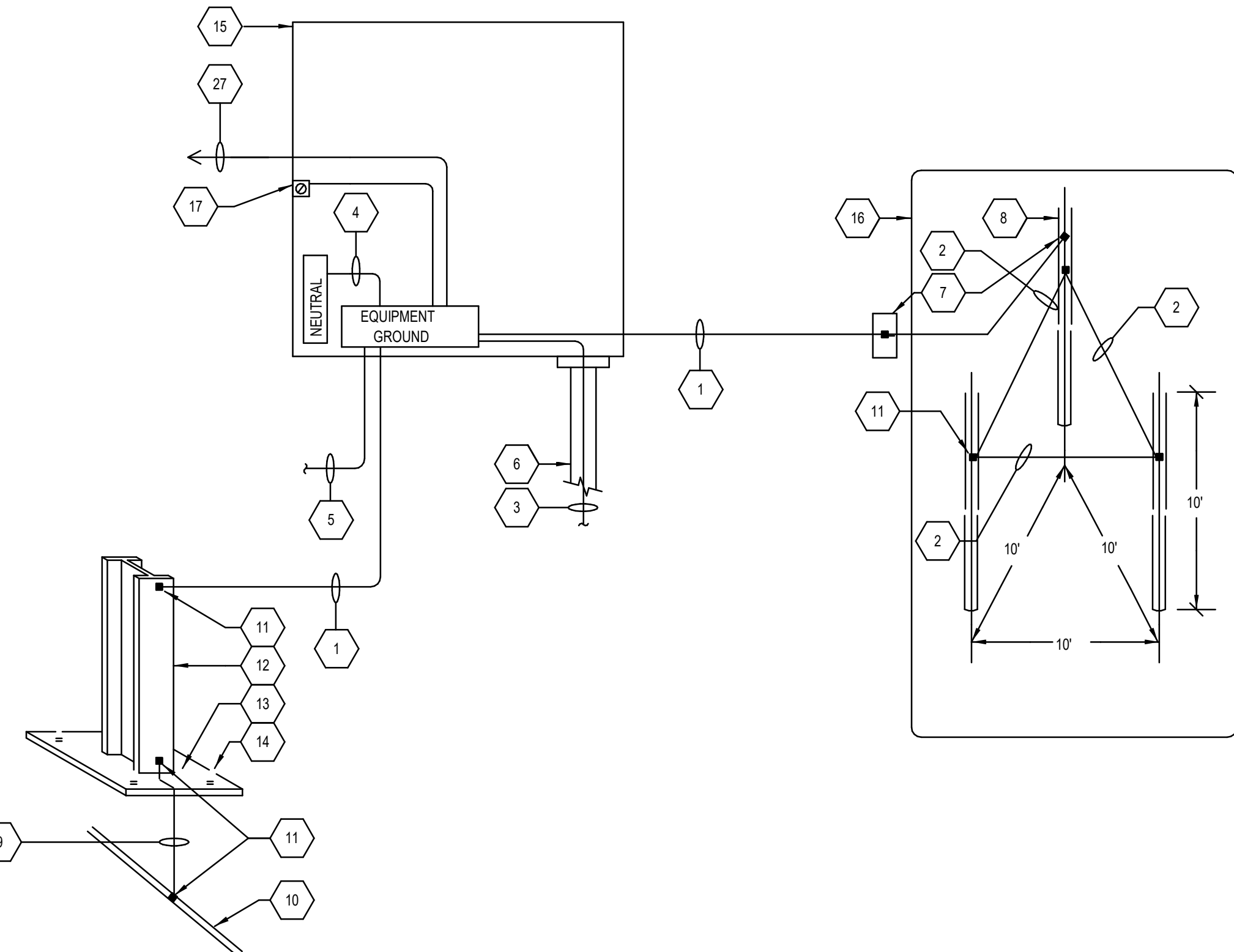
- NOTES:
- PROVIDE TORK #2001 SERIES AIMABLE PHOTOCELL OR APPROVED EQUAL (120V).
 - PROVIDE TORK 1 CHANNEL DIGITAL TIMECLOCK WITH 365 DAY SEASONAL SCHEDULING, ASTRONOMIC OPTION, LITHIUM BATTERY BACKUP, 120V OR APPROVED EQUAL.
 - ONE HAND-OFF-AUTO FOR SHARED OVERRIDE OF BOTH CHANNELS.
 - REFER TO CONTACTOR SCHEDULE FOR ADDITIONAL INFORMATION.

D1 SITE LIGHTING CONTROLS
 N.T.S.

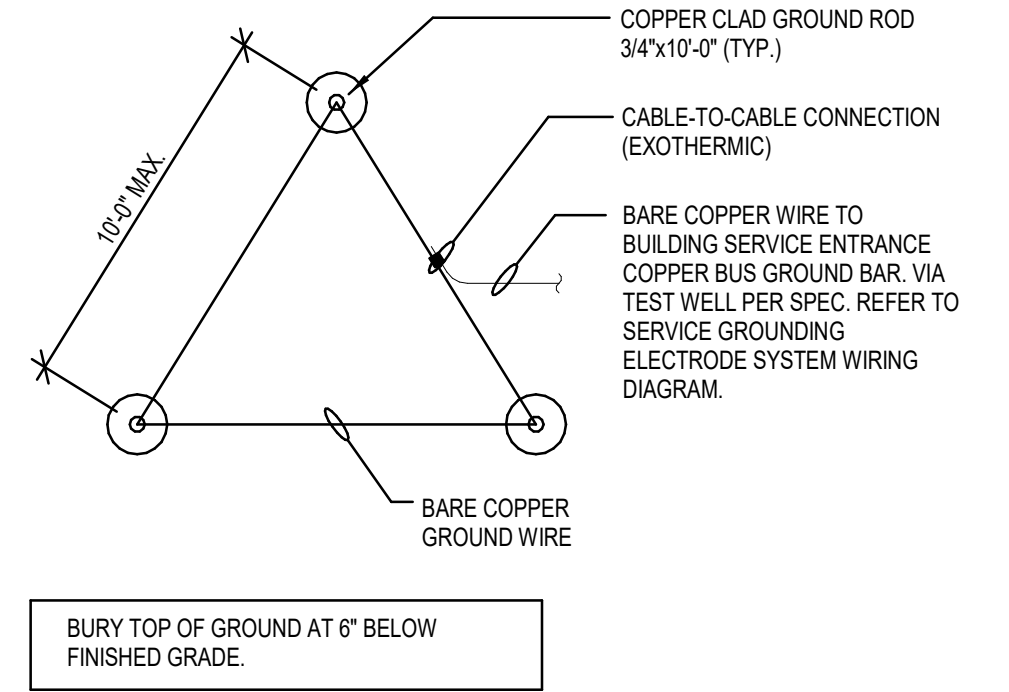


- NOTES:
- BOND AND GROUND ACCORDING TO NEC 250.
 - PROVIDE WORKING SPACE AS SPECIFIED IN NEC 110.
 - METER SOCKET MAY BE CONNECTED TO AN EXTERNAL GROUND ROD IF REQUIRED BY LOCAL INSPECTION AUTHORITIES.
 - CUSTOMER MAY BE REQUIRED TO PROVIDE A TELEPHONE LINK TO THE METER SOCKET LOCATION. CONTACT THE METER MANAGER.
 - WHERE METER IS EXPOSED TO VEHICLE TRAFFIC, CUSTOMER SHALL INSTALL PROTECTIVE BUMPER POSTS 36" FROM METER. POST SHALL BE 6" RIGID GALVANIZED STEEL PIPE FILLED WITH CONCRETE AND PAINTED BRIGHT YELLOW.
 - CABINET TO BE INSTALLED ON EXTERIOR BUILDING WALL.
 - SEE MATRIX BELOW FOR E.C./UTILITY COMPANY RESPONSIBILITIES.
 - NO CONDUIT SHALL ENTER TOP OF CABINET.
 - FOR SERVICES SMALLER THAN 2,400 AMPERES, WINDOW-TYPE CTS MAY BE MOUNTED IN A BUS STRUCTURE (SWITCHBOARD SECTION BY THE EQUIPMENT MANUFACTURER). THE CT COMPARTMENT SHALL HAVE A HINGED LOCKABLE DOOR. OHIO EDISON'S METERING DEPARTMENT SHALL REVIEW AND APPROVE DESIGN/CONSTRUCTION DRAWINGS PRIOR TO ORDERING EQUIPMENT AND SHALL BE CONSULTED DURING CONSTRUCTION BY THE E.C. FOR EXACT LOCATION OF THE METER AND THE FACILITIES REQUIRED.
 - FOR SERVICES EXCEEDING 2,400 AMPERES, THE E.C. SHALL PROVIDE A SWITCHGEAR ENCLOSURE FOR METERING BASED UPON OHIO EDISON'S STANDARDS WITH A FIVE (5) INCH MAXIMUM BUS DIMENSION TO ALLOW FOR WINDOW TYPE CTS.

UNDERGROUND SERVICE MATERIAL GUIDELINES AND RESPONSIBILITY MATRIX		
MATERIAL	SUPPLIED BY	INSTALLED BY
SERVICE LATERAL	E.C.	E.C.
TRENCH / BACKFILL	E.C.	E.C.
SERVICE ENTRANCE	E.C.	E.C.
RISER - CONDUIT	E.C.	E.C.
CONNECTORS AT TRANSFORMER OR HAND HOLE	E.C.	E.C.
CONNECTORS AT SERVICE EQUIPMENT	E.C.	E.C.
CURRENT TRANSFORMERS FOR USE IN CT CABINET	AEP	E.C. SEE NOTE #1 BELOW.
CT CABINET (IF APPLICABLE)	E.C.	E.C.
METERING CONDUCTORS	AEP	AEP
METERING CONDUIT	E.C.	E.C.
TRANSFORMER-RATED METER SOCKET.	AEP	E.C. SEE NOTE #1 BELOW.
METER	AEP	AEP

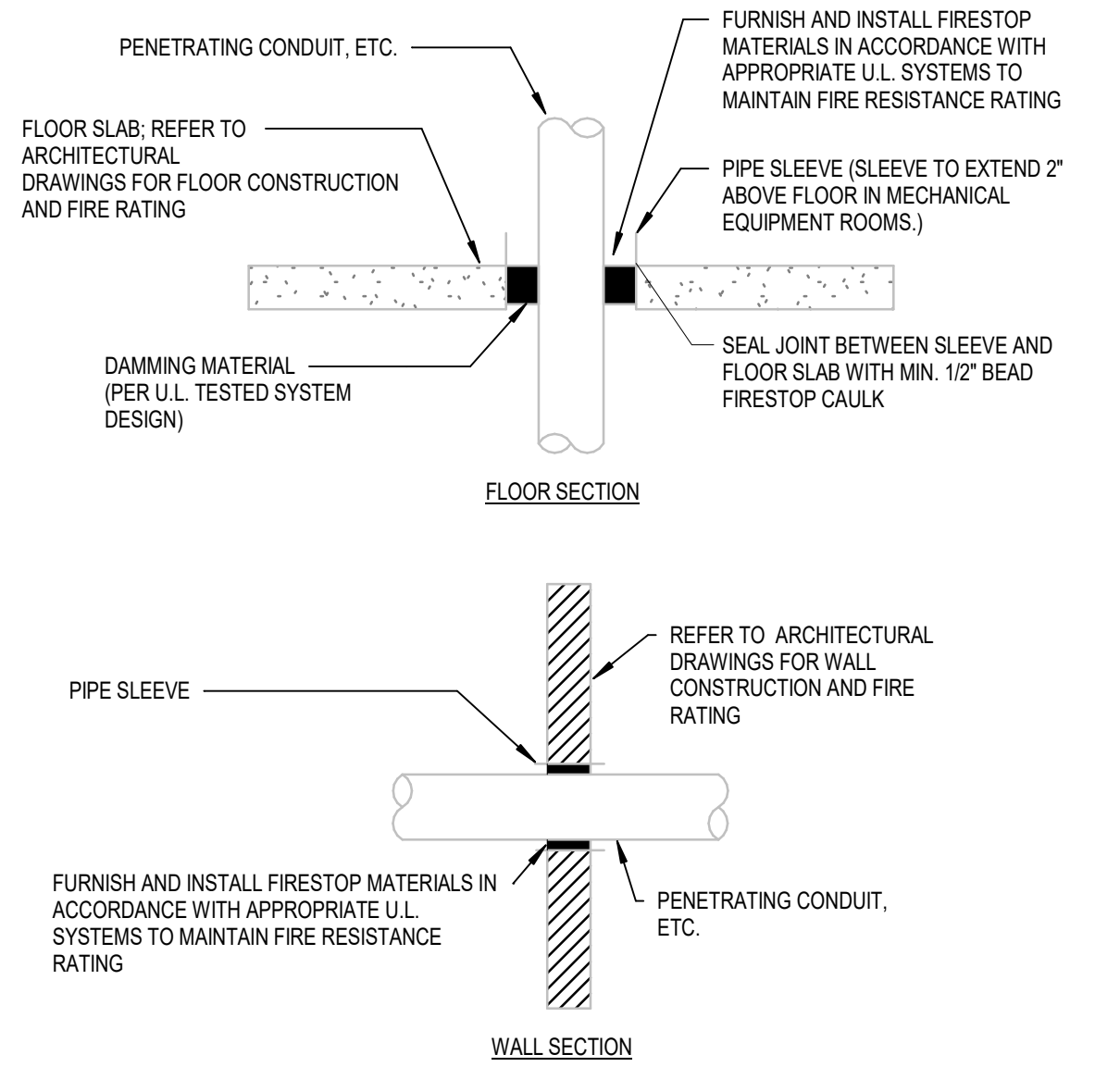


C4 SERVICE GROUNDING ELECTRODE SYSTEM WIRING DIAGRAM
 N.T.S.



B3 UNDERGROUND SERVICE WITH OUTDOOR METER INSTALLATION
 N.T.S.

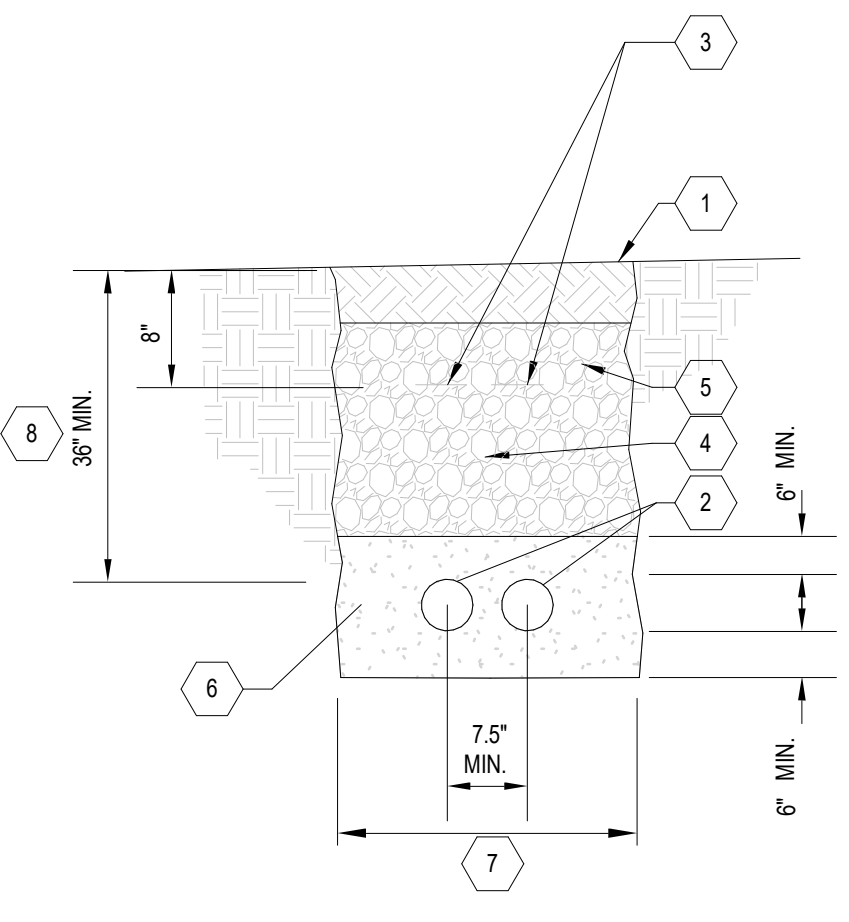
B1 SERVICE ENTRANCE MADE ELECTRODE GROUND MAT DETAIL
 N.T.S.



A1 FIRESTOPPING DETAIL FOR PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION
 N.T.S.

- NOTES:
- WHERE CONDUIT, CABLES AND OTHER COMPONENTS PASS THROUGH FIRE OR SMOKE RATED WALLS OR FLOORS, PROVIDE NON-ASBESTOS SEAL ASSEMBLIES CLASSIFIED BY U.L. TO PROVIDE FIRE BARRIERS EQUAL TO OR GREATER THAN THE TIME RATING OF THE CONSTRUCTION BEING PENETRATED, WITH APPROPRIATE MATERIALS AND SYSTEMS THAT COMPLY WITH APPLICABLE CODES AND THAT HAVE BEEN TESTED IN ACCORDANCE WITH U.L. 1470 OR ASTM E114.
 - GROUT, MORTAR OR GYPSUM BASED PRODUCTS SHALL NOT BE INSTALLED IN LIEU OF FIRESTOPPING MATERIALS AND U.L. SYSTEMS.
 - FOR SLEEVED PENETRATIONS, FIRESTOP ANNUAL SPACE, IF ANY, BETWEEN SLEEVE AND ADJACENT CONSTRUCTION TO MEET U.L. SYSTEM REQUIREMENTS. SEE NOTE 2 ABOVE.
 - THIS CONTRACTOR SHALL FIRESTOP ALL MISCELLANEOUS OPENINGS IN FIRE-RATED CONSTRUCTION RESULTING FROM HIS WORK.
 - CONTRACTOR SHALL PROVIDE SUBMITTAL DRAWINGS TO ENGINEER, INCLUDING U.L. RATED SYSTEM NUMBER AND DETAIL FOR EACH TYPE OF PENETRATION AND CONFIGURATION.
 - SLEEVES USED FOR CABLE RISERS THROUGH FLOORS OR WALLS SHALL BE INSTALLED PER THE ABOVE FLOOR OR WALL SECTIONS. IN ADDITION, FIRESTOP MATERIAL SHALL BE PROVIDED INSIDE SLEEVE AFTER CABLES ARE COMPLETELY INSTALLED.

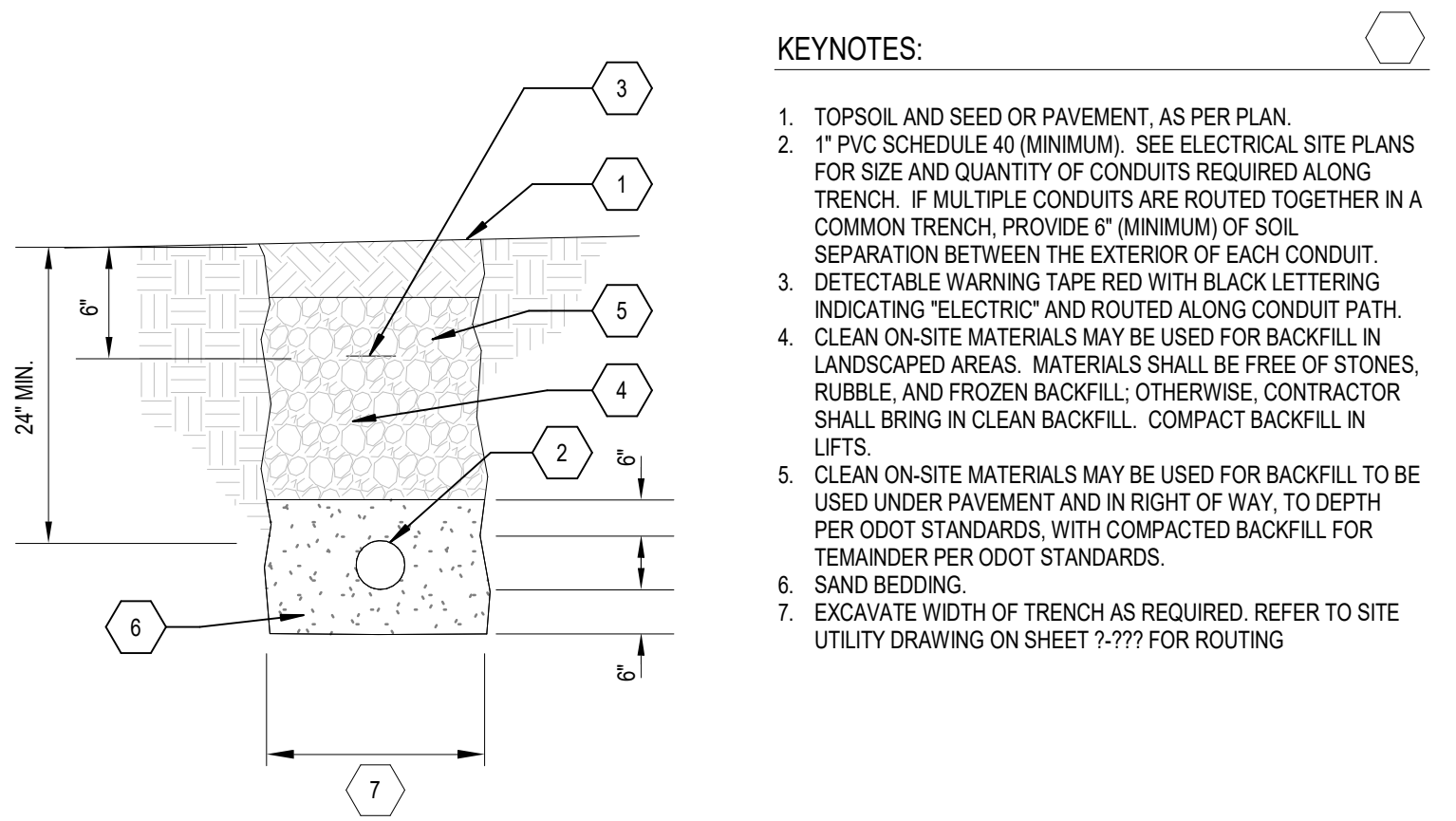
SERVICE	UL FIRE STOP SYSTEMS FOR 1 AND 2 HOUR RATED WALL AND FLOOR ASSEMBLIES		
	GYPSUM WALL PENETRATION	CONCRETE/MASONRY WALL PENETRATION	CONCRETE FLOOR PENETRATION
GRC CONDUIT (NOMINAL < 8" DIA.)	WL1049	WS1055	CAJ1079
EAT CONDUIT (NOMINAL < 4" DIA.)	WL1049	WS1055	CAJ1079
PVC CONDUIT/INNER DUCT (< 2" DIA.)	WL2093	WJ2018	CAJ2031
CABLES (MAX. 3" DIA. CABLE BUNDLE)	WL3078	WJ3022	CAJ3133
CABLE TRAYS	WL4005	WJ4009	CAJ4029
BUS DUCT	WL6001	CAJ6008	CAJ6008



A3 SERVICE SECONDARY - ELECTRIC SERVICE TRENCH
 N.T.S.

KEYNOTES:

- TOPSOIL AND SEED OR PAVEMENT, AS PER PLAN.
- 2" 2" PVC SCHEDULE 80 CONDUITS WITH NYLON PULLSTRINGS FROM UTILITY TRANSFORMER TO UTILITY DIP POLE. E.C. SHALL TRANSITION BELOW GRADE FROM PVC TO RGS FOR CONDUIT STUB-UPS AT BASE OF UTILITY POLE. CAP BOTH CONDUITS UNTIL USED (ONE REMAINS CAPPED FOR SPARE). E.C. SHALL PROVIDE RISERS AND MOUNTING HARDWARE UP POLE AS DIRECTED BY UTILITY COMPANY. E.C. SHALL COORDINATE MATERIALS PROVIDED BY UTILITY COMPANY AND WORK PERFORMED BY CONTRACTOR FOR COMPLETE COVERAGE IN BASE BID. PROVIDE CONDUITS IN CONCRETE ENCASUREMENT WHERE ROUTED UNDER ANY DRIVEWAY, ROADWAY, AND PARKING LOTS AND SHALL EXTEND 5' PAST EACH EDGE. CONCRETE ENCASUREMENT SHALL BE 10" W X 12" D UNLESS OTHERWISE DIRECTED BY UTILITY COMPANY.
- DETECTABLE WARNING TAPE RED WITH BLACK LETTERING INDICATING "ELECTRIC" AND ROUTED ALONG CONDUIT PATH.
- CLEAN ON-SITE MATERIALS MAY BE USED FOR BACKFILL IN LANDSCAPED AREAS. MATERIALS SHALL BE FREE OF STONES, RUBBLE AND FROZEN BACKFILL. OTHERWISE, CONTRACTOR SHALL BRING IN CLEAN BACKFILL. COMPACT BACKFILL IN LIFTS.
- GRANULAR BACKFILL (DOT ITEM 304 LIMESTONE) TO BE USED UNDER PAVEMENT AND IN RIGHT OF WAY. TO A DEPTH PER DOT STANDARDS. WITH COMPACTED BACKFILL FOR REMAINDER PER DOT STANDARDS.
- SAND BEDDING.
- EXCAVATE WIDTH OF TRENCH AS REQUIRED. REFER TO SITE ELECTRICAL DRAWING FOR ROUTING AND SINGLE LINE DIAGRAM FOR MORE DETAILS.
- VERIFY DEPTH WITH UTILITY COMPANY PRIOR TO COMMENCING TRENCHING.



E1 MISC. ELECTRIC BRANCH CIRCUIT/FEEDER TRENCH DETAIL
 N.T.S.

DESCRIPTION
DATE
REV.

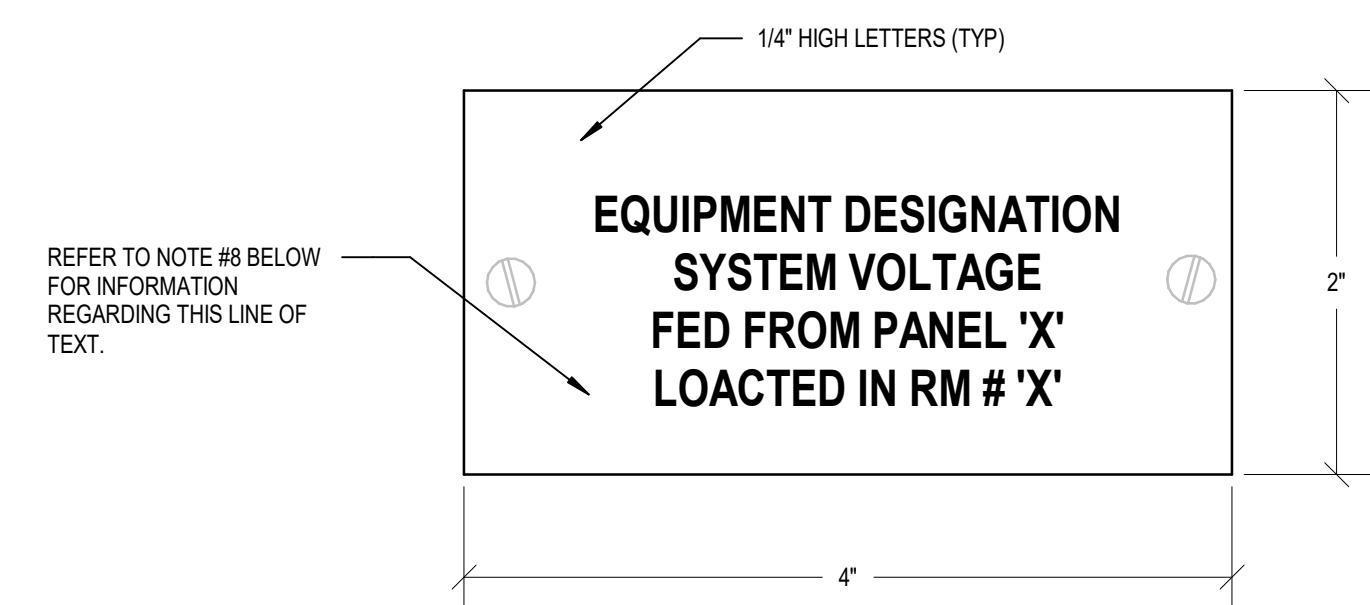
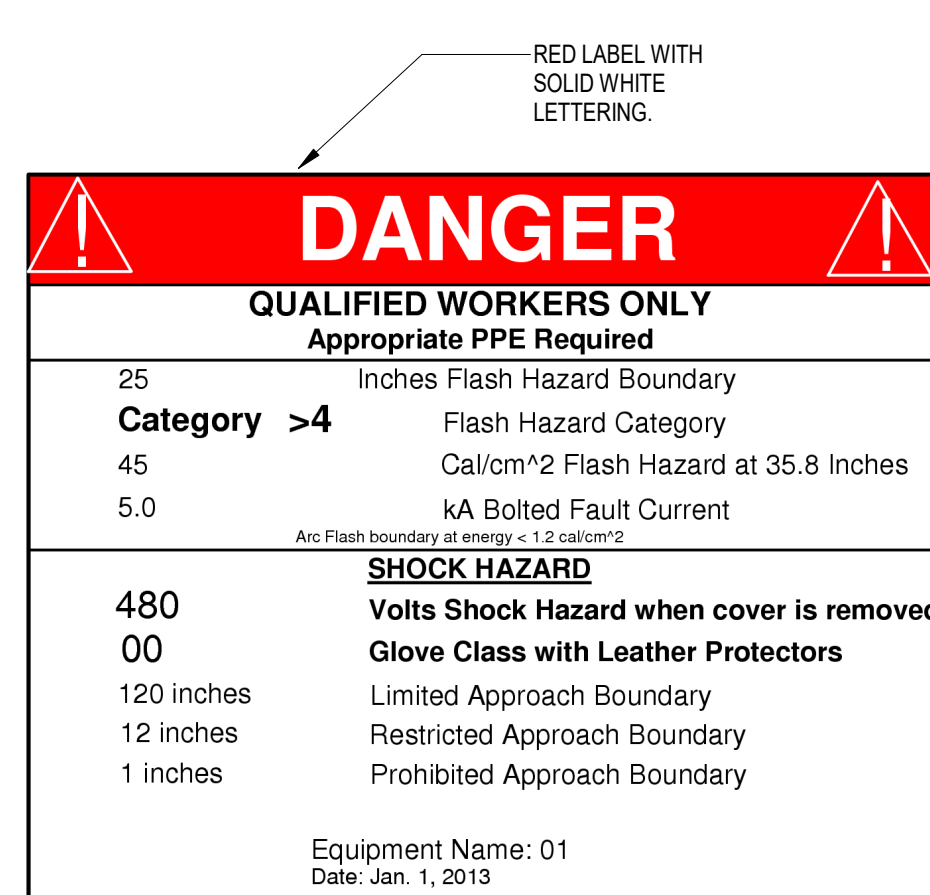
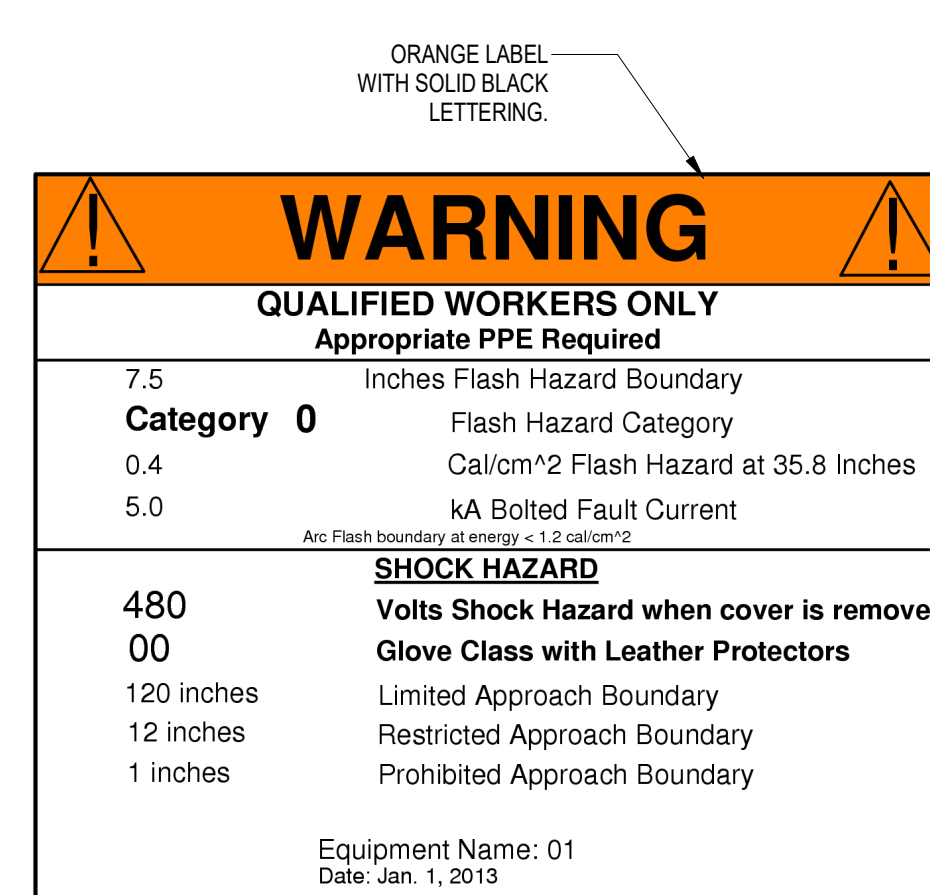
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ELECTRICAL DETAILS

DATE:	
PERMIT	01/06/2023
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PROJECT MANAGER	DESIGNER
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E-501



- NOTES:**
1. PROVIDE LAMOCOID NAMEPLATE ENGRAVED WITH WHITE LETTERS.
 2. NAMEPLATE SHALL BE THE FOLLOWING COLORS: BLACK - NORMAL POWER ON 208/120 VOLT SYSTEM
 3. SECURE NAMEPLATE TO EQUIPMENT WITH TWO SHEET METAL SCREWS.
 4. PROVIDE A NAMEPLATE FOR EVERY MAJOR ELECTRICAL DEVICE OR ELECTRICAL CONTROLS WEATHER PROVIDED BY DIVISION 26 OR BY ANOTHER DIVISION SUCH AS DIVISION 20 INCLUDING BUT NOT LIMITED TO: SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, LIGHTING CONTROL PANELS, STARTERS, DISCONNECT SWITCHES, ETC. (AS APPLICABLE).
 5. REFER TO SPECIFICATION SECTION 260553 FOR FURTHER DESCRIPTION.
 6. EQUIPMENT DESIGNATION SHOULD INDICATE NAME OF PANELBOARD OR TYPE OF EQUIPMENT BE SERVED (I.E. "PANEL LPA", "PUMP CWP-1").
 7. SYSTEM VOLTAGE SHALL INDICATE VOLTAGE AND PHASE SUCH AS: 480/277V, 3Ø, 240/120V, 1Ø, ETC.
 8. THE THIRD LINE OF TEXT SHALL INDICATE UPSTREAM POWER SOURCE IDENTIFIED BY ITS NAME, SUCH AS "TRANSFORMER T1", PANEL "LPA", ETC.
 9. THE FOURTH LINE (OR POSSIBLY A FIFTH LINE OF TEXT) IS REQUIRED DUE TO LOCATION OF A PANEL FEEDING EQUIPMENT WHICH IS NOT IN THE GENERAL VICINITY OF EQUIPMENT BEING FED OR IS LOCATED ON ANOTHER FLOOR. ETC. THE NAMEPLATE SHALL BE INCREASED IN SIZE AS REQUIRED TO HAVE THIS INFORMATION AVAILABLE FOR FUTURE REFERENCE BY MAINTENANCE PERSONNEL.

- 'WARNING' ARC FLASH LABEL NOTES:**
1. REFER TO EQUIPMENT SPECIFICATION #260553 FOR FURTHER DESCRIPTION.
 2. FOR HAZARD/RISK CATEGORY 0, 1, 2, 3 & 4) 0-40 cal/cm², USE ORANGE "WARNING" LABELS WITH SOLID BLACK LETTERS.
 3. ALL LABELS SHALL BE PRINTED WITH PERMANENT INK ON WEATHERPROOF LABELS WITH SELF-STICKING ADHESIVE.
 4. ANY ELECTRICAL EQUIPMENT THAT HAS A DOOR SHALL BE PROVIDED WITH A LABEL ON BOTH SIDES OF THE DOOR.

- 'DANGER' ARC FLASH LABEL NOTES:**
1. REFER TO EQUIPMENT SPECIFICATION #260553 FOR FURTHER DESCRIPTION.
 2. FOR EQUIPMENT LABELS WITH INCIDENT ENERGY LEVELS >40 cal/cm², USE RED "WARNING" LABELS WITH SOLID WHITE LETTERS.
 3. ALL LABELS SHALL BE PRINTED WITH PERMANENT INK ON WEATHERPROOF LABELS WITH SELF-STICKING ADHESIVE.
 4. ANY ELECTRICAL EQUIPMENT THAT HAS A DOOR SHALL BE PROVIDED WITH A LABEL ON BOTH SIDES OF THE DOOR.

B1 ARC FLASH WARNING DETAIL
 N.T.S.

D3 NAMEPLATE DETAIL
 N.T.S.

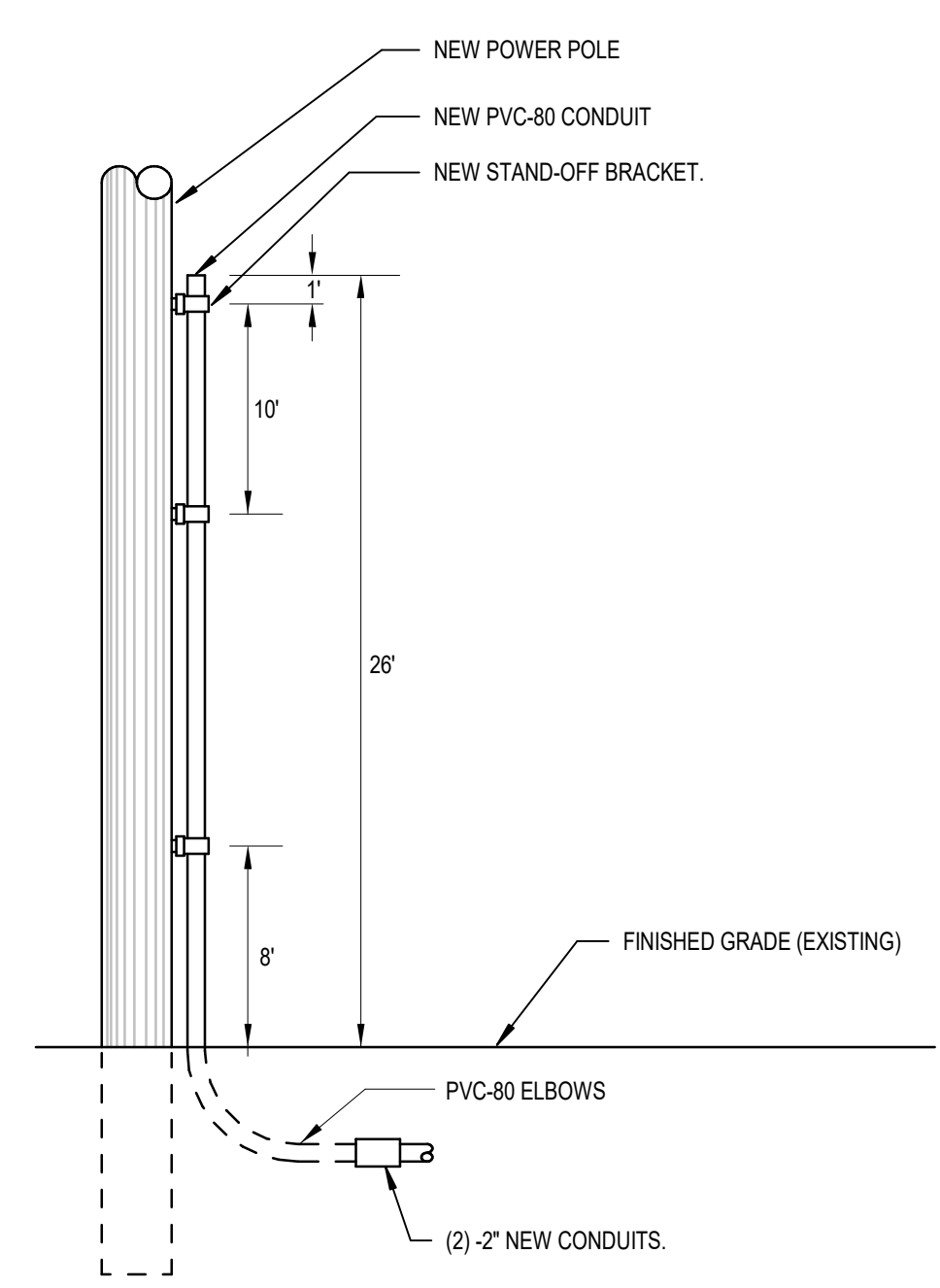
DIST. PANEL: MP
 LOCATION: SHED 101
 SUPPLY FROM:
 MOUNTING: SURFACE
 ENCLOSURE: N1

VOLTS: 120/208 Wye
 PHASES: 3
 WIRES: 4

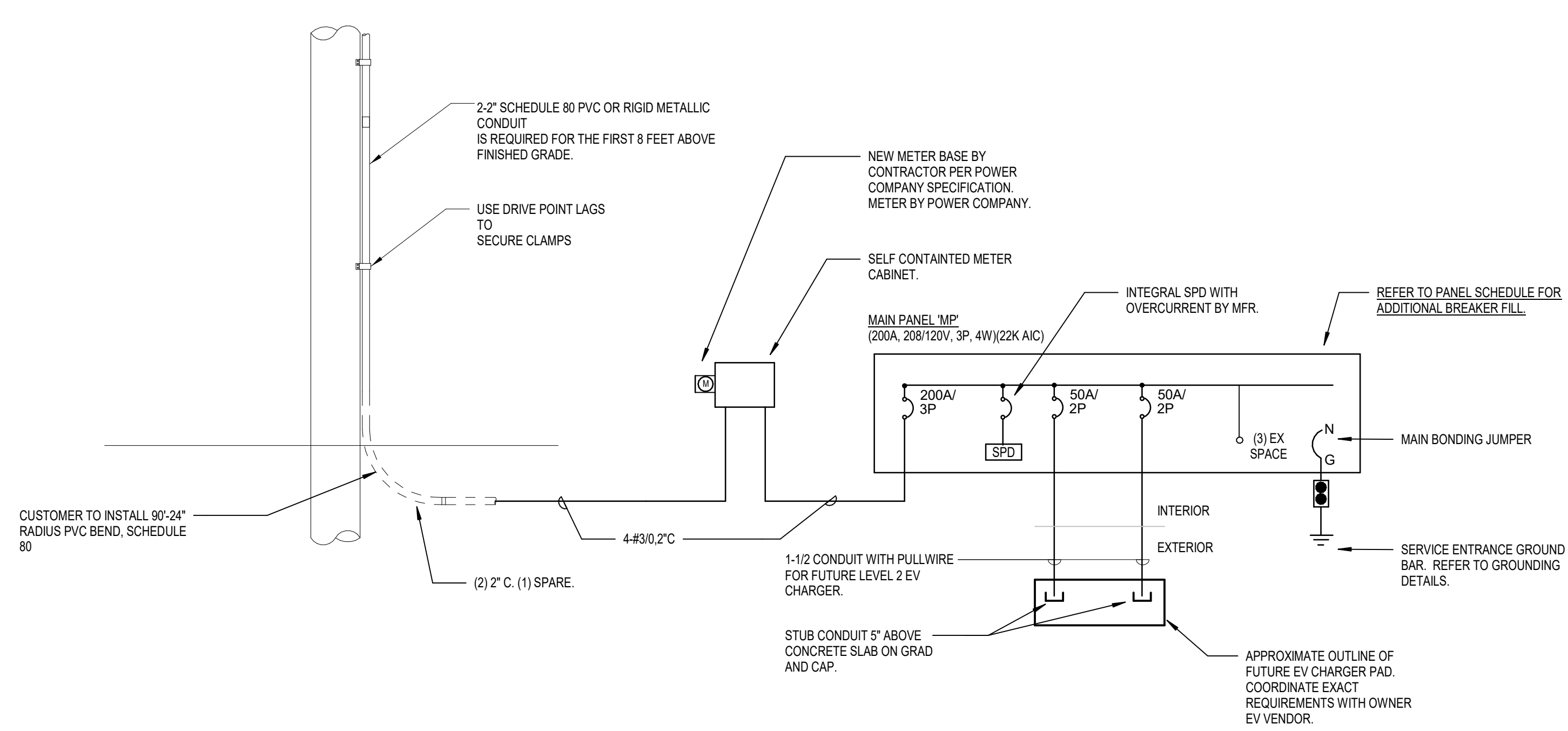
A.I.C. RATING: 22KAIC
 MAINS TYPE: MCB
 MAINS RATING: 200 A
 MCB RATING: 200 A

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C
1	LIGHTING WEST ROW	20 A	1	902 VA		
2	OVERHEAD DOOR	20 A	1		0 VA	
3	LIGHTING EAST ROW	20 A	1			886 VA
4	EV CHARGER 1	50 A	2	3600 VA		
5					3600 VA	
6	EV CHARGER 2	50 A	2			3600 VA
7				3600 VA		
8	EXTERIOR/CANOPY LIGHTING	20 A	1		566 VA	
9	EXTERIOR RECEPTACLE	20 A	1			360 VA
10	INTERIOR RECEPTACLES WEST	20 A	1	720 VA		
11	INTERIOR RECEPTACLES EAST	20 A	1		540 VA	
12	INTERIOR RECEPTACLES SOUTH	20 A	1			360 VA
13	SPARE	20 A	1	0 VA		
14	SPARE	20 A	1	0 VA		
15	SPARE	20 A	1		0 VA	0 VA
16	SPARE	20 A	1	0 VA		
17	SPARE	20 A	1		0 VA	
18	SPARE	20 A	1			0 VA
19	SPARE	--	--	0 VA		
20	SPARE	--	--		0 VA	
21	SPARE	--	--			0 VA
22	SPARE	--	--	0 VA		
23	SPARE	--	--		0 VA	
24	SPARE	--	--			0 VA
TOTAL LOAD:				8822 VA	4706 VA	5206 VA
TOTAL AMPS:				74 A	39 A	44 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
Lighting	2296 VA	100.00%	2296 VA	TOTAL CONN. LOAD: 18676 VA
Power	14400 VA	100.00%	14400 VA	TOTAL DEMAND LOAD: 18676 VA
Receptacle	1980 VA	100.00%	1980 VA	TOTAL CONN. CURRENT: 52 A
				TOTAL DEMAND CURRENT: 52 A



D1 POWER POLE DETAIL
 N.T.S.



A2 SINGLE-LINE DIAGRAM
 N.T.S.

SINGLE LINE DIAGRAM NOTES

1. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY REGARDING THE ELECTRIC SERVICE REQUIREMENTS, ROUTING AND LOCATION OF TRANSFORMER (THIS INFORMATION CAN ONLY BE VERIFIED BY THE ELECTRICAL CONTRACTOR WITH UTILITY, AS REQUIRED BY UTILITY).
2. PROVIDE ARC-FAULT LABELING AS REQUIRED BY DRAWINGS AND PER SPECIFICATIONS.
3. PROVIDE LAMOCOID NAMEPLATES AS REQUIRED BY DRAWINGS AND/OR SPECIFICATIONS.
4. ALL PANELBOARDS SHALL BE PROVIDED WITH AIC RATINGS AS NOTED ON PANEL SCHEDULE.

REV.	DATE	DESCRIPTION

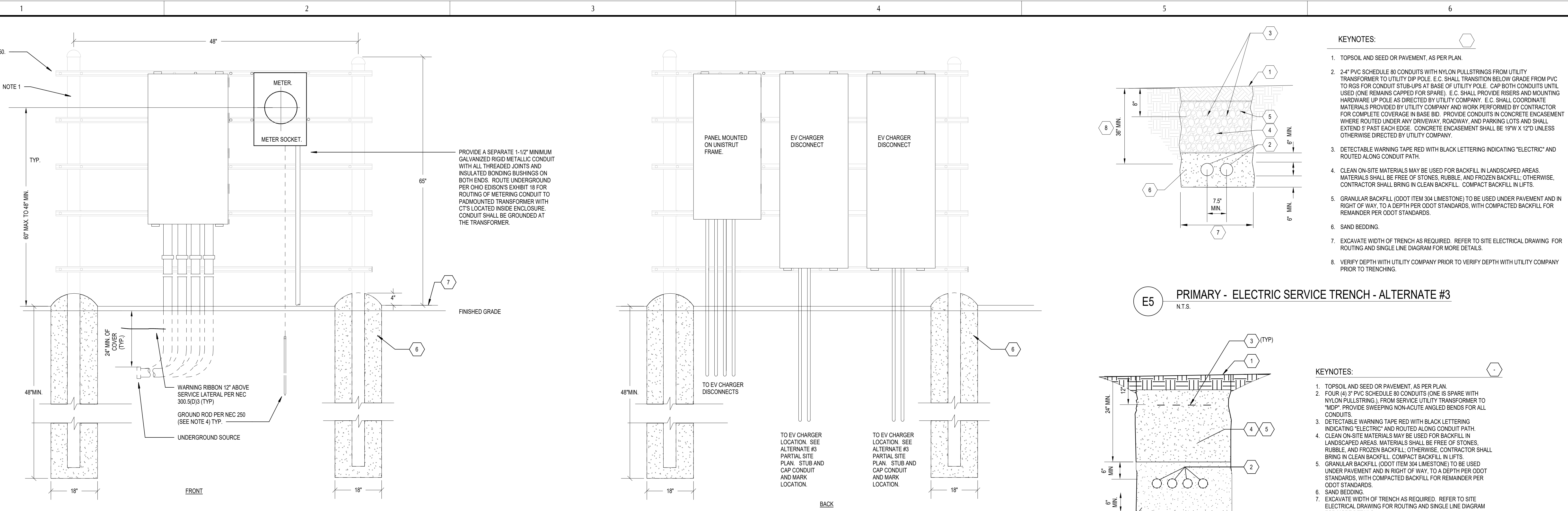
CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

ELECTRICAL SINGLE LINE DIAGRAM

PERMIT	DATE:
	01/06/2023
BID	DATE:
	01/06/2023
CONSTRUCTION	DATE:
RECORDED	DATE:
PROJECT MANAGER	DESIGNER
RG	DC

JOB NO.
 2020377.06

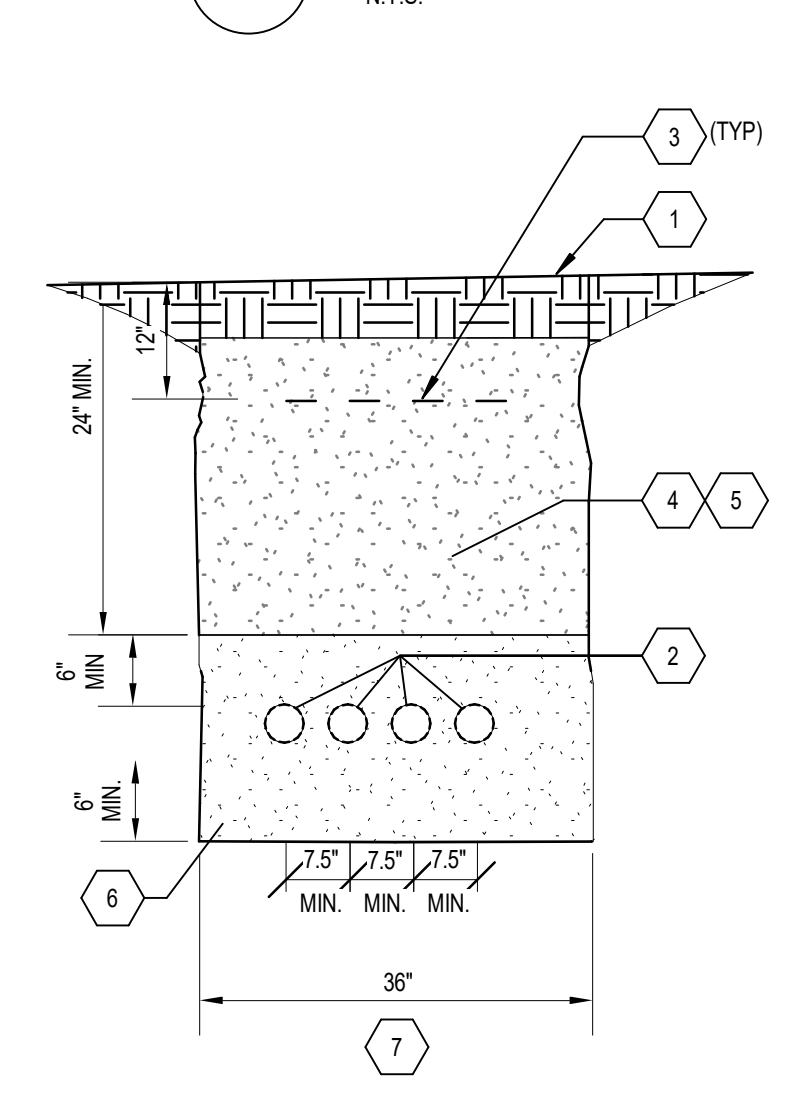
E-601



KEYNOTES:

1. TOPSOIL AND SEED OR PAVEMENT, AS PER PLAN.
2. 24" PVC SCHEDULE 80 CONDUITS WITH NYLON PULLSTRINGS FROM UTILITY TRANSFORMER TO UTILITY DIP POLE. E.C. SHALL TRANSITION BELOW GRADE FROM PVC TO RISERS FOR CONDUIT STUB-UPS AT BASE OF UTILITY POLE. CAP BOTH CONDUITS UNTIL USED (ONE REMAINS CAPPED FOR SPARE), E.C. SHALL PROVIDE RISERS AND MOUNTING HARDWARE UP POLE AS DIRECTED BY UTILITY COMPANY. E.C. SHALL COORDINATE MATERIALS PROVIDED BY UTILITY COMPANY AND WORK PERFORMED BY CONTRACTOR FOR COMPLETE COVERAGE IN BASE BID. PROVIDE CONDUITS IN CONCRETE ENCASUREMENT WHERE ROUTED UNDER ANY DRIVEWAY, ROADWAY, AND PARKING LOTS AND SHALL EXTEND 3' PAST EACH EDGE. CONCRETE ENCASUREMENT SHALL BE 19" X 12" UNLESS OTHERWISE DIRECTED BY UTILITY COMPANY.
3. DETECTABLE WARNING TAPE RED WITH BLACK LETTERING INDICATING "ELECTRIC" AND ROUTED ALONG CONDUIT PATH.
4. CLEAN ON-SITE MATERIALS MAY BE USED FOR BACKFILL IN LANDSCAPED AREAS. MATERIALS SHALL BE FREE OF STONES, RUBBLE, AND FROZEN BACKFILL; OTHERWISE, CONTRACTOR SHALL BRING IN CLEAN BACKFILL. COMPACT BACKFILL IN LIFTS.
5. GRANULAR BACKFILL (ODOT ITEM 304 LIMESTONE) TO BE USED UNDER PAVEMENT AND IN RIGHT OF WAY, TO A DEPTH PER ODOT STANDARDS, WITH COMPACTED BACKFILL FOR REMAINDER PER ODOT STANDARDS.
6. SAND BEDDING.
7. EXCAVATE WIDTH OF TRENCH AS REQUIRED. REFER TO SITE ELECTRICAL DRAWING FOR ROUTING AND SINGLE LINE DIAGRAM FOR MORE DETAILS.
8. VERIFY DEPTH WITH UTILITY COMPANY PRIOR TO VERIFY DEPTH WITH UTILITY COMPANY PRIOR TO TRENCHING.

E5 PRIMARY - ELECTRIC SERVICE TRENCH - ALTERNATE #3
 N.T.S.



KEYNOTES:

1. TOPSOIL AND SEED OR PAVEMENT, AS PER PLAN.
2. FOUR #1/2" PVC SCHEDULE 80 CONDUITS (ONE IS SPARE WITH NYLON PULLSTRING) FROM SERVICE UTILITY TRANSFORMER TO "MCP". PROVIDE SWEEPING NON-ACUTE ANGLED BENDS FOR ALL CONDUITS.
3. DETECTABLE WARNING TAPE RED WITH BLACK LETTERING INDICATING "ELECTRIC" AND ROUTED ALONG CONDUIT PATH.
4. CLEAN ON-SITE MATERIALS MAY BE USED FOR BACKFILL IN LANDSCAPED AREAS. MATERIALS SHALL BE FREE OF STONES, RUBBLE, AND FROZEN BACKFILL; OTHERWISE, CONTRACTOR SHALL BRING IN CLEAN BACKFILL. COMPACT BACKFILL IN LIFTS.
5. GRANULAR BACKFILL (ODOT ITEM 304 LIMESTONE) TO BE USED UNDER PAVEMENT AND IN RIGHT OF WAY, TO A DEPTH PER ODOT STANDARDS, WITH COMPACTED BACKFILL FOR REMAINDER PER ODOT STANDARDS.
6. SAND BEDDING.
7. EXCAVATE WIDTH OF TRENCH AS REQUIRED. REFER TO SITE ELECTRICAL DRAWING FOR ROUTING AND SINGLE LINE DIAGRAM FOR MORE DETAILS.

D5 SERVICE ENTRANCE TRENCH (SECONDARY FEEDERS) - ALTERNATE #3
 N.T.S.

DIST. PANEL: MPEV
LOCATION: _____
SUPPLY FROM: _____
MOUNTING: SURFACE
ENCLOSURE: 3R

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 40K AIC
MAINS TYPE: MCB
MAINS RATING: 1200 A
MCB RATING: 1200 A

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C
1	EV CHARGER 2	600 A	3	116667 VA	116667 VA	116667 VA
2						
3						
4	EV CHARGER 1	600 A	3	116667 VA	116667 VA	116667 VA
5						
6						
7	SPACE	--	--	0 VA	0 VA	0 VA
8	SPACE	--	--	0 VA	0 VA	0 VA
9	SPACE	--	--	0 VA	0 VA	0 VA
10	SPACE	--	--	0 VA	0 VA	0 VA
11	SPACE	--	--	0 VA	0 VA	0 VA
12	SPACE	--	--	0 VA	0 VA	0 VA
13	SPACE	--	--	0 VA	0 VA	0 VA
14	SPACE	--	--	0 VA	0 VA	0 VA
15	SPACE	--	--	0 VA	0 VA	0 VA
16	SPACE	--	--	0 VA	0 VA	0 VA
17	SPACE	--	--	0 VA	0 VA	0 VA
18	SPACE	--	--	0 VA	0 VA	0 VA
19	SPACE	--	--	0 VA	0 VA	0 VA
20	SPACE	--	--	0 VA	0 VA	0 VA
21	SPACE	--	--	0 VA	0 VA	0 VA
22	SPACE	--	--	0 VA	0 VA	0 VA
23	SPACE	--	--	0 VA	0 VA	0 VA
24	SPACE	--	--	0 VA	0 VA	0 VA
TOTAL LOAD:				233333 VA	233333 VA	233333 VA
TOTAL AMPS:				842 A	842 A	842 A
LOAD CLASSIFICATION		CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Continuous		700000 VA	125.00%	875000 VA	TOTAL CONN. LOAD: 700000 VA	TOTAL DEMAND LOAD: 875000 VA
					TOTAL CONN. CURRENT: 842 A	TOTAL DEMAND CURRENT: 1052 A

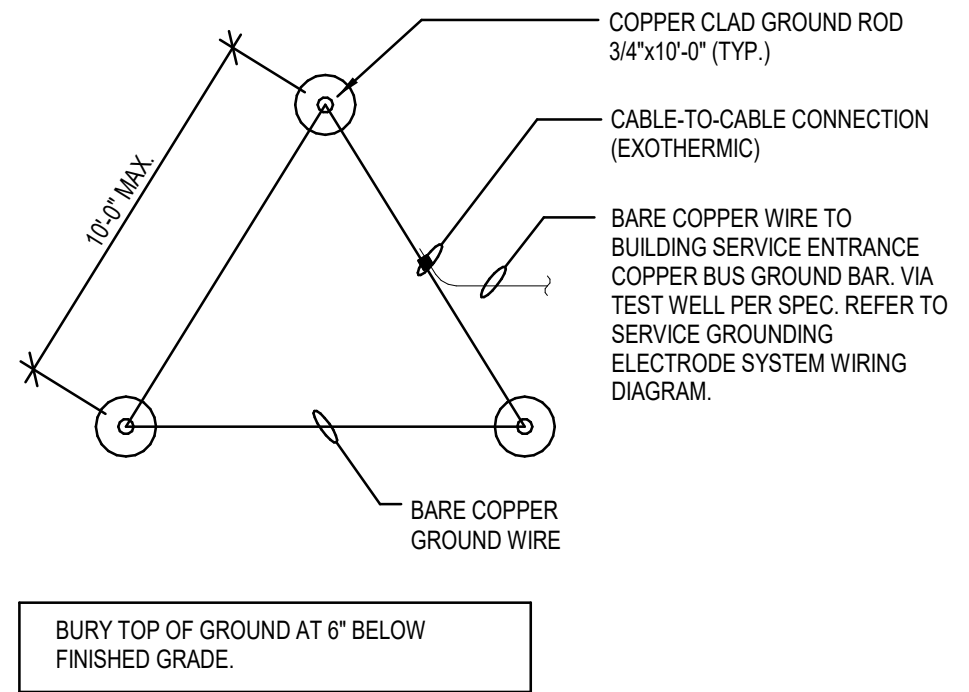
UNDERGROUND SERVICE MATERIAL GUIDELINES AND RESPONSIBILITY MATRIX FOR METERING INSTALLATION OF 1/2 AND 3/4 480V SELF-CONTAINED METER WITH SOURCE-SIDE DISCONNECT SWITCH

MATERIAL	SUPPLIED BY	INSTALLED BY
SERVICE LATERAL (CABLE)	E.C.	E.C.
TRENCH BACKFILL	E.C.	E.C.
SERVICE ENTRANCE RISER CONDUIT	E.C.	E.C.
CONNECTORS @ SOURCE TRANSFORMER OR HANDHOLE	COMMERCIAL- CUSTOMER	POWER COMPANY
CONNECTORS @ METER SOCKET	E.C.	E.C.
METER SOCKET 200 AMP OR LESS	E.C.	E.C.
METER SOCKET 320 AMP	POWER COMPANY	E.C.
480 VOLT METER DISCONNECTING MEANS (SEE NOTE #1 THRU #9 ABOVE)	E.C.	E.C.
METER	POWER COMPANY	POWER COMPANY

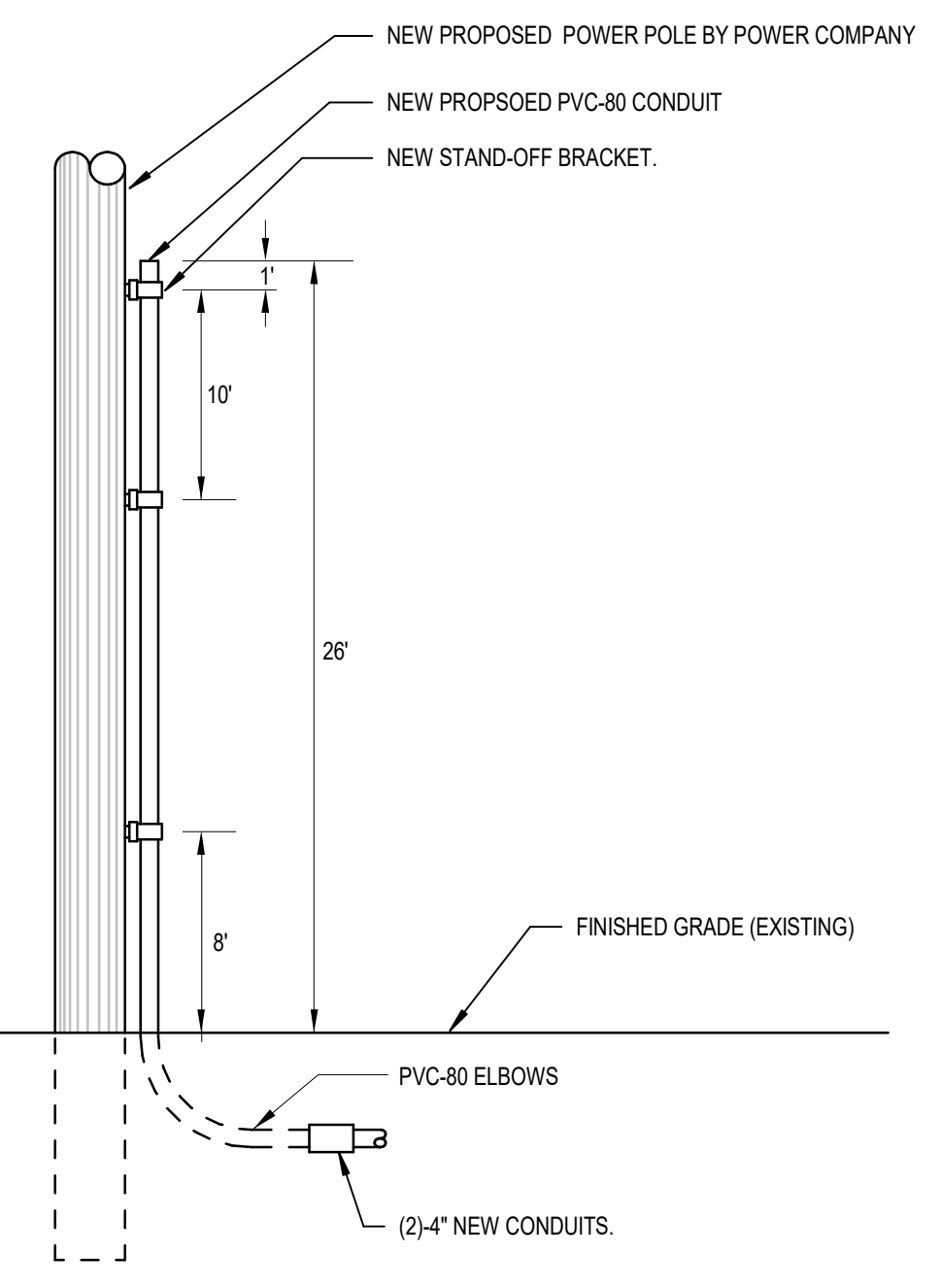
NOTES:

1. SUPPORT POST: 24" MIN. GALV. STEEL I-BEAM (3/8"-1/2" THICK) CEMENTED IN GROUND.
2. MOUNTING HARDWARE: TWO 1/2 GAUGE 1-5/8" X 1-5/8" CONTINUOUS SLOT HOT DIPPED GALVANIZED CHANNEL (e.g. 13 THD SPRING NUT (2 PER CHANNEL), 5/16" HEX NUT, AND LOCK WASHER SECURELY MOUNTED TO SUPPORT POSTS).
3. SUPPLY SIDE CONDUIT SHALL BE RIGID GALVANIZED OR IMC STEEL, OR SCHEDULE 80 PVC (ELECTRICAL GRADE).
4. METER SOCKET(S) MAY BE CONNECTED TO AN EXTERNAL GROUND ROD IF REQUIRED BY LOCAL INSPECTION AUTHORITIES.
5. SEE MATRIX BELOW FOR E.C./ UTILITY COMPANY RESPONSIBILITIES.
6. FOR ALL SINGLE-PHASE AND THREE-PHASE 480VOLT SERVICES WITH SELF-CONTAINED METERING, A DISCONNECTING MEANS IS REQUIRED ON THE SOURCE SIDE OF THE METER SOCKET.
7. CONTACT THE UTILITY COMPANY'S METER SERVICES SECTION FOR DETAILS REGARDING THESE REQUIREMENTS AND TO OBTAIN APPROVAL FOR THE PROPOSED INSTALLATION.
8. THE NON-FUSIBLE METER DISCONNECT SWITCH MUST BE LOCKABLE IN THE OPEN AND CLOSED POSITIONS. THE SWITCH ENCLOSURE SHALL HAVE PROVISIONS FOR A COMPANY SEAL AND/OR PADLOCK.
9. SELF-CONTAINED METERING IS ONLY AVAILABLE TO UP TO 320 AMPS CONTINUOUS LOAD (400A) AND IS CONSTRUCTED WITHOUT AN INTEGRAL DISCONNECT SWITCH. THE METER IS CONSTRUCTED TO WITHSTAND THE CURRENT FROM THE SOURCE FLOWING THRU IT TO THE SERVICE DISCONNECT SWITCH.

B1 SELF CONTAINED METER CENTER FOR 480V 1Ø OR 3Ø SERVICE UNDERGROUND - ALTERNATE #3
 N.T.S.



E4 SERVICE ENTRANCE MADE ELECTRODE GROUND MAT DETAIL - ALTERNATE #3
 N.T.S.



WARNING
 QUALIFIED WORKERS ONLY
 Appropriate PPE Required

7.5	Inches Flash Hazard Boundary
Category 0	Flash Hazard Category
0.4	Cal/cm ² Flash Hazard at 35.8 Inches
5.0	KA Bolted Fault Current
Arc Flash boundary distance: 1.0 - 3.0 meters	
480	Volts Shock Hazard when cover is removed
00	Glove Class with Leather Protectors
120 inches	Limited Approach Boundary
12 inches	Restricted Approach Boundary
1 inches	Prohibited Approach Boundary

Equipment Name: 01
 Date: Jan. 1, 2013

DANGER
 QUALIFIED WORKERS ONLY
 Appropriate PPE Required

25	Inches Flash Hazard Boundary
Category >4	Flash Hazard Category
45	Cal/cm ² Flash Hazard at 35.8 Inches
5.0	KA Bolted Fault Current
Arc Flash boundary distance: 1.0 - 3.0 meters	
480	Volts Shock Hazard when cover is removed
00	Glove Class with Leather Protectors
120 inches	Limited Approach Boundary
12 inches	Restricted Approach Boundary
1 inches	Prohibited Approach Boundary

Equipment Name: 01
 Date: Jan. 1, 2013

WARNING ARC FLASH LABEL NOTES:

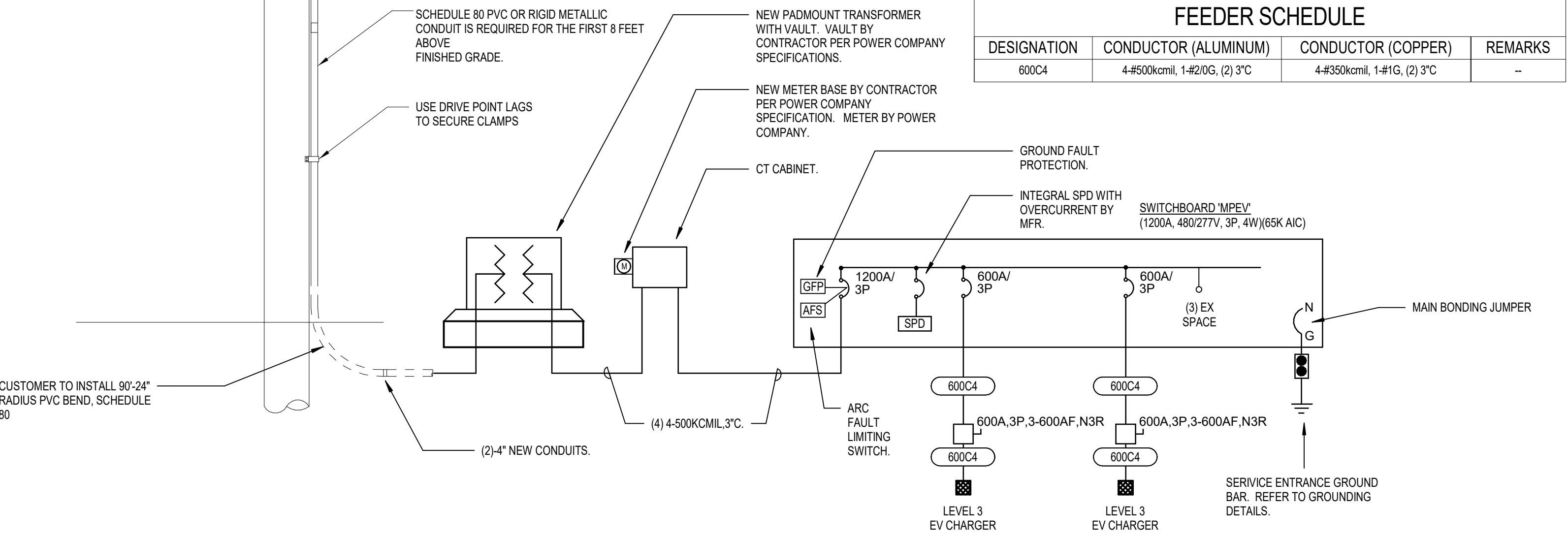
1. REFER TO EQUIPMENT SPECIFICATION #26553 FOR FURTHER DESCRIPTION.
2. FOR HAZARD/RISK CATEGORY 0, 1, 2, 3, & 4) 0-40 cal/cm², USE ORANGE "WARNING" LABELS WITH SOLID BLACK LETTERS.
3. ALL LABELS SHALL BE PRINTED WITH PERMANENT INK ON WEATHERPROOF LABELS WITH SELF-STICKING ADHESIVE.
4. ANY ELECTRICAL EQUIPMENT THAT HAS A DOOR SHALL BE PROVIDED WITH A LABEL ON BOTH SIDES OF THE DOOR.

DANGER ARC FLASH LABEL NOTES:

1. REFER TO EQUIPMENT SPECIFICATION #26553 FOR FURTHER DESCRIPTION.
2. FOR EQUIPMENT LABELS WITH INCIDENT ENERGY LEVELS >40 cal/cm², USE RED "DANGER" LABELS WITH SOLID WHITE LETTERS.
3. ALL LABELS SHALL BE PRINTED WITH PERMANENT INK ON WEATHERPROOF LABELS WITH SELF-STICKING ADHESIVE.
4. ANY ELECTRICAL EQUIPMENT THAT HAS A DOOR SHALL BE PROVIDED WITH A LABEL ON BOTH SIDES OF THE DOOR.

A1 ARC FLASH WARNING LABEL - ALTERNATE #3
 N.T.S.

A2 POWER POLE DETAIL - ALTERNATE #3
 N.T.S.



B4 SINGLE-LINE DIAGRAM - ALTERNATE #3
 N.T.S.

FEEDER SCHEDULE

DESIGNATION	CONDUCTOR (ALUMINUM)	CONDUCTOR (COPPER)	REMARKS
600C4	4-#500kcmil, 1-#20G, (2) 3°C	4-#350kcmil, 1-#1G, (2) 3°C	-

1/16/2023 5:07:29 PM

CITY OF CANTON - 2022 SERVICE CENTER UPGRADES
 2436 30TH STREET N.E.
 CANTON, OH 44705

PERMIT	01/06/2023
BID	01/06/2023
CONSTRUCTION	--/--
RECORDED	--/--
PROJECT MANAGER	DESIGNER
RG	DC

E-602
 JOB NO.
 2020377.06

ALTERNATE #3 DETAILS AND SCHEDULES

Appendix C

CITY OF CANTON 2022 SERVICE CENTER UPGRADE AND RECONFIGURATION PROJECT – GP1331

2436 30TH Street N.E.
Canton, Ohio 44705

TECHNICAL SPECIFICATIONS

Prepared by:



GPD Group
520 South Main St, Suite 2531
Akron, OH 44311

January 15, 2023
Job No. 2020377.06

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DOCUMENT 00 31 32 - GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.
- B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.
- C. A geotechnical investigation report for Project, prepared by GPD Group, dated September 7, 2022, is available for viewing as appended to this Document.
 - 1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
 - 2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.

END OF DOCUMENT 00 31 32



GEOTECHNICAL ENGINEERING REPORT

**SERVICE CENTER SITE IMPROVEMENTS
2436 30TH STREET NORTHEAST
CANTON, OHIO**

Prepared For:

The City of Canton

GPD Project No. 2022377.05
September 7, 2022



Delbert J. Channels
09/07/2022

Delbert J. Channels, PE
Director of Geotechnical Services



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SECTION 1

1.0 Introduction

GPD Group is pleased to submit this Geotechnical Report for the aforementioned project. The purpose of this study was to obtain information on the subsurface conditions at the proposed project site and based on this information, to provide geotechnical recommendations regarding the design and construction of foundations, pavements, and site development for the Canton Service Center Site Improvements. Seven (7) borings extending to depths of 10 to 15 feet below the existing ground surface were drilled at the site. A Boring Location Plan and individual boring logs are attached.

1.1 Project Description

The site for the proposed facility is at 2636 30th Street NE, in Stark County, Canton, Ohio. At the time of our investigation the area for the proposed site improvements is currently an asphalt parking lot, gravel lot, lawns and wooded areas. Existing and former residential properties lie within a portion of the improvement area. No other building developments are known to have taken place at the site.

An examination of ODNR sites indicate that there are no gas/oil well at the site or karst topography. Research showed that no abandoned underground mines existed in the region of the proposed improvements. ODNR bedrock maps and nearby water well logs suggest bedrock may lie at a depth of over 100 feet below the ground surface.

We understand that improvements are planned at the Canton Service Center. Improvements encompass new auction & public parking lots, upgrades to pavement drives and an addition to the impound lot. A small auction building and an open-air shed are also planned. Both structures are anticipated to have building loads relatively light in magnitude. New pavements will generally be comprised of conventional asphalt or concrete sections subject to light automobile vehicular traffic. A site grading plan was not available at the writing of this report. Cuts and fills for the pavements and structures are anticipated to be 2 feet or less. Existing site grades are roughly at an elevation of 1060 to 1058 feet above sea level based on County GIS.

1.2 Purpose and Scope

The purposes of this report were to investigate subsurface conditions of the proposed development to provide geotechnical engineering recommendations for earthwork, pavement, and foundation design. Specifically, the scope of work included the following:

- ❖ Conducting a field exploration program consisting of site reconnaissance and drilling sample borings at selected locations within the proposed building and pavement locations to explore subsurface conditions and collect soil samples.
- ❖ Conducting geotechnical engineering laboratory test on sampled soils to assist with soil classifications and estimation of engineering properties.
- ❖ Develop geotechnical engineering recommendations for the design and construction of foundations, pavement sections and earthwork for site grading.

SECTION 2

2.0 Subsurface Exploration Program

The subsurface exploration consisted of drilling and sampling seven (7) borings at the site to depths ranging from 10 to 15 feet below existing grades. GPD personnel using a handheld GPS unit laid out the boring locations. The locations should be considered accurate only to the degree implied by the means and methods used to define them. The boring locations were cleared for existing utilities per an Ohio 811 call (OUPS) and by GPD Survey Utility Clearance.

The borings were drilled with a track-mounted Geoprobe 7822DT and Simco rotary drill rigs using hollow-stem augers and an automatic/manual hammer to advance the boreholes. Representative soil samples were obtained by split-barrel sampling procedure in general accordance with the appropriate ASTM standards. In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound hammer with a free fall of 30 inches, is the standard penetration resistance value (N-Value). This value is used to estimate the in-situ relative density of cohesion-less soils and the consistency of cohesive soils. The sampling depths and penetration distance, plus the standard penetration resistance values, are shown on the boring logs. The samples were sealed and returned to the laboratory for testing and classification.

The drill crew prepared field logs of each boring. These logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. Final boring logs included with this report represent an interpretation of the field logs and include modifications based on observations made by a Geotechnical Engineer and the results of laboratory testing.

2.1 Laboratory Testing

The samples were classified in the laboratory based on visual observation, texture, and plasticity. The descriptions of the soils indicated on the boring logs are in accordance with the enclosed General Notes and the Unified Soil Classification System. A brief description of this classification system is attached to this report. The laboratory testing program consisted of performing natural water content tests in general accordance with ASTM D-2216.

2.2 Subsurface Conditions

Asphalt – Existing asphalt depths at the site were measured to thicknesses of 6.0 to 12.0 inches. A base consisting of asphalt grindings or slag was encountered at some of the locations

Fills – Existing fills were encountered at some of the soil boring locations of the site to depths of up to 3 feet below grade. Fills consisted of sands, silts, slag or asphalt grindings with lesser amounts of gravel and organics. Consistencies of the fill were found to be loose to very dense and were generally found to be in a dry to damp condition.

Native Soils – Site soils consist of sands, silts & clays with varying levels of gravel & cobbles. Consistencies across the boring locations for the soils were generally loose to very dense or soft to stiff. Moistures generally varied from damp to wet. Refer to the attached boring logs for additional soil information.

2.2.1 Groundwater Conditions

The borings were monitored while drilling and immediately after completion for the presence and level of groundwater. Groundwater was not encountered in any of the soil boring at depths. Fluctuations of the groundwater level can occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

SECTION 3

3.0 Engineering Recommendations

The following engineering recommendations are based on information provided to GPD Group regarding the design of the proposed project, the field and laboratory testing performed on the soil encountered at this site, and other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, GPD should be immediately notified so that further evaluation and supplemental recommendations can be provided.

3.1 Geotechnical Considerations

Based on the information obtained during the course of this study, the following geotechnical considerations should be taken into account during the planning, design and construction phases of the project. These geotechnical considerations are provided as a summary of the primary issues we believe are associated with this site. This report must be read in its entirety for a full description of our geotechnical recommendations:

- ❖ Existing and past residential structures exist in the proposed region of the public parking lot near 30th Street NE. The existing structure includes a basement. Following the demolition of the structure the backfill of the basement area should take place with an approved material and backfilled per the recommendations of this report. It is not known if the former residential structure also contained a basement. A shallow test pit and/or cone penetrometer tests should take place prior to construction to determine the type and consistency of the backfill. Unsuitable backfill for support of the proposed parking lot should be undercut and re-backfilled under the direction of a Geotechnical Engineer or personnel under the direction of the Engineer.
- ❖ Existing fills soils might exist at the planned foundation depths of the proposed auction building or open air shed. Close examination of the bearing subgrades should take place during construction by a Geotechnical Engineer or personnel under the direction of the Engineer. Bearing subgrades found to consist of an existing fill should be undercut under the direction of the Engineer and per the recommendations of this report. Building slabs on grade can be supported by the existing fill provided the area passes a proof-roll or the fill does not consist of a significant amount of rubble or organics. Existing fill soil deemed unsuitable by the Geotechnical Engineer should be undercut under their direction and per the recommendations of this report.
- ❖ Soft soils or existing fills exist in areas of proposed pavements. Soft soils (such as found at B-1) failing a proof-roll should be handled per section 3.2 of this report. Pavements can be supported by existing fills provided the area passes a proof-roll or the fill does not consist of a significant amount of rubble or organics. Existing fill soil deemed unsuitable by the Geotechnical Engineer should be undercut under their direction and per the recommendations of this report. Existing fills failing a proof-roll could be partially undercut and replaced with Geogrid overlain with ODOT 304 crushed limestone.

- ❖ Contingent upon proper site preparation and thorough evaluation of the foundation excavations, it is our opinion that the proposed building and pavements can be supported on conventional shallow foundations and slab-on-grade concrete floor slabs and pavements.

The following report sections provide detailed recommendations regarding the geotechnical considerations presented above. In the event changes in the project design occur, GPD Group must review this report to determine if modifications to our recommendations are warranted.

3.2 Site Preparation

All vegetation, topsoil, tree roots, organic-containing soils, and any soft or otherwise unsuitable materials should be removed from the structure and pavement limits.

Subsequent to site clearing and topsoil removal; proof-rolling with heavy construction equipment such as a loaded tandem axle dump truck (approximately 60,000-pound gross) is recommended to aid in locating unstable subgrade materials. Proof-rolling is also recommended in cut areas, and areas left near existing grade after rough grading is completed. Unstable materials located by proof rolling should be removed and replaced with suitable compacted fill material. Areas of very loose to loose sand should be densified with a smooth drum vibratory roller.

It should be noted that any encountered silty soils may be moisture sensitive and susceptible to disturbance from construction activity, particularly if the soil is wetted by surface water or seepage. Care should be taken during the site grading operation to provide adequate site drainage and minimize disturbance of soils. Heavy equipment traffic directly on surfaces should be avoided in wet soil areas. It may also be necessary to aerate portions of the subgrade prior to placing additional fill.

Areas of unsuitable soil identified during proof-rolling or subsequent construction operations will need to be stabilized. Based on our borings and our experience during construction of similar structures, subgrade stabilization may be required to facilitate construction. Alternatives for subgrade stabilization could include the following:

Scarification and Recompaction - It may be feasible to scarify, dry, and recompact the exposed soils that are higher in moisture and/or are very loose in consistency. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Even with adequate time and weather, however, stable subgrades may not be achievable if the thickness of the very loose soil is greater than 1 to 1-1/2 feet. Removing sections to greater depths and replacing the material in layers may be necessary.

Crushed Stone - The use of crushed stone or gravel could be used to improve subgrade stability. The thickness and type of crushed stone will depend upon the conditions encountered and the location of the area to be improved. GPD's on-site Quality Control representative will provide this information as needed. Typical undercut depths would range from 1/2 foot to 1-1/2 feet below finished subgrade elevation. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work such as utility construction is completed. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1-1/2 inches.

3.3 Fill Material

Any fill or backfill required within structure and pavement limits should be select material, as approved by a qualified geotechnical engineer. For all filling operations, the following should be observed:

1. Prior to use, the approved fill material should be tested as outlined in ASTM D-698 to determine the maximum dry density and optimum moisture content for silty or cohesive soils, or ASTM D-4253 and D-4254 for clean granular soils. For each change in borrow material, additional tests will be required.
2. For all fill or backfill used, the fill material should be placed on the approved subgrade in controlled lifts, with each lift compacted to a stable condition, and to a minimum of 98% maximum dry density per ASTM D-698 at a moisture content within 1.5% of optimum for cohesive or silty borrow. Controlled lifts of granular material should be compacted to 80% relative density per ASTM D-4254.
3. All filling operations should be observed by a qualified soils technician with field density tests made, to assure compaction to specification.

Proper moisture control of fine-grained silty soils is critical in attaining the required compaction. It should be noted that both in-situ soils and new fill composed of fine-grained soils are susceptible to disturbance by construction equipment traffic when wet. Thus, construction operations should be planned to prevent such disturbance and the resulting weakening of the subgrade soils. Such precautions would include, but not be limited to grading the site to prevent ponding of water, sealing the subgrade soils at the end of operations each day, and allowing wet subgrades to dry before operating heavy equipment on the soil.

3.4 Foundation Systems

Foundations comprised of conventional wall and column spread footings bearing on suitable native soils, on properly compacted/placed fill extending to suitable native soil may be sized using a maximum net allowable soil bearing pressure of **2,000 psf**. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Wall bearing footings should have a minimum width of 18 inches and isolated column footings should have a minimum width of 36 inches to preclude local shear failure. Perimeter footings and footings beneath unheated areas should bear at or below the local frost depth for protection (typically 42 inches for this area).

The foundation settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, the thickness of compacted fill, and the quality of the earthwork operations. Provided that footing construction is performed in accordance with our recommendations, it is our opinion that total settlement will be about 1 inch or less. Differential settlement on the order of 2/3 to 3/4 of the total settlement should be anticipated.

The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Foundation subgrades consisting of sand should be recompacted by a vibratory plate compactor prior to rebar placement. Concrete should be placed as soon as possible after excavating to minimize bearing soil disturbance. Should the soils at bearing level become excessively dry, saturated, disturbed, or otherwise altered, the affected soil should be removed prior to placing concrete. It may be desirable to stabilize the bottom of excavations with a relatively coarse and well-graded crushed stone or gravel, or a lean concrete mud mat.

All footing excavations should be observed and tested by a qualified Geotechnical Engineer or their representative. Testing should include dynamic cone penetrometer tests and/or other testing deemed necessary by GPD Group. Where unsuitable bearing soils are encountered in the footing excavations, the excavations should be extended deeper to suitable soils where the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. The footings could also bear on

properly compacted backfill extending down to the suitable soils. Over-excavation for compacted backfill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of over-excavation depth below footing base elevation. The over-excavation should then be backfilled up to the footing base elevation with well-graded granular material placed in lifts of 8 inches or less in loose thickness and compacted to at least 98 percent of the material's maximum standard Proctor dry density (ASTM D-698). The over-excavation and backfill procedures are described in Figure 1.

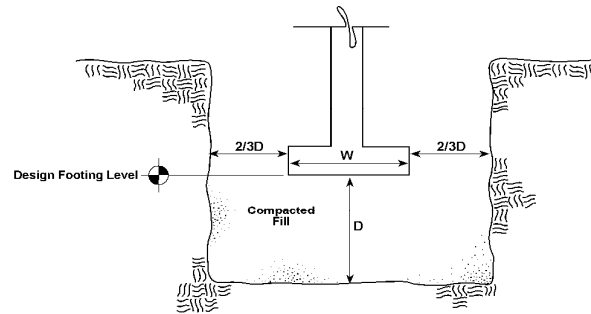


Figure 1: Foundation Over excavation and Backfill Procedure

3.5 Floor Slab Design and Construction

A subgrade prepared and tested as recommended in this report should provide adequate support for light to moderately loaded floor slabs bearing on native soils, engineered fill or those modified with aggregate piers. Our office should be contacted for further recommendations if planned loads will exceed these thresholds. We recommend that floor slabs be designed as "floating" slabs, that is, fully ground supported and structurally independent of any building footings or walls. This is to minimize the possibility of floor slab cracking because of differential movements between the slab and the foundation. The slabs should be appropriately reinforced to support the proposed loads.

For design purposes, a modulus of subgrade reaction (K) equal to 125 pounds per cubic inch (pci) should be used for a properly prepared subgrade as discussed herein. Estimated maximum settlement of the floor slabs with relatively light loads is on the order of 1/2 inch. At a minimum, the floor slabs should be supported on a 4-inch compacted layer of free draining, granular subbase material. The purpose of this layer is to help distribute concentrated loads and act as a capillary break beneath the slab. If the owner is concerned about moisture vapor transmission through the concrete floor slab, a vapor barrier should be used.

3.6 Excavations

Excavation walls shall be sloped or shored per the requirements of OSHA regulations. Based on the borings performed at this site, we recommend that the excavations be designed using an OSHA Type "C" soil classification. The excavation bottom shall be graded to provide a smooth, firm, and stable foundation that is free from rocks and other obstructions. Excavations that extend greater than 20 feet shall be designed and approved by a professional engineer. Any required dewatering should be accomplished via sump pits. Water should be discharged in a manner as not to introduce silt laden water into storm sewers or other local bodies of water.

3.7 Pavements

3.7.1 Flexible Asphalt Pavement

Conventional flexible pavement and rigid pavement sections for parking areas and roadways are considered appropriate for the proposed project pending proper site preparation as discussed herein. The following pavement design is based on an estimated California Bearing Ratio (CBR) value of 4 .

Traffic patterns and anticipated loading conditions will be mostly light; however, a heavy-duty pavement section is also given in this report if that pavement design is required. In the event traffic loading conditions do not align with assumptions stated above, GPD should be notified and afforded the opportunity to review these pavement sections and provide supplemental recommendations based on this new information.

Prior to paving, the prepared subgrade shall be proof-rolled using a loaded tandem axle dump truck. **Unstable materials located by proof rolling should be removed and replaced with suitable compacted fill material, or partially undercut and stabilized with Tensar TX-140 Geogrid covered with ODOT 304 limestone.** GPD recommends that granular aggregate base material, in compliance with Ohio Department of Transportation specifications, be used under all pavement and concrete surfaces. The material should be placed and compacted as discussed in Section 3.3. The pavement sections may be placed after the subgrade has been properly compacted, fine-graded, and proof-rolled. The work shall be done in accordance with local and state specifications. Furthermore, GPD or an Independent Testing Consultant (ITC) should be retained to provide testing on all subgrade, aggregate base and asphalt/concrete materials.

It is important to note that the recommended asphalt pavement sections are based on assumed post-construction traffic loading conditions. If pavements are to be constructed and utilized by construction traffic, the recommended sections will likely prove insufficient for the associated loads which could result in unanticipated distress, reduced lifespan, and/or premature failure.

An asphalt pavement section has been provided in Table 1 for normal-duty and heavy-duty pavement sections.

Table 1: Recommended Flexible Asphalt Pavement Sections

RECOMMENDED THICKNESSES (INCHES)*		
PAVEMENT MATERIAL*	NORMAL-DUTY PAVEMENT SECTION	HEAVY-DUTY PAVEMENT SECTION
Asphalt Surface Course (Item 441, Type I; ODOT Approved)	1.5	1.5
Asphalt Intermediate Course (Item 441, Type 2; ODOT Approved)	3.0	5.0**
Graded Aggregate Base (Item 304; ODOT Approved)	8.0	10.0

* Pavement and subbase materials should conform to ODOT guidelines. **2 Layers

All recommended asphalt materials shall conform to Ohio Department of Transportation (ODOT) design criteria. The maximum proportion of Recycled Asphalt Pavement (RAP) to virgin aggregates shall not exceed 20 percent of the total mix. All HMA placed shall be compacted to between 92 and 97 percent of the materials theoretical maximum density as determined by AASHTO Method T-209 and placed per ODOT thickness guidelines provided in Reference Section 406.

3.7.2 Rigid Concrete Pavement

Two concrete pavement sections have been provided in Table 2 for the normal-duty and heavy-duty (e.g., approach aprons and dumpster pad) pavement sections.

Table 2: Recommended Rigid Concrete Pavement Sections

RECOMMENDED THICKNESSES (INCHES) ¹		
PAVEMENT MATERIAL ¹	NORMAL DUTY PAVEMENT SECTION	HEAVY DUTY PAVEMENT SECTION
Concrete Pavement	6	7
Graded Aggregate Base (Item 304; ODOT Approved)	6	8

¹Portland cement concrete should conform to ODOT guidelines and be adequately reinforced per ACI recommendations

In the event that a concrete approach apron and/or walkways will be constructed, we recommend that an allowable construction tolerance of plus or minus 0.25 inches. The concrete should have a minimum compressive strength of 4,000 psi after 28 days of laboratory curing per ASTM C-31.

Layout of saw-cut control joints should form square panels, and the depth of saw-cut joints should be approximately ¼ of the concrete slab thickness. Joints should be spaced a maximum of 12 and 15 feet for light- and heavy-duty pavements, respectively. The joints should be sawed within six (6) hours of concrete placement or as soon as the concrete has developed sufficient strength to support workers and equipment.

SECTION 4

4.0 Additional Design and Construction Considerations

4.1 Seismic Considerations

The International Building Code (IBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The scope of services for this project required that borings be drilled to a maximum depth of about 20 feet. The noted site classification considers that sandy soils exist below the maximum depth of subsurface exploration. Based on the available field and laboratory test results and our knowledge and experience with the local site geology, a Seismic Site Classification "D" should be used for design of the structures according to the "International Building Code and Related Codes, Section 1613.5.2 Site Class Definitions.

4.2 Surface Drainage

Adequate drainage should be provided at the site to minimize any increase in moisture content of the foundation materials. All pavement or parking areas should be sloped away from the structures to prevent ponding of water. Water should not be allowed to pond adjacent to the pavement edges.



4.3 Subsurface Drainage

At the time of this investigation groundwater was encountered at all of the boring locations; however, groundwater is not anticipated to be an issue during construction activities at the site. Conventional dewatering methods, such as pumping from sumps, should be adequate for temporary removal of any surface water or groundwater encountered during excavation at the site. If springs or other significant groundwater is exposed during the excavation process, it may be necessary to install permanent trench drains to remove this water away from the building and pavements. The location and design of any trench drains should be determined at the time of construction, if warranted.

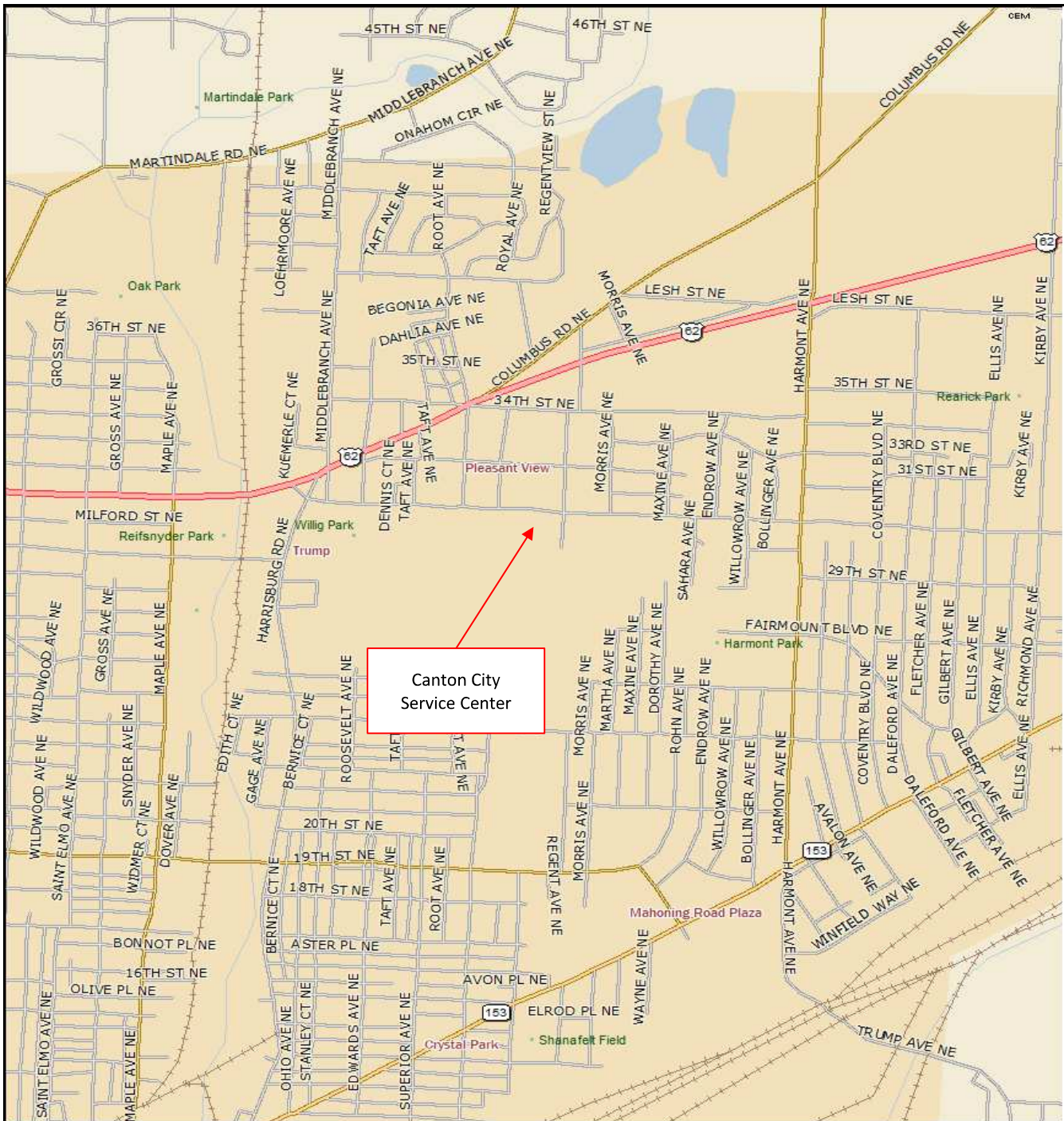
4.4 General Comments

GPD Group should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Subsequent to stripping topsoil, GPD should also be retained to provide testing and observation during site preparation and fill placement operations as well as during the foundation, floor slab, and pavement construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather or between borings and areas covered by the existing facility. The nature and extent of such variations may not become evident until during or after construction. If variations appear, GPD should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken.

This report has been prepared for the exclusive use of **The City of Canton** for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless GPD Group reviews the changes and either verifies or modifies the conclusions of this report in writing.



Canton City
Service Center



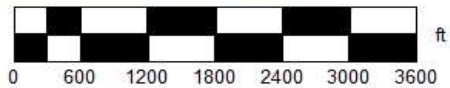
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MN (8.8° W)



Data Zoom 13-2



SITE LOCATION MAP

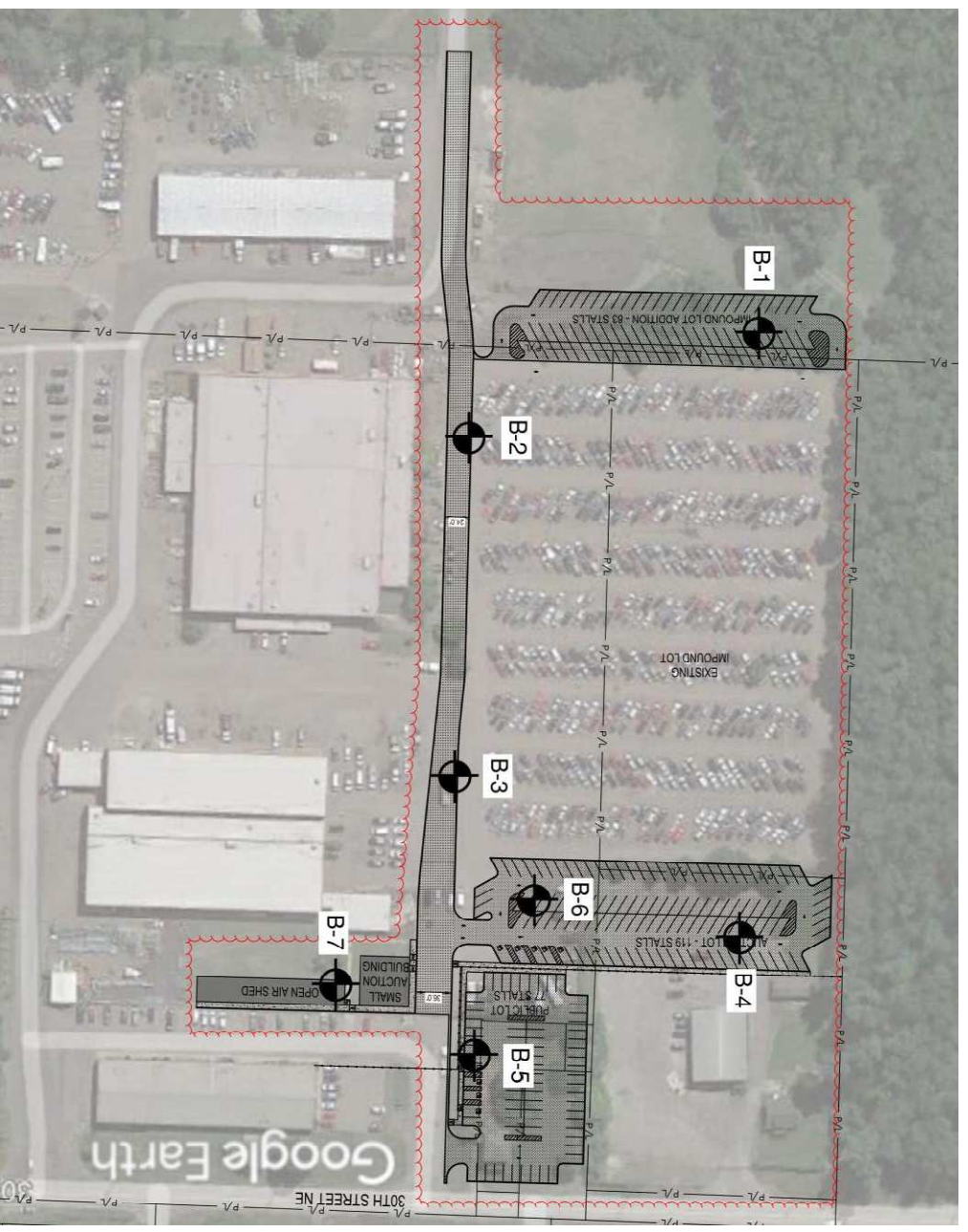
City of Canton - Proposed Sanitation Building

30th Street N.E., Canton, Ohio

GPD Project Number: 2020377.05

Date: August 2022

LOCATION PLAN



Legend
 Soil Boring:

PROJECT: City of Canton – Auction & Impound Lot Expansions
PROJECT NUMBER: 2020377.06
DATE: 8/4/2022
LOCATION: 30th Street N.E., Canton, Ohio



520 South Main Street, Suite 2531 □ Akron, Ohio 44311 □ (330)572-2100

Boring Number: B-1

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None. Hole closure 8.1 feet

GENERALIZED SUBSURFACE PROFILE - GINT STD US LAB.GDT - 8/4/22 15:46 - F:\GPD GILCHRIST\JOBS\2022\GPD\DRILLING\2020377.06 - CANTON SERVICE CENTER\B1 TO B7.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0	[Cross-hatched pattern]	9" SILT (Fill)										
2.5	[Diagonal hatching]	Moist, soft, brown & gray, clayey SILT, trace of roots & organics.	SS 1	89	1-2-2 (4)			24				
5.0	[Dotted pattern]	Moist, medium dense, brown & gray, fine to coarse SAND, little silt & gravel.	SS 2	89	10-16-9 (25)							
7.5	[Large dots]	Damp, medium dense, brown, fine to coarse SAND & GRAVEL.										
10.0	[Large dots]		SS 3	78	16-17-9 (26)							

Boring terminated at 10.0 feet

Boring Number: B-2

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		6" ASPHALT										
		Damp, very dense, black, ASPHALT GRINDINGS. (Fill)	SS 1	93	21-22-50/2"							
2.5												
		Moist, stiff, brown & gray, medium to coarse SAND & CLAY, little gravel.	SS 2	100	4-5-7 (12)							
5.0												
		Moist to wet, dense, brown, medium to coarse SAND & GRAVEL.										
7.5												
			SS 3	100	8-14-17 (31)							
10.0												

Boring terminated at 10.0 feet

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Boring Number: B-3

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		11" ASPHALT										
		8" ASPHALT GRINDINGS.										
		Damp, loose, brown & gray, fine to medium SAND & SLAG. (Fill)	SS 1	56	31-6-3 (9)							
2.5		Moist, stiff, brown & gray, silty CLAY, some sand.	SS 2	89	2-4-6 (10)							
5.0		Wet, medium dense, brown, fine to coarse SAND & GRAVEL.	SS 3	94	7-11-14 (25)							
7.5												
10.0												

Boring terminated at 10.0 feet

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Boring Number: B-4

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0	[Cross-hatch pattern]	8" SAND & GRAVEL										
	[Diagonal lines pattern]	Moist, medium stiff, brown & gray, silty CLAY, trace of organics.										
2.5	[Diagonal lines pattern]		SS 1	100	3-4-4 (8)			24				
	[Dotted pattern]	Damp, medium dense, brown, fine to coarse SAND & GRAVEL.										
5.0	[Dotted pattern]		SS 2	50	3-7-6 (13)							
	[Dotted pattern]											
7.5	[Dotted pattern]											
	[Dotted pattern]	Wet, loose, brown, fine to coarse SAND & GRAVEL.										
10.0	[Dotted pattern]		SS 3	44	2-3-3 (6)							

Boring terminated at 10.0 feet

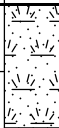





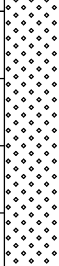



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Boring Number: B-5

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None

GENERALIZED SUBSURFACE PROFILE - GINT STD US LAB.GDT - 8/4/22 15:46 - F:\GPD GILCHRIST\JOBS\2022\GPD\DRILLING\2020377.06 - CANTON SERVICE CENTER\B1 TO B7.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		11" TOPSOIL										
		Damp, loose, gray SILT, little sand & clay, trace of roots.		78	3-3-3 (6)			23				
2.5												
		Damp, medium dense, brown & gray, fine to coarse SAND, some gravel, trace of silt.		83	5-6-5 (11)							
5.0												
		Damp, dense, brown, fine to coarse SAND, GRAVEL & COBBLES.		83	18-50 (50)							
7.5												
10.0												

Boring terminated at 10.0 feet

Boring Number: B-6

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		12" ASPHALT										
		6" GRANULATED SLAG										
		Dry, medium dense, brown SILT, little sand. (Fill)	SS 1	100	26-11-10 (21)							
2.5		Damp to moist, medium dense, brown, fine to coarse SAND, some gravel, little silt.	SS 2	100	7-7-7 (14)							
5.0												
		Damp, very dense, brown, fine to coarse SAND, GRAVEL & COBBLES.	SS 3	100	18-26-25 (51)							
7.5												
10.0												

Boring terminated at 10.0 feet

GENERALIZED SUBSURFACE PROFILE - GINT STD US LAB.GDT - 8/4/22 15:46 - F:\GPD GILCHRIST\JOBS\2022\GPD\DRILLING\2020377.06 - CANTON SERVICE CENTER\B1 TO B7.GPJ

Boring Number: B-7

CLIENT City of Canton
PROJECT NUMBER 2020377.06
DATE STARTED June 21, 2022 **COMPLETED** June 21, 2022
DRILLING CONTRACTOR GPD Geotechnical Services, Inc.
DRILLING METHOD Hollow Stem Auger - 2 1/4" ID
LOGGED BY Nick Burgess **CHECKED BY** Thomas Kratz
NOTES Drill Rig: Simco 2400

PROJECT NAME Auction & Impound Lot Expansions
PROJECT LOCATION 30th Street N.E., Canton, Ohio
GROUND ELEVATION _____ **HOLE SIZE** 6 in
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None
AT END OF DRILLING --- None. Hole closure 12.3 feet

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0	3" ASPHALT											
2.5	Damp, medium dense, dark brown, fine to coarse SAND & SILT, little gravel, trace of slag. (Fill)	SS 1	56	10-6-5 (11)								
5.0	Moist, stiff, brown & gray, clayey SILT, trace of sand.	SS 2	100	4-5-8 (13)			10					
7.5	Damp, medium dense, brown, medium to coarse SAND & GRAVEL.	SS 3	83	7-7-10 (17)								
12.5	Damp, dense, brown, fine to coarse SAND, GRAVEL & COBBLES.	SS 4	94	11-15-18 (33)								
15.0												

Boring terminated at 15.0 feet

GENERALIZED SUBSURFACE PROFILE - GINT STD US LAB.GDT - 8/4/22 15:46 - F:\GPD GILCHRIST\JOBS\2022\GPD\DRILLING\2020377.06 - CANTON SERVICE CENTER\B1 TO B7.GPJ

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	BS: Bulk Sample
R.C.: Diamond Bit Core Sampler	PM: Pressuremeter
H.A.: Hand Auger	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings
P.A.: Power Auger - Handheld motorized auger	

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
 N_{60} : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
 Q_u : Unconfined compressive strength, TSF
 Q_p : Pocket penetrometer value, unconfined compressive strength, TSF
 $w\%$: Moisture/water content, %
 LL: Liquid Limit, %
 PL: Plastic Limit, %
 PI: Plasticity Index = (LL-PL), %
 DD: Dry unit weight, pcf
 ∇, ∇, ∇ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/4 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

<u>Q_u - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

<u>Q_u - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

<u>(Typically Sedimentary Rock)</u>	
<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 -100
Good	75 - 90
Fair	50 - 75
Poor	25 -50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

Unified Soil Classification System

Major Divisions			Letter	Symbol	Description	
Coarse-grained Soils More than ½ retained on the No. 200 Sieve	Gravels More than ½ coarse fraction retained on the No. 4 sieve	Clean Gravels	GW		Well-graded gravels and gravel-sand mixtures, little or no fines.	
		Gravels With Fines	GP		Poorly-graded gravels and gravel-sand mixtures, little or no fines.	
		Gravels With Fines	GM		Silty gravels, gravel-sand-silt mixtures.	
		Gravels With Fines	GC		Clayey gravels, gravel-sand-clay mixtures.	
	Sands More than ½ passing through the No. 200 sieve	Clean Sands	Clean Sands	SW		Well-graded sands and gravelly sands, little or no fines.
			Clean Sands	SP		Poorly-graded sands and gravelly sands, little or no fines.
		Sands With Fines	Sands With Fines	SM		Silty sands, sand-silt mixtures
			Sands With Fines	SC		Clayey sands, sandy-clay mixtures.
Fine-grained Soils More than ½ passing through the No. 200 Sieve	Silts and Clays Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.	
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
			OL		Organic clays of medium to high plasticity.	
	Silts and Clays Liquid Limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous fines sands or silts, elastic silts.	
			CH		Inorganic clays of high plasticity, fat clays.	
			OH		Organic clays of medium to high plasticity.	
Highly Organic Soils			PT		Peat, muck, and other highly organic soils.	
Consistency Classification						
<i>Granular Soils</i>			<i>Cohesive Soils</i>			
Description - Blows Per Foot (Corrected)			Description - Blows Per Foot (Corrected)			
	<u>MCS</u>	<u>SPT</u>		<u>MCS</u>	<u>SPT</u>	
Very loose	<5	<4	Very soft	<3	<2	
Loose	5 - 15	4 - 10	Soft	3 - 5	2 - 4	
Medium dense	16 - 40	11 - 30	Firm	6 - 10	5 - 8	
Dense	41 - 65	31 - 50	Stiff	11 - 20	9 - 15	
Very dense	>65	>50	Very Stiff	21 - 40	16 - 30	
			Hard	>40	>30	
MCS = Modified California Sampler			SPT = Standard Penetration Test Sampler			

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Project information.
- 2. Work covered by Contract Documents.
- 3. Future work not part of this Project.
- 4. Contractor's use of site and premises.
- 5. Coordination with occupants.
- 6. Work restrictions.
- 7. Specification and Drawing conventions.
- 8. Miscellaneous provisions.

B. Related Requirements:

- 1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
- 2. Section 01 73 00 "Execution" for coordination of Owner-installed products.

1.3 DEFINITIONS

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

- A. Project Identification: CITY OF CANTON – 2022 SERVICE CENTER UPGRADES AND RECONFIGURATION PROJECT – GP 1331.

- 1. Project Location: 2436 30th STREET N.E., CANTON, OH 44705.

B. Owner: CITY OF CANTON.

- 1. Owner's Representative: JOHN M. HIGHMAN, JR.

C. Architect: GPD GROUP, 520 SOUTH MAIN STREET, SUITE 2531, AKRON, OH, 44311.

1. Architect's Representative: RUSSELL GAYHEART: RGAYHEART@GPDGROUP.COM.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents.
- B. Type of Contract:
 1. Project will be constructed under a single prime contract.

1.6 WORK UNDER OWNER'S SEPARATE CONTRACTS

- A. Future Work Not Part of this Contract: The Contract Documents include requirements that will allow Owner to carry out future work following completion of this Project; provide for the following future work:
 1. Electrical vehicle charging stations. Refer to Civil and Electrical Drawings for additional information and requirements.

1.7 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy Project site and existing adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.

1.9 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
1. Weekend Hours: At Owner's sole discretion.
 - a. Notify Owner not less than two days in advance.
 - b. Obtain Owner's written permission before proceeding.
 2. City Holiday Hours: At Owner's sole discretion.
 - a. Notify Owner not less than two days in advance.
 - b. Obtain Owner's written permission before proceeding.
- C. On-Site Work Day Restrictions: Do not perform work on-site during work black-out days or shut down dates indicated in the Owner-Contractor Agreement.
- D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.

- E. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 01 40 00 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
- B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Unit Price Contingency Allowance: Include a contingency allowance of \$50,000.00 for use according to Owner's written instructions.
 - 1. Coordinate contingency allowance adjustment with Unit Price No. 1 and Unit Price No. 2 requirements in Section 012200 "Unit Prices."

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 01 40 00 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- A. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: Subgrade stabilization

1. Description: Contractor shall remove any bad/weak soils found during proof roll (to a 12" depth). Contractor shall install tx 160 geogrid and place 12" of ODOT item 304 aggregate stabilization above as directed by the onsite geotechnical engineer.
2. Unit of Measurement: Square Yard [SY]
3. Contingency Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

B. Unit Price No. 2: Full depth asphalt pavement replacement

1. Description: Contractor shall remove damaged asphalt pavement including base as directed by the owner or owner's representative and install new heavy duty asphalt pavement as detailed on sheet C-501
2. Unit of Measurement: Square Foot [SF]
3. Contingency Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Proposed asphalt parking lot addition to auction car lot.
 - 1. Base Bid: Grading to proposed grades and permanent seeding.
 - 2. Alternate: Proposed asphalt parking lot with striping.

- B. Alternate No. 2: Proposed asphalt parking lot addition to proposed building.
 - 1. Base Bid: Grading to proposed grades and permanent seeding.
 - 2. Alternate: Removal of additional asphalt pavement, proposed concrete collar on catch basin, proposed asphalt parking lot with striping.

- C. Alternate No. 3: Proposed asphalt parking lot with ADA spaces and future EV stalls.
 - 1. Base Bid: Existing house removed, minor grading to fill in existing house and seeding disturbed areas.
 - 2. Alternate: Proposed grading of entire area, proposed asphalt parking lot with ADA stalls and new Electrical service for future EV stalls.

- D. Alternate No. 4: Proposed right of way concrete walk per city of Canton standards
 - 1. Base Bid: Existing grass remains the same.
 - 2. Alternate: Proposed walk, grading, and seeding disturbed areas.

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. "Instructions to Bidders" and "General Conditions" for requirements for substitution requests prior to award of Contract.
 - 2. Section 01 21 00 "Allowances" for products selected under an allowance.
 - 3. Section 01 23 00 "Alternates" for products selected under an alternate.
 - 4. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form acceptable to Architect.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.

- b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- b. Substitution request is fully documented and properly submitted.
- c. Requested substitution will not adversely affect Contractor's construction schedule.
- d. Requested substitution has received necessary approvals of authorities having jurisdiction.
- e. Requested substitution is compatible with other portions of the Work.
- f. Requested substitution has been coordinated with other portions of the Work.
- g. Requested substitution provides specified warranty.
- h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
 - 2. Section 01 31 00 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

- A. Architect's Supplemental Instruction (ASI) or Field Order: Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form acceptable to Architect.

1.4 PROPOSAL REQUESTS OR CHANGE PROPOSAL

- A. Owner-Initiated Proposal Requests or Change Proposals: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests or Change Proposals issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or Change Proposal or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

- c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
- 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 01 21 00 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 01 22 00 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request or Change Proposal, Architect will issue a Change Order for signatures of Owner and Contractor on form acceptable to Architect.

1.7 CONSTRUCTION CHANGE DIRECTIVE OR WORK CHANGE DIRECTIVE

- A. Construction Change Directive or Work Change Directive: Architect may issue a Construction Change Directive on form acceptable to Architect. Construction Change Directive or Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive or Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive or Work Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Section 01 22 00 "Unit Prices" for administrative requirements governing the use of unit prices.
 - 3. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 4. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's name.
 - c. Owner's Project number.
 - d. Name of Architect.
 - e. Architect's Project number.
 - f. Contractor's name and address.
 - g. Date of submittal.

2. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.

5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
8. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 - 1. Application for Payment Forms: Use forms proposed by the Contractor acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- C. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- D. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 - 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- E. Transmittal: Submit six signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Products list (preliminary if not final).
 5. Schedule of unit prices.
 6. Submittal schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
- H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 01 77 00 "Closeout Procedures."
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.

2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. Evidence that claims have been settled.
6. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
7. Final liquidated damages settlement statement.
8. Proof that taxes, fees, and similar obligations are paid.
9. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Project meetings.
- B. Related Requirements:
 - 1. Section 01 32 00 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 01 77 00 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. BIM: Building Information Modeling.
- B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.

- b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 - 8. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
- 1. File Preparation Format:
 - a. Same digital data software program, version, and operating system as original Drawings.
 - 2. File Submittal Format: Submit or post coordination drawing files using PDF format.
 - 3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCAD 2020.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement included in this Project Manual.

1.7 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 - 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Owner name.
 - 3. Owner's Project number.
 - 4. Name of Architect.
 - 5. Architect's Project number.
 - 6. Date.
 - 7. Name of Contractor.

8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form acceptable to Architect.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 26 00 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number, including RFIs that were returned without action or withdrawn.

5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work or Field Order, Construction Change Directive or Work Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.
1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD 2020.
 4. Contractor shall execute a data licensing agreement in the form of Agreement included in Project Manual.
 - a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement included in this Project Manual.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Preparation of Record Documents.
 - o. Use of the premises and existing building.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - t. Procedures for moisture and mold control.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.

- d. Submittal of written warranties.
 - e. Requirements for preparing operations and maintenance data.
 - f. Requirements for delivery of material samples, attic stock, and spare parts.
 - g. Requirements for demonstration and training.
 - h. Preparation of Contractor's punch list.
 - i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - j. Submittal procedures.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at weekly intervals or at intervals agreed upon by Architect, Owner, and Contractor.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site use.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of Proposal Requests.

- 15) Pending changes.
- 16) Status of Change Orders.
- 17) Pending claims and disputes.
- 18) Documentation of information for payment requests.

- 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

AGREEMENT FOR TRANSFER AND USE OF ELECTRONIC FILES

This AGREEMENT made this _____ day of _____, Two Thousand _____, by,
and between Glaus, Pyle, Schomer, Burns, and DeHaven, Inc. dba GPD Group (hereinafter “Design
Professional”), and

_____ (hereinafter “User”) whose address is:
(Name of User)

(User Address)

Whereas, User has requested Design Professional provide electronic files for User’s convenience and use related to project name listed below and whereas, Design Professional is willing to accommodate this request pursuant to the following terms and conditions, User and Design Professional agree as follows:

Design Professional and User fully understand that the data contained in these electronic files are part of Design Professional’s Instruments of Service, Design Professional shall be deemed the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights. These files are not a product, and shall not be used by User or anyone else receiving this data through or from User for any other purpose other than as a convenience. Design Professional makes no warranties, either express or implied, of merchantability and fitness for any particular purpose.

User understands and accepts that electronic files deteriorate or can be modified inadvertently or otherwise without authorization by Design Professional. Therefore, Design Professional may remove all indication of its ownership or involvement from these electronic files. Furthermore, Design Professional makes no representations as to compatibility, usability or readability of the files resulting from the use of software, application packages, operating systems, or computer hardware differing from those of Design Professional. User understands that these electronic files are not contract documents. Significant differences may exist between these electronic files and corresponding hard copy documents due to addenda, change orders, revisions, layer visibility or other reasons. Design Professional makes no representations as to the accuracy or completeness of these electronic files. User understands and agrees that in the event of a conflict, printed hard copy drawings and specifications issued by Design Professional shall take precedence over electronic files. User understands and agrees that User alone is completely responsible, without limitation, to check and otherwise confirm the accuracy of all data on these electronic files.



User agrees to make no claims and hereby waives, to the fullest extent permitted by law, any claims or causes of action of any nature whatsoever against Design Professional, it's officers, directors, employees, agents or sub-consultants which may arise out of or in connection with the use of the electronic files. Furthermore, User shall, to the fullest extent permitted by law, indemnify, defend and hold harmless Design Professional, it's officers, directors, employees, agents or sub-consultants from and against any and all claims, damages, losses and expenses, including attorney fees, arising out of or related to User's, or anyone else receiving this data through or from User, use of the electronic files.

Neither this Agreement nor use of these files shall alter the contractor's Contract for Construction in any way.

An administrative fee to provide a copy of electronic files is (\$ _____)
(Amount)

Accepted and Agreed by:

Signature (signer represents he/she is legally authorized to sign on behalf of client)

Print Name & Title

Company Name

Date

Project Name

GPD Project Number

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.

- B. Related Requirements:
 - 1. Section 01 29 00 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
 - 2. Section 01 40 00 "Quality Requirements" for schedule of tests and inspections.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.

- B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.

1. Float time belongs to Owner.
 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
1. Working electronic copy of schedule file.
 2. PDF file.
- B. Startup construction schedule.
1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 3. Total Float Report: List of activities sorted in ascending order of total float.
 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at monthly intervals.
- H. Material Location Reports: Submit at monthly intervals.
- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Unusual Event Reports: Submit at time of unusual event.

1.4 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Verify availability of qualified personnel needed to develop and update schedule.
 3. Discuss constraints, including work stages, interim milestones, and partial Owner occupancy.
 4. Review delivery dates for Owner-furnished products.
 5. Review schedule for work of Owner's separate contracts.
 6. Review submittal requirements and procedures.
 7. Review time required for review of submittals and resubmittals.
 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 9. Review time required for Project closeout and Owner startup procedures.
 10. Review and finalize list of construction activities to be included in schedule.
 11. Review procedures for updating schedule.

1.5 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from entities involved.
 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

- a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Construction of mock-ups, prototypes and samples.
 - d. Owner interfaces and furnishing of items.
 - e. Interfaces with Separate Contracts.
 - f. Regulatory agency approvals.
 - g. Punch list.
3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.

- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
 - F. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
 - 1. See Section 01 29 00 "Payment Procedures" for cost reporting and payment procedures.
 - G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.
 - H. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Final Completion percentage for each activity.
 - I. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
 - J. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
- 1.7 STARTUP CONSTRUCTION SCHEDULE
- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.

- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.8 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract must not excuse Contractor from completing all work within applicable completion dates.
 - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and inspection.
 - j. Punch list and Final Completion.
 - k. Activities occurring following Final Completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates to be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
 - a. Each activity cost to reflect an appropriate value subject to approval by Architect.
 - b. Total cost assigned to activities to equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.9 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Meter readings and similar recordings.
 13. Emergency procedures.
 14. Orders and requests of authorities having jurisdiction.
 15. Change Orders received and implemented.
 16. Construction or Work Change Directives received and implemented.
 17. Services connected and disconnected.
 18. Equipment or system tests and startups.
 19. Partial completions and occupancies.
 20. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.

3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
 1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
 - 3. Periodic construction photographs.
 - 4. Time-lapse sequence construction photographs.
 - 5. Final Completion construction photographs.
 - 6. Preconstruction video recordings.
 - 7. Periodic construction video recordings.
 - 8. Time-lapse sequence construction video recordings.
 - 9. Construction webcam.

- B. Related Requirements:
 - 1. Section 01 77 00 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 02 41 16 "Structure Demolition" for photographic documentation before building demolition operations commence.
 - 3. Section 31 10 00 "Site Clearing" for photographic documentation before site clearing operations commence.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos electronically. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.3 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time from camera.
- D. File Names: Name media files with date, Project area, and sequential numbering suffix.

1.4 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
 - 1. Flag excavation areas and construction limits before taking construction photographs.
 - 2. Take a minimum of 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take a minimum of 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Underground utilities.
 - 2. Underslab services.
 - 3. Piping.
 - 4. Electrical conduit.
 - 5. Waterproofing and weather-resistant barriers.
- E. Periodic Construction Photographs: Take 20 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 01 31 00 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 01 32 33 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 01 40 00 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 01 77 00 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
9. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled dates for purchasing.
 - h. Scheduled date of fabrication.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.4 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
1. Project name.
 2. Date.
 3. Name of Architect.
 4. Name of Contractor.
 5. Name of firm or entity that prepared submittal.
 6. Names of subcontractor, manufacturer, and supplier.
 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
 8. Category and type of submittal.
 9. Submittal purpose and description.
 10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 11. Drawing number and detail references, as appropriate.
 12. Indication of full or partial submittal.

13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.5 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
 - a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing

color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.

- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

- G. Certificates:
 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.

6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.7 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect[**and Construction Manager**].
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
 - 1. Mockups are used for one or more of the following:
 - a. Verify selections made under Sample submittals.
 - b. Demonstrate aesthetic effects.
 - c. Demonstrate the qualities of products and workmanship.

- d. Demonstrate successful installation of interfaces between components and systems.
 - e. Perform preconstruction testing to determine system performance.
2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
 3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
 - F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
 - G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
 - H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
 - I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
 - J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect[**or Construction Manager**].

1.3 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
 - 2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.

- G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
 2. Project title and number.
 3. Name, address, telephone number, and email address of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement of whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement of whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from

manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
 - 1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups of size indicated.
 - 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 - 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 - 5. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.

- a. Allow seven days for initial review and each re-review of each mockup.
 - 7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 - 8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- K. Specialty Mockups: See Section 01 43 39 "Mockups" for additional construction requirements for integrated exterior mockups.

1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
- 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
- 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
 - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 6. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan]. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.

2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.10 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.
 1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

- 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."

- B. Protect construction exposed by or for quality-control service activities.

- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

REFERENCES

2022 SERVICE CENTER UPGRADE AND RECONFIGURATION PROJECT - GP 1331
BID / PERMIT

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- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.
30. ASCE - American Society of Civil Engineers; www.asce.org.
31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.

33. ASME - ASME International; American Society of Mechanical Engineers (The); www.asme.org.
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.
35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; www.bwfbadminton.com.
50. CARB - California Air Resources Board; www.arb.ca.gov.
51. CDA - Copper Development Association Inc.; www.copper.org.
52. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
53. CEA - Canadian Electricity Association; www.electricity.ca.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
58. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
59. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
60. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
61. CPA - Composite Panel Association; www.compositepanel.org.
62. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
63. CRRC - Cool Roof Rating Council; www.coolroofs.org.
64. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
65. CSA - CSA Group; www.csagroup.org.
66. CSI - Cast Stone Institute; www.caststone.org.
67. CSI - Construction Specifications Institute (The); www.csiresources.org.
68. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
69. CTA - Consumer Technology Association; www.cta.tech.
70. CTI - Cooling Technology Institute; www.coolingtechnology.org.
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECIA - Electronic Components Industry Association; www.ecianow.org.
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.
78. ESTA - Entertainment Services and Technology Association; www.esta.org.
79. EVO - Efficiency Valuation Organization; www.evo-world.org.

REFERENCES

80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FGIA - Fenestration and Glazing Industry Alliance; <https://fgiaonline.org>.
82. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
83. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
84. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
85. FM Global - FM Global; www.fmglobal.com.
86. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridarroof.com.
87. FSA - Fluid Sealing Association; www.fluidsealing.com.
88. FSC - Forest Stewardship Council U.S.; www.fscus.org.
89. GA - Gypsum Association; www.gypsum.org.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).
93. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
94. IAS - International Accreditation Service; www.iasonline.org.
95. ICC - International Code Council; www.iccsafe.org.
96. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
97. ICPA - International Cast Polymer Association (The); www.theicpa.com.
98. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
99. IEC - International Electrotechnical Commission; www.iec.ch.
100. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
101. IES - Illuminating Engineering Society; www.ies.org.
102. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
103. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
104. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
105. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
106. Intertek - Intertek Group; www.intertek.com.
107. ISA - International Society of Automation (The); www.isa.org.
108. ISFA - International Surface Fabricators Association; www.isfanow.org.
109. ISO - International Organization for Standardization; www.iso.org.
110. ITU - International Telecommunication Union; www.itu.int.
111. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
112. LPI - Lightning Protection Institute; www.lightning.org.
113. MBMA - Metal Building Manufacturers Association; www.mbma.com.
114. MCA - Metal Construction Association; www.metalconstruction.org.
115. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
116. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
117. MHI - Material Handling Industry; www.mhi.org.
118. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
119. MPI - Master Painters Institute; www.paintinfo.com.
120. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.
121. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
122. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
123. NADCA - National Air Duct Cleaners Association; www.nadca.com.
124. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.

REFERENCES

125. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
126. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
127. NBI - New Buildings Institute; www.newbuildings.org.
128. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
129. NCMA - National Concrete Masonry Association; www.ncma.org.
130. NEBB - National Environmental Balancing Bureau; www.nebb.org.
131. NECA - National Electrical Contractors Association; www.necanet.org.
132. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
133. NEMA - National Electrical Manufacturers Association; www.nema.org.
134. NETA - InterNational Electrical Testing Association; www.netaworld.org.
135. NFHS - National Federation of State High School Associations; www.nfhs.org.
136. NFPA - National Fire Protection Association; www.nfpa.org.
137. NFPA - NFPA International; (see NFPA).
138. NFRC - National Fenestration Rating Council; www.nfrc.org.
139. NGA - National Glass Association; www.glass.org.
140. NHLA - National Hardwood Lumber Association; www.nhla.com.
141. NLGA - National Lumber Grades Authority; www.nlga.org.
142. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
143. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
144. NRCA - National Roofing Contractors Association; www.nrca.net.
145. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
146. NSF - NSF International; www.nsf.org.
147. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
148. NSPE - National Society of Professional Engineers; www.nspe.org.
149. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
150. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
151. NWFA - National Wood Flooring Association; www.nwfa.org.
152. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
153. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
154. PDI - Plumbing & Drainage Institute; www.pdionline.org.
155. PLASA - PLASA; www.plasa.org.
156. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
157. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
159. RFCI - Resilient Floor Covering Institute; www.rfci.com.
160. RIS - Redwood Inspection Service; (see WWPA).
161. SAE - SAE International; www.sae.org.
162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
163. SDI - Steel Deck Institute; www.sdi.org.
164. SDI - Steel Door Institute; www.steeldoor.org.
165. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).
167. SIA - Security Industry Association; www.securityindustry.org.
168. SJI - Steel Joist Institute; www.steeljoist.org.
169. SMA - Screen Manufacturers Association; www.smainfo.org.
170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
173. SPIB - Southern Pine Inspection Bureau; www.spib.org.

REFERENCES

174. SPRI - Single Ply Roofing Industry; www.spri.org.
175. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
176. SSINA - Specialty Steel Industry of North America; www.ssina.com.
177. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
178. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steeltank.com.
179. SWI - Steel Window Institute; www.steelwindows.com.
180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
182. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
184. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
185. TMS - The Masonry Society; www.masonrysociety.org.
186. TPI - Truss Plate Institute; www.tpinst.org.
187. TPI - Turfgrass Producers International; www.turfgrasssod.org.
188. TRI - Tile Roofing Industry Alliance; www.tilerroofing.org.
189. UL - Underwriters Laboratories Inc.; www.ul.org.
190. UL LLC - UL LLC; www.ul.com.
191. USAV - USA Volleyball; www.usavolleyball.org.
192. USGBC - U.S. Green Building Council; www.usgbc.org.
193. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
194. WA - Wallcoverings Association; www.wallcoverings.org.
195. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
196. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
197. WDMA - Window & Door Manufacturers Association; www.wdma.com.
198. WI - Woodwork Institute; www.woodworkinstitute.com.
199. WSRCA - Western States Roofing Contractors Association; www.wsra.com.
200. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.
2. DOC - U.S. Department of Commerce; www.commerce.gov.
3. DOD - U.S. Department of Defense; www.defense.gov.
4. DOE - U.S. Department of Energy; www.energy.gov.
5. DOJ - U.S. Department of Justice; www.ojp.usdoj.gov.
6. DOS - U.S. Department of State; www.state.gov.
7. EPA - United States Environmental Protection Agency; www.epa.gov.
8. FAA - Federal Aviation Administration; www.faa.gov.
9. GPO - U.S. Government Publishing Office; www.gpo.gov.
10. GSA - U.S. General Services Administration; www.gsa.gov.

11. HUD - U.S. Department of Housing and Urban Development; www.hud.gov.
12. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; www.lbl.gov/.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
16. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.
17. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
18. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USP - U.S. Pharmacopeial Convention; www.usp.org.
20. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.
2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
3. DSCC - Defense Supply Center Columbus; (see FS).
4. FED-STD - Federal Standard; (see FS).
5. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from U.S. General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specification and Standards; (see DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. BEARHFTI; California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; (see BHGS).
2. BHGS; State of California Bureau of Household Goods and Services; (Formerly: California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation); www.bhgs.dca.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.oal.ca.gov/publications/ccr/.
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.

7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development;
<https://tfsweb.tamu.edu/>.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 43 39 - MOCKUPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Integrated exterior mockups.

B. Related Requirements:

1. Section 01 40 00 "Quality Requirements" for quality assurance requirements for aesthetic and workmanship mockups specified in other Sections.

1.2 DEFINITIONS

- A. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as part of permanent construction, consisting of multiple products, assemblies, and subassemblies.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, testing and inspecting agency representative, and installers of major systems whose Work is included in integrated exterior mockups.
2. Review locations and extent of mockups.
3. Review and finalize schedule for mockups, and verify availability of materials, personnel, equipment, and facilities needed to complete mockups and maintain schedule for the Work.

1.4 QUALITY ASSURANCE

- A. Build mockups to do the following:

1. Verify selections made under Sample submittals.
2. Demonstrate aesthetic effects.
3. Demonstrate the qualities of products and workmanship.
4. Demonstrate acceptable coordination between components and systems.

- B. Fabrication: Before fabricating or installing portions of the Work requiring mockups, build mockups for each form of construction and finish required. Use materials and installation methods as required for the Work.

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.

3. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.

C. Notifications:

1. Notify Architect seven days in advance of the dates and times when mockups will be constructed.
2. Allow seven days for initial review and each re-review of each mockup.

D. Approval: Obtain Architect's approval of mockups before starting fabrication or construction of corresponding Work.

1. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 COORDINATION

- A. Coordinate schedule for construction of mockups, so construction, testing, and review of mockups do not impact Project schedule.

PART 2 - PRODUCTS

2.1 INTEGRATED EXTERIOR MOCKUPS

- A. Construct integrated exterior mockup to demonstrate constructability, coordination of trades, and sequencing of Work; and to ensure materials, components, subassemblies, assemblies, and interfaces integrate into a system complying with indicated performance and aesthetic requirements.
- B. Build integrated exterior mockups using installers and construction methods that will be used in completed construction.
- C. Use specified products that have been approved by Architect. Coordinate installation of materials and products specified in individual Specification Sections that include Work included in integrated exterior mockups.
- D. The Work of integrated exterior mockups includes, but is not limited to, the following:
1. Masonry veneer.
 2. Cold-formed metal framing.
 3. Air and weather barriers.
 4. Waterproofing.
 5. Through-wall flashing.

6. Flashing and sheet metal trim.
 7. Joint sealants.
 8. Metal wall panels.
- E. Photographic Documentation: Document construction of integrated exterior mockups with photographs in accordance with Section 01 32 33 "Photographic Documentation." Provide photographs showing details of interface of different materials and assemblies.
- F. Provide and document modifications to construction details and interfaces between components and systems required to properly sequence the Work, or to pass performance testing requirements. Obtain Architect's approval for modifications.

Retain approved mockups constructed in place. Incorporate fully into the Work.

PART 3 - EXECUTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

- E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.

- F. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by Owner. Include the following:
 - 1. Methods used to meet the goals and requirements of Owner.
 - 2. Concrete cutting method(s) to be used.
 - 3. Location of construction devices on the site.
 - 4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
 - 5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with Owner.
 - 6. Indicate locations of sensitive equipment areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.

2.2 TEMPORARY FACILITIES

- A. Field Offices:
 - 1. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Section 01 10 00 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service:
 - 1. Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.
- E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- F. Electric Power Service:
 - 1. Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - a. Install electric power service overhead unless otherwise indicated.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 31 20 00 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 32 12 16 "Asphalt Paving."

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Storage and Staging: Use designated areas of Project site for storage and staging needs.

G. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 3. Maintain and touch up signs, so they are legible at all times.
- I. Waste Disposal Facilities:
1. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution."
- J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Section 01 10 00 "Summary."
- C. Temporary Erosion and Sedimentation Control:
1. Comply with requirements specified in Section 31 10 00 "Site Clearing."
 2. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, in accordance with erosion- and sedimentation-control Drawings and requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

- a. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - b. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - c. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - d. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection:
- 1. Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
- 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or As indicated on Drawings.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- K. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
- 1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 - 2. Paint and maintain appearance of walkway for duration of the Work.

- L. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

- M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.

- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard and replace stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

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BID / PERMIT	01/15/2023

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for products selected under an allowance.
 - 2. Section 01 23 00 "Alternates" for products selected under an alternate.
 - 3. Section 01 25 00 "Substitution Procedures" for requests for substitutions.
 - 4. Section 01 42 00 "References" for applicable industry standards for products specified.
 - 5. Section 01770 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
 - D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
 - E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 33 00 "Submittal Procedures."
 - F. Substitution: Refer to Section 01 25 00 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 2. Store products to allow for inspection and measurement of quantity or counting of units.
 3. Store materials in a manner that will not endanger Project structure.
 4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.

5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
 7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 25 00 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.

- 5. Samples, if requested.

- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 01 33 00 "Submittal Procedures."
 - 1. Form of Approval of Submittal: As specified in Section 01 33 00 "Submittal Procedures."
 - 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering.
 - 3. Installation.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
 - 8. Correction of the Work.
- B. Related Requirements:
 - 1. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor or professional engineer.
- B. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 - 4. Dates: Indicate when cutting and patching will be performed.

5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.4 CLOSEOUT SUBMITTALS

- A. Final Property Survey: Submit number of copies required by the Owner showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Professional Engineer Qualifications: Refer to Section 01 40 00 "Quality Requirements."
- C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 01 31 00 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Engage a land surveyor or professional engineer experienced in laying out the Work, using the following accepted surveying practices:
 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish limits on use of Project site.
 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.
 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Final Property Survey: Engage a land surveyor or professional engineer to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor or professional engineer, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb, and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.

- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00 "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Restore permanent facilities used during construction to their specified condition.
- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

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2022 SERVICE CENTER UPGRADE AND RECONFIGURATION PROJECT - GP 1331	2020377.06
BID / PERMIT	01/15/2023

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final Completion procedures.
 - 3. List of incomplete items.
 - 4. Submittal of Project warranties.
 - 5. Final cleaning.

- B. Related Requirements:
 - 1. Section 01 29 00 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 01 78 23 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Section 01 79 00 "Demonstration and Training" for requirements to train Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

- C. Field Report: For pest-control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in utility services.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 01 29 00 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following format:
 - a. MS Excel Electronic File: Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 1. Submit by email to Architect.
- E. Warranties in Paper Form:
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
 - i. Vacuum and mop concrete.
 - j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
 - k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - l. Remove labels that are not permanent.

- m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - o. Clean strainers.
 - p. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 01 50 00 "Temporary Facilities and Controls."

3.2 CORRECTION OF THE WORK

- A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 01 73 00 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:

1. Submit Manuals by email to Architect in pdf format for review and comment.
 2. Submit Final Corrected Manual: one copy in electronic pdf format (to Owner and Architect) and three paper copies to Owner.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit pdf and paper copies of each corrected final manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

- E. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor has delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.

2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.
- 1.11 PRODUCT MAINTENANCE MANUALS
- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
 - B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- D. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.

- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.

- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 73 00 "Execution" for final property survey.
 - 2. Section 01 77 00 "Closeout Procedures" for general closeout procedures.
 - 3. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit annotated PDF electronic files and 3 paper copies of Project's Specifications, including addenda and Contract modifications.

- C. Record Product Data: Submit annotated PDF electronic files and directories and 3 paper copies of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories and 3 paper copies of each submittal.
- E. Reports: Submit written report monthly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Locations of concealed internal utilities.
 - i. Changes made by Change Order or Construction or Work Change Directive.
 - j. Changes made following Architect's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.
 - m. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.

4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, Record Product Data, and Record Drawings where applicable.
- B. Format: Submit record specifications as annotated PDF electronic file and paper copy.

1.6 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file and paper copy.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file and paper copy.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.3 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.
 - 2. Transcript:
 - a. Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.

- b. Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
3. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 01 78 23 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.
 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.

5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 1. Owner will furnish Contractor with names and positions of participants.

- C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.9 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.
 - 1. Submit video recordings on CD-ROM or thumb drive.
 - 2. File Hierarchy: Organize folder structure and file locations in accordance with Project Manual table of contents. Provide complete screen-based menu.
 - 3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
 - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged in accordance with Project Manual table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. Email address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
 - 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.

- c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
 - 1. Furnish additional portable lighting as required.
- E. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- F. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 79 00

SECTION 02 41 16 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of buildings and site improvements.
2. Removing below-grade construction.
3. Disconnecting, capping or sealing, and removing site utilities.

B. Related Requirements:

1. Section 01 10 00 "Summary" for use of the premises and phasing requirements.
2. Section 01 32 00 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
3. Section 31 10 00 "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition.

1.2 DEFINITIONS

- ##### A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.

1.3 MATERIALS OWNERSHIP

- ##### A. Unless otherwise indicated, demolition waste becomes property of Contractor.

- ##### B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 PREINSTALLATION MEETINGS

- ##### A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be demolished.
2. Review structural load limitations of existing structures.
3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent buildings.

7. Review items to be salvaged and returned to Owner.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Schedule of Building Demolition Activities: Indicate the following:
 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 2. Temporary interruption of utility services.
 3. Shutoff and capping or re-routing of utility services.
- D. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Comply with Section 01 32 33 "Photographic Documentation." Submit before the Work begins.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.8 FIELD CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.

- C. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. On-site storage or sale of removed items or materials is not permitted.

1.9 COORDINATION

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations or operations of adjacent occupied buildings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

2.2 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 31 20 00 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Utilities to Be Disconnected: Locate, identify, disconnect, and seal or cap off utilities serving buildings and structures to be demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 3. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.4 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of demolition.
- C. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.
 - 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 50 00 "Temporary Facilities and Controls."
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.5 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- C. Explosives: Use of explosives is not permitted.

3.6 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.

- C. Below-Grade Construction: Demolish foundation walls and other below-grade construction.
 - 1. Remove below-grade construction, including basements, foundation walls, and footings, completely.
- D. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.
- E. Hydraulic Elevator Systems: Demolish and remove elevator system, including cylinder, plunger, well assembly, steel well casing and liner, oil supply lines, and tanks.

3.7 SITE RESTORATION

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 31 20 00 "Earth Moving."
- C. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Do not burn demolished materials.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.
 - 1. Clean roadways of debris caused by debris transport.

END OF SECTION 02 41 16

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of cast-in-place concrete is shown on drawings. This Section includes the following miscellaneous materials associated with cast-in-place concrete:
 - 1. Waterstops.
 - 2. Premolded joint filler.
 - 3. Underslab moisture barrier.
- B. Work Provided by Others:
 - 1. By the Owner - Payment of costs for concrete testing and inspection as hereinafter described.

1.3 REFERENCES

- A. Reference Specification: To be complete, this specification Section requires the use of ACI 301-10 "Specifications for Structural Concrete". This specification Section is intended to supplement and modify ACI 301 and will take precedence where conflict exists. Requirements of ACI 301 shall govern the work, except as noted herein.
- B. Field References: Keep a copy of ACI SP-15 Field Reference Manual in the Concrete Installer's field office at all times. Supervisory personnel shall be familiar with ACI 301 and other standards contained in SP-15, as well as with this project specification.

1.4 QUALITY ASSURANCE

- A. Source Quality Control: Materials are subject to inspection and tests in field conducted by a qualified inspection agency. Such inspections and tests will not relieve contractor of responsibility for providing materials in compliance with specification requirements. Promptly remove and replace materials or components which do not comply.
 - 1. The reinforcing steel supplier shall certify that all reinforcing steel has been manufactured in the United States and meets the designated ASTM specifications.
- B. Testing:
 - 1. As per ACI 301, Section 1, Article 1.6, except as noted.

2. Required testing services of Sections 1.6.4 and 1.6.5 will be performed by an independent testing laboratory employed by the Owner. Testing services required in Sections 1.6.4.2a, b, and c shall be performed by same laboratory but at Contractor's expense.
 3. All samples shall be taken after any addition of water at the job site is complete. When pumping or pneumatic equipment is used, samples shall be taken at discharge end. This is for both cylinders and slump tests.
 4. Mold and cure four specimens (cylinders) in accordance with ASTM C31. Four specimens constitute a strength test. Test one cylinder at 7 days and 2 at 28 days. Acceptance of structure will be based on results of 28-day tests.
 5. Air Content:
 - a. Determine air content of concrete for each strength test by either the pressure method (ASTM C231) or the volumetric method (ASTM C173). The "chase" air indicator shall not be used.
 - b. Air content tests shall be made on all concrete whether the concrete is designated as air-entrained or not.
 - c. Additional air content tests, for concrete specified as air-entrained, shall be made when any of the following conditions occur:
 - 1) A change in appearance or consistency of concrete.
 - 2) Possible reduction of air content due to time delays of truck and/or hot weather.
 - 3) When air temperature is over 80°F, check each truck load.
 - d. Inform Engineer immediately of any slump and/or air content tests that do not meet these specifications. If strength, durability or aesthetics of the structure would be impaired, that concrete shall not be used.
 6. Concrete test reports shall contain the following information: concrete supplier, quantity of concrete represented, location of samples taken, design strength requirement at 28 days, list of all materials and admixtures used with quantity and brand or source, actual slump, actual air content, air temperature, concrete temperature, weather, cylinder weight as received, date molded, number of days on job site, date tested, test results for 7 and 28 days, and any other information necessary to evaluate test results.
 7. Send one copy of reports on all required laboratory testing directly to the Structural Engineer, one copies to the Architect, one copy to the Contractor and one copy to the concrete supplier. A copy of all test reports shall be in the Engineer's office within a minimum of 5 working days from date of test or inspection.
 8. Verbal information on any concrete not meeting these specifications shall be communicated to the engineer immediately by phone.
- C. Contractor's Responsibility: Provide a box for storing concrete test specimens while on job; maintain temperature in the box between 60 and 80°F; prevent loss of moisture from specimens in accordance with ASTM C31.
- D. Evaluation and acceptance of concrete: Article 1.6.7, 1.6.8 and as follows: any test results on in-place concrete conducted without prior knowledge and input of the Engineer will not be accepted. Engineer reserves the right to reject any non-destructive test results that he considers improperly calibrated or correlated.
- E. Acceptance of Structure: Article 1.7 and as follows: if 28-day test results do not meet requirements of Section 1.6.7, the Engineer shall have the right to order a change in mix

proportions for remaining portions of structure. He may require core tests in accordance with Section 1.6.5.3 to be made at Contractor's expense. Any such testing shall be done by an independent testing agency acceptable to the Engineer.

- F. Testing agencies affidavit that construction is in conformance with the drawings and specifications.

1.5 SUBMITTALS

- A. Product Data: Submit data for proprietary materials and items including admixtures, patching compounds, waterstops, joint systems, curing compounds, finish materials, and others as requested by Architect/Engineer.
- B. Shop Drawings/Reinforcement: See ACI 301, Section 3.1. Detailing shall conform to ACI 315-10 "Details and Detailing of Concrete Reinforcement".
- C. Shop Drawings/Formwork: Submit shop drawings prepared by a Registered Engineer for concrete formwork indicating all shoring and reshoring, form construction, locations of form ties, form finishes, and other information as required by the Engineer. Design shall conform to following:
 - 1. "Specifications for Structural Concrete, ACI-301-Section 2, Formwork".
 - 2. "Guide to Formwork for Concrete, ACI-347-14, Chapter 2, Design".
- D. Shop drawings/slab penetration: Submit shop drawings showing location and size of all slab penetrations by all trades.
- E. Shop drawings submittals shall consist of a direct reading transparency plus 2 prints of each drawing.
- F. Mix Design: Submit mix designs for each concrete mix for the project per Chapter 5 of ACI 318-14. Mix designs shall include all back up material with compressive strength breaks based on field experience or breaks from a trial mix per Chapter 5.

1.6 DELIVERY, STORAGE AND HANDLING

- A. See ACI 301, Section 5.
- B. Store reinforcement off the ground to avoid soiling by foreign materials.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Where applicable, reference is made herein to material requirements given in ACI 301.
- B. Use manufactured materials in accordance with manufacturer's recommendations. If such recommendations differ from requirements specified herein, call to the Engineer's attention before proceeding. Generally, the more stringent requirements will apply.

2.2 FORM MATERIALS

- A. General: As per ACI 301, Section 2, except as noted.
- B. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly—placed concrete without bow or deflection.
- C. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- D. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 REINFORCING MATERIALS

- A. Reinforcement: As per ACI 301, Section 3, Article 3.2, with selections and supplements.
- B. Supports for Reinforcement: Provide such items as bolsters, chairs and spacers for supporting, spacing and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable. Supports shall be of the following types:
 - 1. Class C (Plastic Coated): Support for members with soffits exposed to view and where plaster or other coatings are to be applied directly to concrete.
 - 2. Class A (Bright Basic): Supports for all other soffits.
 - 3. Precast Concrete Blocks: Support reinforcement for slabs on grade.
- C. Fibrous Reinforcement: Furnish fibrillated polypropylene fibers for secondary reinforcement only of concrete toppings and non-structural slabs on grade. Do not use fibers for structural, elevated structural or sloping slabs.
 - 1. Provide one of the following:
 - a. Polypropylene Fibers: 100 percent collated fibrillated polypropylene fibers with an average length of $\frac{3}{4}$ inch, a minimum specific gravity of 0.9, and a minimum tensile strength of 80 ksi. Polypropylene fibers shall be added to the concrete mix at a rate of 1-1/2 pounds per cubic yard.
 - b. Anti-microbial Fibers: 100 percent virgin homopolymer polypropylene fibers containing no reprocessed olefin materials. Fibers shall be added to the concrete at a rate of 1-1/2 pounds per cubic yard.
 - 2. Fiber reinforcement shall require Architect's approval for sealed concrete finish locations.
 - 3. Fiber reinforcement may be used as secondary reinforcement for welded wire fabric in all slabs on grade.

D. Carbon Steel Fibers: Steel fibers shall meet the requirements of ASTM A820, Type 1 or Type 2. Maximum length of 1-1/2".

1. Carbon steel fibers may be used in concrete in lieu of welded wire fabric and fibrous reinforcement, except as otherwise noted at a rate of 30 lbs/cu. Yd. Of concrete.
2. Carbon steel fibers may not be used on concrete for elevated slabs on non-composite deck or steel centering in lieu of welded wire fabric and fibrous reinforcement.

2.4 CONCRETE MATERIALS

A. General:

1. Cements, admixtures, water and aggregates shall conform to ACI 301, Section 4, with selections and supplements as specified herein.

B. Cementitious

1. All cements used shall be Portland Cements conforming to ASTM C150, Type I or III, unless otherwise acceptable to the Engineer. Types 1A and 1P are not acceptable. Use one brand of cement throughout project.
2. Flyash shall conform to ASTM C618 Type C or F and shall be permitted to be used as a substitute of up to 20% of the Portland cement. If used, the mix design submittals shall have tests using the same amount of flyash. The Contractor's schedule shall account for the use of flyash.
3. Ground Granulated Blast Furnace Slag (GGBF):
 - a. GGBF, when used, shall meet the requirements of ASTM C989, Grade 100 or better.
 - b. Provide GGBF at all liquid containing structures (walls and mat of fire pump well), accounting for a minimum of 30% of the total cementitious materials.

C. Admixtures:

1. Conform to following requirements:
 - a. Air-Entraining Admixture: ASTM C260.
 - b. Water-reducing admixture: ASTM C494, Type A, containing not more than 0.1% chloride ions.
 - c. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C494, Type F or G, containing not more than 0.1% chloride ions.
 - d. Water-Reducing, Non-chloride Accelerating Admixture: ASTM C494, Type E, containing not more than 0.1% chloride ions.
 - e. Water-Reducing, Retarding Admixture: ASTM C494, Type D, containing not more than 0.1% chloride ions.
 - f. Certification: Upon Engineer's request, provide admixture manufacturer's written certification that chloride ion content complies with specified requirements.
 - g. Calcium chloride or admixtures containing more than 0.1% chloride ions are not permitted.
 - h. Waterproofing Admixture:
 - 1) Integral Waterproofing Admixture: Integral crystalline admixture specifically formulated to interact with concrete capillary pore structures to provide a waterproofing system that is a permanent part of concrete matrix. Integral

Waterproofing shall be used and dosed in strict accordance with the manufacturer's written recommendations.

- 2) Admixture shall be rated for above ground and below ground use.
- 3) Admixture shall be used in concrete mix designs for all liquid containing structures (walls and mat of fire pump well).
- 4) Products:
 - a) Euclid Chemical Company; Eucon Vandex AM
 - b) BASF Corporation; Rheomac 300D
 - c) WR Grace & Co; Hydralite WR
 - d) Xypex; Admix C-500

2. Subject to compliance with requirements, admixtures used shall be products of one of the following (where more than one admixture is used in a concrete mix, they shall be of same manufacturer):

- a. Chem-Masters Corp.
- b. Euclid Chemical Co.
- c. Construction Products Div/W.R. Grace & Co.
- d. Master Builders/Degussa Admixtures, Inc.
- e. Sika Corp.

3. When requested by Engineer or Contractor, a qualified concrete technician employed by the admixture manufacturer shall be available to assist in proportioning concrete mixes, to advise on proper use of admixture(s), and to make subsequent adjustment of mixes to suit job and climatic conditions.

4. Procedures and equipment for use of superplasticizer shall be submitted to the Engineer for review with mix design. Proposed procedure shall have been tested under job conditions with actual materials to be used in the mix.

D. Aggregates:

1. Upon Engineer's request, furnish test reports from an approved testing laboratory showing compliance of aggregates with specifications.
2. Normal Weight Aggregate: ASTM C33, and as herein specified, from a single source.
3. Local aggregates for normal weight concrete not complying with ASTM C33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Engineer/Architect.

E. Water – potable.

2.5 CURING MATERIALS

A. General: As per ACI 301, Section 5, Article 5.2, with selections and supplements as specified herein.

B. Curing Compound or combination curing compound with sealer and/or hardener and/or dustproofer (as indicated on Architectural Drawings): (See Part 3 paragraph "Curing and Protection" herein for restrictions on use of curing compound.)

1. Liquid membrane-forming type (sodium silicate type not approved) meeting all requirements of ASTM C1315, Type 1-Class A and ASTM C309, Type 1-Class B clear or

translucent, having a fugitive dye to facilitate visual check of coverage. Use of Type 2 white pigmented type is recommended during hot weather.

2. Instructions on containers of compound delivered to the job shall clearly state the maximum coverage rate which meets ASTM C309 water retention requirement (0.55 kilogram/sq. meter/72 hr.).
 3. On slabs to be exposed, curing compound shall also perform the additional functions of hardening, dustproofing, etc., and shall be clear. Exposed floor slabs as listed as sealed concrete on the finish schedule shall receive an additional coat of clear sealer meeting the above requirements.
 4. Acceptable Products and Manufacturers:
 - a. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.
 - b. Euclid Chemical Company (The); Super Diamond Clear VOX.
 - c. Meadows, W. R., Inc.; Vocomp-30.
- C. Moisture-Retaining Sheet Materials: Any of the types listed in and meeting requirements of ASTM C171: waterproof paper, 4 mil (.004") polyethylene film, white burlap/polyethylene sheet.
- D. Sealing Materials: For laps in sheet covering, provide pressure sensitive tape, non-staining mastic, or other effective adhesive recommended by covering manufacturer.
- E. Finishing Aid: Sprayable material designed to form a monomolecular film on fresh plastic concrete, and to retard moisture evaporation prior to finishing.
1. Confilm by Master Builders/DeGussa Admixtures, Inc.
 2. Finishing Aid, Symons Corporation.
 3. Sure Film J-74, Dalco Industries.

2.6 MISCELLANEOUS MATERIALS

- A. Waterstops: Provide flat, dumbbell type or centerbulb type waterstops at construction joints and other joints as indicated, sized to suit joints, either rubber, Corps of Engineers (CE) CRD-C 513, or polyvinyl chloride (pvc), CE CRD-C, 572.
- B. Premolded Joint Filler: For use in expansion or isolation joints, size 1/2" thick x full depth of slab; either ASTM D 1751 or D 1752, and compatible with type of joint sealant used.
- C. Plastic Vapor Retarder: Provide moisture barrier cover over prepared base material where indicated in accordance with ASTM E1643. Use only materials which are resistant to decay when tested in accordance with ASTM E 154, as follows:
 1. Vapor Retarder: Polyethylene sheet not less than 15 mils thick, which complies with ASTM E1745, Class B. Include manufacturer's recommended adhesive or pressure sensitive tape. Acceptable products include:
 - a. Permeance Rating: Not to exceed 0.02 Perms (ASTM F 1249).
 - b. Puncture Resistance: Minimum 1700 grams (ASTM E 1745).
 - c. Tensile Strength: Minimum 30.0 lbf/in (ASTM E 1745).

2. Approved Manufacturers:
 - a. WR Meadows, Inc.; Perminator 15 mil.
 - b. Stego Industries, LLC; Stego Wrap, 15 mil.
 - c. Raven Industries, Inc.; Dura Skrim 20.
 - d. Viper; Vapor Check 15 mil.

- D. Plastic Vapor Retarder: Provide moisture barrier cover over prepared base material where indicated in accordance with ASTM E1643. Use only materials which are resistant to decay when tested in accordance with ASTM E 154, as follows:
 1. Vapor Barrier: ASTM E1745 Class A. Include manufacturer's recommended adhesive or pressure sensitive tape. Acceptable products include:
 - a. Permeance Rating: Not to exceed 0.02 Perms (ASTM F 1249).
 - b. Puncture Resistance: Minimum 2200 grams (ASTM E 1745).
 - c. Tensile Strength: Minimum 45.0 lbf/in (ASTM E 1745).
 - d. Water Vapor Permeance: (ASTM E-96): 0.025 GR./sq. ft./HR or lower.
 2. Approved Manufacturers:
 - a. WR Meadows, Inc.; Perminator 15 mil.
 - b. Raven Industries, Inc.; Vapor Block 15.
 - c. Stego Industries, LLC; Stego Wrap, 15 mil.
 - d. Viper; Vapor Check 16 mil.

- E. Bonding Compound: Use where fresh concrete is placed on or against hardened concrete for repairs (see par. 3.5A herein).
 1. For uses where concrete will not become wet under normal service conditions; polyvinyl acetate or acrylic base, rewettable type. Subject to compliance with requirements, acceptable products include:
 - a. Polyweld; Chem-Masters Corp.
 - b. EucoWeld; Euclid Chemical Co.
 - c. Daraweld C; W.R. Grace.
 - d. Weldcrete; Larsen Products.
 - e. Everbond; L & M Construction Chemicals.

- F. Surface Hardeners:
 1. Type: Ready-to-use dust-on powder containing non-metallic hardeners, concentrated lime-proof color pigments, dispersing agents and cementitious binders.
 2. Color: As selected by the Architect from the manufacturer's standard published color chart.
 3. Rate of Application: 100 pounds per 100 square foot.
 4. Basis of Design Manufacturers: "Colorcron" for hardeners with color and "Mastercron" for hardeners without color by Master Builders/Degussa Admixtures, Inc.
 5. Approved Manufacturers:
 - a. Surfex by Euclid Chemical.

b. Quartz Plate by L & M Construction Chemicals, Inc.

G. Bond Breaker: 15# felt.

2.7 PROPORTIONING AND DESIGN OF MIXES

A. General: As per ACI 301, Section 4, except as noted.

B. No concrete shall be placed until the proposed concrete mix has been submitted in writing and reviewed by the Engineer.

C. All normal weight concrete shall weigh 145 pcf, except where otherwise specified.

D. Concrete shall conform to following water-cement ratios:

All concrete:

Compressive Strength:	4000 psi at 28 days
Maximum Water-Cement Ratio:	0.55 (non-air-entrained) 0.45 (air-entrained)

E. All concrete shall have a maximum slump of 4" unless noted otherwise.

F. Concrete Quality: See notes on structural drawings for compressive strength, cement content, and other quality requirements for various areas.

G. Use of Admixtures:

1. All concrete shall contain the specified water-reducing admixture. Concrete slabs placed at temperatures below 50°F shall contain an accelerator. When increased workability or pumpability, lower water-cement ratio and higher ultimate and/or initial strength are required, superplasticizer may be used. Air-entraining admixture shall be used where required to achieve specified air content.
2. Concrete containing superplasticizer shall have a maximum slump of 8" after the addition of superplasticizer at the truck unless otherwise directed by the Engineer. This concrete shall arrive at the job site having slump between 2 and 3", to be verified, and then the superplasticizer added to reach approved slump level

H. Selection of Proportions:

1. Proportions for all classes of concrete shall be selected by one of the methods described in Chapter 4, Article 4.2.3 of ACI 301. Mixes must be approved by the Engineer before use on the job. No deviations from the approved mixes will be permitted without Engineer's prior approval.
2. Mix designs proportioned on the basis of previous field experience or trial mixtures (Section 3.9) shall have been prepared by an independent testing laboratory within the past 12 months.
3. For computation of standard deviation referred to in Section 4.2.3.2 of ACI 301, show data in tabular form.

2.8 CONCRETE PRODUCTION

- A. General: As per ACI 301, Section 4, Article 4.3, except as noted.
- B. Ready-Mixed Concrete: Use for all work, except that when small quantities (not over 1/2 cu yd) are needed for isolated or relatively unimportant items, concrete may be batch mixed at site, subject to Architect's prior approval.
- C. Delivery Ticket: In addition to information required on the delivery ticket in ASTM C94, the following data regarding water, expressed in gal./cu yd, shall be shown on the delivery ticket or on an attached batch ticket for each truckload of concrete:
 - 1. Mix design water requirement.
 - 2. Free water in aggregate.
 - 3. Water added at plant.
 - 4. Permissible water to add at job site.
- D. Mixing Time: Concrete which has attained its initial set or has contained water for longer than listed below, shall not be deposited in the work.

Concrete Temperature at Time of Placement, degrees	Maximum Time Before Placement, hr.
Under 80	1-1/2
80 to 85	1-1/4
86 to 90	1
Over 90	1, with Architect's approval dependent on slump and use.

2.9 FABRICATING REINFORCEMENT

- A. General: As per ACI 301, Section 3, Article 3.2.2, except as follows:
 - 1. No welding of reinforcing bars will be permitted without approval of the Engineer.

2.10 SELF-LEVELING MATERIALS

- A. Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

PART 3 - EXECUTION

3.1 FORM WORK

- A. General: As per ACI 301, Section 2 and ACI 347R, except as noted.
- B. Form Design and Construction: Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position. Arrange forms and supports to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Earth Forms: Earth cuts may be used as forms for footing vertical surfaces, if sides are sharp and true, and not exposed in finished structure.
- D. Form and Shore Removal: As per ACI 347R, Section 3.7.

3.2 PLACING REINFORCEMENT

- A. General: As per ACI 301, Section 3, Article 3.3.2.
- B. Comply with Concrete Reinforcing Steel Institute (CRSI) recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

3.3 JOINTS AND EMBEDDED ITEMS

- A. General: As per ACI 301, Section 5, with joint locations as noted.
- B. Construction Joints: Locate and install construction joints as indicated, or if not indicated, locate so as not to impair strength and appearance of structure. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings; except bulkheads designed for this purpose may be used for slabs. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless noted otherwise. In slabs on grade, construction joints may be substituted for control joints indicated on drawings as required by the Contractor, provided the slab is subdivided into longstrips or large blocks, but control joints may not be substituted for construction joints. Checker-boarding shall not be permitted.
 - 1. Construction joints shall be spaced at the following maximum distances:
 - a. Exterior and interior walls - 50 ft.
 - b. Footings - 125 ft.
- C. Control Joints in Slabs: Control joints in slabs shall be provided at the locations indicated on the drawings. Joints shall be made by saw cutting 0 to 2 hours after the final finish at each joint location using the early-entry dry-cut process per ACI 302.1R. Joint depth shall be per drawing detail. The saw shall use a diamond-impregnated blade and employ the use of a skid plate to prevent spalling and raveling of the slab.

- D. Contraction & Expansion Joints in Concrete Walls: Provide bond breaker at joint locations with smooth dowel spanning across the joint at spacing per the drawings.
 - 1. Provide joint spacing at the following distances:
 - a. Contraction Joints - 30' o.c. max
 - b. Expansion Joints - 90' o.c. max
- E. General: It is this Contractor's responsibility to coordinate with all trades for the setting of the sleeves, anchors, dovetail slots, inserts, frames, flashing reglets, and other embedded items and provide all openings required for the installation of other work in accordance with the Contractor's shop drawings and certified prints.
- F. Structural Integrity: Provide no sleeves or openings in structural concrete unless shown on the structural drawings or approved by the Engineer.

3.4 CONCRETE PLACEMENT

- A. General: As per ACI 301, Section 5, except as noted.
- B. Preparation Before Placing:
 - 1. Cleaning: Remove loose mill scale rust, dirt and other coatings that would reduce or destroy bond from reinforcing steel. Thoroughly clean forms of hardened concrete, wood chips, shavings and other debris.
 - 2. Sprinkling Slab Underbed: At slab areas on ground where there is no moisture barrier, sprinkle granular underbed sufficiently and uniformly with clean water to eliminate loss of water from concrete.
- C. Placing: No concrete shall be placed except when Architect or independent testing laboratory representative is present, unless this requirement is specifically waived by the Architect. Give adequate notice to the Architect, the testing laboratory, and all contractors affected before placing concrete. Allow adequate time for installation of all necessary parts.
- D. Cold Weather Placing:
 - 1. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.
 - 2. When air temperature has fallen to or is expected to fall below 40°F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50°F, and not more than 80°F at point of placement.
- E. Hot Weather Placing:
 - 1. When hot weather conditions exist that would impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
 - 2. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F. Mixing water may be chilled, or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water.
 - 3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before

embedment in concrete. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.

3.5 REPAIR OF SURFACE DEFECTS

- A. General: As per ACI 301, Section 5, Article 5.3.7, except that concealed concrete surfaces not exposed to view upon completion, may be patched with non-shrink mortar in lieu of ACI specified mortar.

3.6 FINISH OF FORMED SURFACES

- A. General: As per ACI 301, Section 5, Article 5.3.3, with selections as follows:
 - 1. Rough Form Finish: Use for formed concrete surfaces not exposed to view in the finish work.
 - 2. Smooth Form Finish: Use for formed concrete surfaces to be covered with a coating or covering material applied directly to concrete such as waterproofing, dampproofing, painting or other similar system.
 - 3. Smooth Rubbed Finish: Use for formed concrete surfaces exposed to view, except use smooth form finish for exposed overhead surfaces, whether or not painted.

3.7 SLABS

- A. Examination
 - 1. Verify that floor surfaces are ready to receive Work.
 - 2. Starting Work constitutes acceptance of the existing conditions and this Contractor shall then, at his expense, be responsible for correcting all unsatisfactory and defective Work encountered.
- B. Finishing
 - 1. Finish concrete floor surfaces in accordance with ACI 301.
 - 2. Initial Working:
 - a. Remove surface irregularities with bull float before water appears on concrete surface.
 - b. Do no further working of surface until time for floating; do not work surface while water is present.
 - c. "Dry Sprinkle" method finishing is not acceptable and will be cause for rejection.
 - 3. Floating:
 - a. Begin float operations when bleed water sheen has disappeared and concrete has stiffened sufficiently to allow walking on surface without leaving heel prints more than 1/4 inch deep. Use magnesium or aluminum power float.
 - b. Premature finishing brings excessive fines to surface and causes finished slab to have soft surface which will dust.
 - 4. Troweling:

- a. Delay troweling as long as possible to prevent working excess fines and water to surface. Do not begin until surface moisture film and shine remaining after floating have disappeared.
 - b. Power trowel where possible; use hand trowel in inaccessible areas.
 - c. Slab must be able to accept specified floor treatment. Coordinate with floor treatment manufacturer's application instructions for proper finish and for procedures when finish is too dense for proper floor treatment application.
 - d. Do not re-wet surface to trowel.
5. Broomed:
- a. Provide a floated finish, then finish with a flexible bristle broom.
 - b. Allow surface to harden sufficiently to retain scoring or ridges.
 - c. Broom transverse to traffic or at right angles to slope of slab.
6. Minimum floor finish tolerances as measured in accordance with ASTM E-1155 Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System.
- a. Float Finish (Flt-Fn) – Not Critical Floor Tolerance:
 - 1) Specified Overall Value: FF 25/FL 20.
 - 2) Minimum Local Value: FF 20/FL 17.
 - 3) Apply float finish to monolithic slab surfaces that are to receive trowel finish and other thick finishes as hereinafter specified, and slab surfaces which are to be covered with waterproofing membrane or sand-bed terrazzo, thickset tile, and other areas which receive a mud/setting bed.
 - b. Trowel Finish 1 (Tr-Fn1) – Typical Classroom, Corridors, and Normal Sized Rooms (Under 1,000 sq. ft.):
 - 1) Specified Overall Value: FF 30/FL 23.
 - 2) Minimum Local Value: FF 25/FL 20.
 - 3) Apply trowel finish to slab surfaces that are to be covered with resilient flooring, paint, or other thin film finish coating system.
 - c. Trowel Finish 2 (Tr-Fn2) – Large Rooms and Public Areas (Over 1,000 sq. ft.):
 - 1) Specified Overall Value: FF 36/FL 25.
 - 2) Minimum Local Value: FF 30/FL 22.
 - 3) Apply trowel finish to monolithic slab surfaces that are to receive resilient flooring, carpet, or other thin finish system.
 - d. Trowel Finish 3 (Tr-Fn3) – Gym Floors, Stage Floors:
 - 1) The slab shall be steel troweled to a true level and finished smooth and straight to a tolerance of 1/8 inch in any 10 foot radius. High spots shall be ground level, and low spots filled in with approved leveling compounds by the Contractor responsible for Section 03300 to the full approval of the wood flooring contractor.

C. Finish Schedule

1. Interior Floor Slabs: Machine trowel.
2. Exterior Slab Areas: Light Broom.

3.8 CURING AND PROTECTION

- A. General: As per ACI 301, Section 5, Article 5.3.6, except as noted. Requirements for curing and protection specified in ACI 301 shall be strictly observed, with particular emphasis on the following:
1. Initial curing may be accomplished by any of the methods given in ACI 301, Article 5.3.6, except as noted, using materials specified herein.
 2. Maintain initial curing for approximately 12 hours after finishing. Increase this period to 24 hours when air temperature is 75°F and above.
 3. Total curing period shall consist of 7 cumulative days, (3 days for high-early strength concrete) not necessarily consecutive, during which air in contact with concrete is above 50°F.
 4. For formed surfaces, keep wood forms in contact with concrete wet, as well as steel forms heated by the sun. After form removal, maintain curing for any time remaining of required curing period.
- B. Weather Requirements:
1. Warm, Dry, or Windy Weather: Use finishing aid specified herein to reduce moisture evaporation from freshly placed concrete when it is exposed to rapid drying conditions: direct sunlight, low humidity, heated interior, high wind, etc. Prepare dilute solution and spray apply on rate of 10 to 20 gallons solution/5000 sq. ft. If drying conditions are particularly severe, make additional applications as required following various finishing steps.
- C. Use of Curing Methods: Maintain curing protection in good condition during required period. Repair, reapply or replace when necessary.
1. Water: When excessive amounts of water are used for curing, provide means for removal so that harmful effects to other construction and to earth surfaces will be minimized.
 2. Waterproof Sheet Materials: These will be permitted for initial curing only. Use largest practical size sheets. Lap joints not less than 4" and seal carefully. Anchor covering securely in place.
 3. Curing Compounds:
 - a. Restrictions on use: Do not use curing compound on surfaces over which homogeneous sheet material will be applied. For surfaces to receive other finishes, submit well in advance of time for curing application, written acceptance of curing compound by both the manufacturer and the installer of the finish material, relative to compatibility therewith of finish material, including primers, adhesives, and similar materials.
 - b. Application: Apply uniformly at a coverage rate not less than that stated by manufacturer which meets ASTM C309 moisture retention requirement (0.55 kilogram/sq. meter/72 hr.). Re-apply final coating at time of project completion, as scheduled by the Construction Manager.

4. Reflective Materials: During hot sunny weather (generally 75°F and above) use of white or light colored curing materials is recommended to help keep down concrete surface temperature. White or gray pigmented curing compound shall not be used when determined by the Architect to be objectionable.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Grout base plates and foundations as indicated, using specified non-metallic non-shrink grout.
- C. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landing and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.
- D. Formwork for structural elements shall not be removed until concrete has reached 75% of its design strength.
- E. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 1. Lap joints 6 inches and seal with manufacturer's recommended tape.
- F. Moisture Reducing Materials
 1. Install in strict accordance with manufacturers instructions for preparation, mixing, application, curing, protection and cleanup.

END OF SECTION 03 30 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Brick.
3. Mortar and grout materials.
4. Reinforcement.
5. Ties and anchors.
6. Embedded flashing.
7. Accessories.
8. Mortar and grout mixes.

B. Related Requirements:

1. Section 01 43 39 "Mockups" for integrated exterior mockup requirements.
2. Section 07 19 00 "Water Repellents" for water repellents applied to unit masonry assemblies.

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Indicate bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315R.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Initial Selection:

1. Clay face brick, in the form of straps of five or more bricks.
2. Weep/cavity vents.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type of the following:

1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
 - c. For exposed brick, include test report for efflorescence in accordance with ASTM C67/C67M.
 - d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing in accordance with ASTM C67/C67M.
 - e. For masonry units, include data and calculations establishing average net-area compressive strength of units.
2. Integral water repellent used in CMUs.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Mortar admixtures.
5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Joint reinforcement.
9. Anchors, ties, and metal accessories.

B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

C. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 602.

D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Installers: All masonry flashing installers must complete the International Masonry Institute Flashing Upgrade training course.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. For exposed masonry units and cementitious mortar components, obtain each color and grade from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with TMS 602.
 2. Determine net-area compressive strength of masonry by testing masonry prisms in accordance with ASTM C1314.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
1. Where fire-resistance-rated construction is indicated, use the equivalent thickness method for masonry units in accordance with ACI 216.1.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

2. Provide square-edged units for outside corners unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent.
1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested in accordance with ASTM E514/E514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, will show no visible water or leaks on the back of test specimen.
 - a. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - 1) [ACM Chemistries.](#)
 - 2) [Euclid Chemical Company \(The\); an RPM company.](#)
 - 3) [GCP Applied Technologies Inc.](#)
 - 4) [Master Builders Solutions.](#)
- C. CMUs: ASTM C90, weight as indicated on Structural Drawings.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength as indicated on Structural Drawings.
 2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

2.5 BRICK

- A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 2. Provide special shapes for any of the following applications
 - a. where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels
 - b. requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing
 - c. where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Clay Face Brick: Facing brick complying with ASTM C216, Grade SW, Type FBS.
1. **Basis-of-Design Product:** Subject to compliance with requirements, provide [Belden Brick Company \(The\)](#); St. Simon Blend Dart-Tex or a comparable product by one of the following:
 - a. Bowerston Shale Company
 - b. Glen-Gery Corporation

2. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested in accordance with ASTM C67/C67M.
3. Efflorescence: Provide brick that has been tested in accordance with ASTM C67/C67M and is rated "not effloresced."
4. Surface Coating: Brick with colors or textures produced by application of coatings withstand 50 cycles of freezing and thawing in accordance with ASTM C67/C67M with no observable difference in the applied finish when viewed from 10 ft..
5. Size (Actual Dimensions): 3-5/8 inches wide by 3-5/8 inches high by 11-5/8 inches long.

2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 1. Alkali content will not be more than 0.1 percent when tested in accordance with ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C144.
 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- E. Aggregate for Grout: ASTM C404.
- F. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. [ACM Chemistries.](#)
 - b. [Euclid Chemical Company \(The\); an RPM company.](#)
 - c. [GCP Applied Technologies Inc.](#)
 - d. [Master Builders Solutions.](#)
- G. Water: Potable.

2.7 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 - 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. [Heckmann Building Products, Inc.](#)
 - b. [Hohmann & Barnard, Inc.](#)
 - c. [Wire-Bond.](#)
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
 - 1. Interior Walls: Mill- galvanized carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon steel.
 - 3. Wire Size for Side Rods: 0.148-inch diameter.
 - 4. Wire Size for Cross Rods: 0.148-inch diameter.
 - 5. Wire Size for Veneer Ties: 0.148-inch diameter.
 - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - 7. Provide in lengths of not less than 10 ft., with prefabricated corner and tee units.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder or truss type with single pair of side rods.
 - 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. [Heckmann Building Products, Inc.](#)
 - b. [Hohmann & Barnard, Inc.](#)
 - c. [Wire-Bond.](#)

2.8 TIES AND ANCHORS

- A. General: Ties and anchors extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 - 1. Stainless Steel Wire: ASTM A580/A580M, Type 304.
 - 2. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
- C. Adjustable Anchors for Connecting to CMU: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.: 362 Gripstay Channel Slot with 363 Flexible Gripstay Channel Slot Anchor Head or a comparable product by one of the following:
 - a. Advanced Building Products Inc.
 - b. Heckmann Building Products, Inc.
 - c. Wire-Bond.
2. Connector Section: Surface fastened channel with integrally formed end tabs for attachment to masonry, channel accepts anchor section; formed from 14 gauge stainless steel sheet.
3. Anchor Section: 12 gauge stainless steel sheet slotted head attached to triangular-shaped wire tie made from 0.187-inch-diameter, stainless steel wire.

2.9 EMBEDDED FLASHING

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 316, 0.016 inch thick.
 2. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 3. Solder metal items at corners.
- B. Flexible Flashing: Use the following unless otherwise indicated:
 1. Copper-Fabric Flashing: 5 oz./sq. ft. copper sheet bonded between two layers of glass-fiber cloth.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Advanced Building Products Inc.
 - 2) Hohmann & Barnard, Inc.
 - 3) STS Coatings, Inc.
 - 4) Wire-Bond.
 - 5) York Manufacturing, Inc.
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
- D. Termination Bars for Flexible Flashing: Stainless steel bars 0.075 inch by 1 inch.

2.10 ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).
- D. Weep/Cavity Vents: Use the following unless otherwise indicated:
 - 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) [Advanced Building Products Inc.](#)
 - 2) [Heckmann Building Products, Inc.](#)
 - 3) [Hohmann & Barnard, Inc.](#)
 - 4) [Wire-Bond.](#)
- E. Proprietary Acidic Masonry Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Diedrich Technologies, Inc.; a Hohmann & Barnard company.](#)
 - b. [EaCo Chem, Inc.](#)
 - c. [PROSOCO, Inc.](#)

2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For masonry below grade or in contact with earth, use Type M.
 - 2. For reinforced masonry, use Type M.

3. For exterior, above-grade, load-bearing, nonload-bearing walls, and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
 4. For interior nonload-bearing partitions, Type O may be used instead of Type N.
- D. Grout for Unit Masonry: Comply with ASTM C476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, paragraph 4.2.1.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
 4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested in accordance with ASTM C67/C67M. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
 - 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units and hollow brick with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- E. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten screw-attached anchors with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 - 2. Embed tie sections in masonry joints.
 - 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 25 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.
- B. Provide not less than 1 inch of airspace between back of masonry veneer and face of masonry backup.
 - 1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

3.7 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at corners by using prefabricated L-shaped units.

3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.
- C. Form expansion joints in brick as follows:
1. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Section 07 92 00 "Joint Sealants."
- D. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 07 92 00 "Joint Sealants," but not less than 3/8 inch.
1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.9 FLASHING, WEEP HOLES, AND CAVITY VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, across airspace, and up exterior face of interior wythe at least 8 inches. Fasten upper edge of flexible flashing to masonry through termination bar.
 3. At lintels and shelf angles, extend flashing 6 inches minimum, to edge of next full unit at each end. At heads and sills, extend flashing 6 inches minimum, to edge of next full unit and turn ends up not less than 2 inches to form end dams.
 4. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
- C. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
1. Use specified weep/cavity vent products to form weep holes.
 2. Space weep holes a maximum of 24 inches o.c. unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace,

- tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 2. Limit height of vertical grout pours to not more than 60 inches.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
 7. Clean masonry with a proprietary acidic masonry cleaner applied according to manufacturer's written instructions.

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches in each dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 31 20 00 "Earth Moving."
 - 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.
- B. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings. It includes steel columns, base plates, beams, and other steel items which are a part of the building structure.
- C. In addition, furnish to the installer involved such items as bolts, anchor rods, inserts, clip angles, and sleeves required for attachment of items specified in this Section, together with placement drawings and tolerances. This includes all plates, joist and beam anchorage.
- D. Related Work Specified Elsewhere:
 - 1. Section 03 30 00 "Cast In Place Concrete" – Setting anchor rods and embedded plates in concrete.
 - 2. Division 09 Section "Painting" for primers and compatability with finish painting.
- E. Work Provided by Others:
 - 1. By the Owner – Payment of costs for testing and inspection as described hereinafter.

1.3 QUALITY ASSURANCE

- A. Source Quality Control: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements. Promptly remove and replace materials or fabricated components which do not comply.
 - 1. The structural steel supplier shall certify that high strength bolts have been manufactured in the United States and meet the designated ASTM specifications.
 - 2. High strength bolts without the manufacturer's identifying symbol shall not be used.
- B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated.
- C. Codes and Standards: Comply with provisions of the following:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges".
 2. AISC "Specifications for the Structural Steel for Buildings", including the "Commentary" and Supplements thereto as issued.
 3. AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
 4. AWS D1.1 "Structural Welding Code".
 5. ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
 6. AISC "Architecturally Exposed Structural Steel".
- D. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure". Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. If recertification of welders is required, retesting will be Contractor's responsibility.
- E. The design and installation of Temporary supports, such as temporary guys, braces, falsework, cribbing or other elements required for the erection of the structure are the responsibility of the contractor. The design of all connections for temporary supports, including connections to the structure are the responsibility of the Contractor. The design of temporary supports and their connections are not the responsibility of the Engineer.

1.4 SUBMITTALS

- A. Product Data: Upon Engineer's request submit producer's or manufacturer's specifications and installation instructions for following products. If requested, submit laboratory test reports and other data to show compliance with specifications, including specified standards.
1. Structural steel and high strength bolt certification as noted in quality assurance.
 2. Structural steel (each type), including certified copies of mill reports covering chemical and physical properties.
 3. High strength bolts (each type), including nuts and washers.
 4. Structural steel primer paint.
 5. Shrinkage-resistant grout.
- B. Shop Drawings:
1. Submit shop drawings prepared under supervision of a registered structural engineer, including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams. Include details of cuts, connections, camber, holes, and other pertinent data.
 2. Indicate welds by standard AWS symbols and show size, length, and type of each weld. Provide setting drawings, templates and directions for installation of anchor rods and other anchorages to be installed by others. Provide calculations used for designing connections.
 3. AISC standard double angle connection details shall be used for all connections that are not otherwise detailed on the drawings. Where the reactions of beams and girders are not shown on the drawings, the connections shall be designed to support the maximum allowable uniform load as indicated in the load tables of the AISC Manual of Steel Construction for the given beam size and span.
 4. Shop drawings shall indicate the date of the structural drawings that were used to prepare the shop drawings.

5. Shop drawing submittals shall consist of a direct reading transparency plus 2 prints of each drawing.
- C. Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on types of tests conducted and test results.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site at such intervals to insure uninterrupted progress of work. Deliver anchor rods and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not delay work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.
- C. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Metal Surfaces, General: For fabrication of work, which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, before cleaning, treating and applying of surface finishes.
- B. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 50 percent.
- C. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than the following:
 1. W-Shapes: 60 percent.
 2. Channels, Angles, M, S-Shapes: 60 percent.
 3. Plate and Bar: 25 percent.
 4. Cold-Formed Hollow Structural Sections: 25 percent.
 5. Steel Pipe: 25 percent.
 6. All Other Steel Materials: 25 percent.
- D. Structural Steel Shapes, Plates and Bars: ASTM A 36 or ASTM A 992 (Fy = 50 ksi) as noted on drawings.
- E. Cold-Formed Steel Tubing: ASTM A 500, Grade B.
- F. Steel Pipe: ASTM A 53, Type E or S, Grade B, black, except where indicated to be galvanized.

- G. Anchor Rods: ASTM F1554 Grade 36, non-headed type unless otherwise indicated.
- H. High Strength Threaded Fasteners: Heavy hexagon structural bolt, heavy hexagon nuts, and hardened washers of quenched and tempered medium-carbon steel, complying with ASTM A 325. All bolts shall be marked with the manufacturer's identifying symbol.
- I. Electrodes for Welding: Comply with AWS Code.
- J. Structural Steel Primer Paint:
 - 1. Fabricator's standard, fast-curing, lead-free, universal primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-664.
 - 2. Where prime painted steel is to receive sprayed-on fireproofing, the substrate shall provide adequate adhesion. Coordinate with fireproofing installer in selecting primer paint to be used to assure this requirement is met.
 - 3. Primer paint shall be compatible with finish coats on architecturally exposed steel.
- K. Nonmetallic Shrinkage-Resistant Grout: Pre-mixed, non-corrosive, non-staining product containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with CE-CRD-C621. Minimum 28-day compressive strength shall be 6000 psi.

2.2 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
- B. Connections:
 - 1. Weld or bolt shop connections, as indicated.
 - 2. All field connections shall be bolted. Only use field welded connections where detailed on structural drawings. Each field welded connection shall be fully detailed on erection drawings.
 - 3. Provide high strength threaded fasteners for all bolted connections.
- C. High Strength Bolted Construction: Install in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts".
- D. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
- E. Equipment Supports and Mechanical Opening Framing: Framing shown on structural drawings is for general arrangement only and may require modification to suit the actual purchased equipment. Coordinate with mechanical trades for necessary certified drawings before starting fabrication. Steel Fabricator shall provide a complete job ready for installation of equipment, and Contract price shall cover this requirement regardless of subsequent modifications to framing shown on drawings, at no extra cost to the Owner.

- F. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings. Provide threaded nuts welded to framing and other specialty items, as indicated, to receive other work. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

2.3 SHOP PAINTING

- A. General: Shop prime structural steel, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.
 - 1. Do not paint surfaces which are to be welded or high-strength bolted with slip critical connections.
- B. Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:
 - 1. All interior steel exposed to view SP6 commercial blast cleaned.
 - 2. All exterior steel exposed to weather SP10 near white blast cleaned.
 - 3. All other steel SP3 power tool cleaned.
- C. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 2.0 mils. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.
- D. Paint Systems: Review painting specifications for finish paint systems. Coordinate surface preparations of steel and type of primer used with specifications and the manufacturer's recommendations to insure compatibility.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before starting erection of structural steel, verify all bearing elevations and anchor rods locations. Report any discrepancies to the Engineer. Do not proceed until corrections have been made.

3.2 ERECTION

- A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- B. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.

- C. Anchor Rods: Furnish anchor rods and other connectors required for securing structural steel to foundations and other in-place work. Furnish templates and other devices as necessary for presetting rods and other anchors to accurate locations.

- D. Setting Bases and Bearing Plates:
 - 1. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.
 - 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate before packing with grout.
 - 3. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure. For proprietary grout materials, comply with manufacturer's instructions.

- E. Field Assembly:
 - 1. Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 2. Level and plumb individual members of structure within specified AISC tolerances. For beams which support steel joists, maintain such tolerances as will assure specified minimum joist bearing. Tolerances shall not be accumulative. Temperature corrections shall be applied so that the structure will be plumb and will have clearances specified at 70 degrees F.
 - 3. Splice members only where indicated on structural drawings or as accepted on shop drawings.
 - 4. Tighten slip-critical bolts in accordance with AISC by the turn-of-the-nut method, by the direct tension indicator or by properly calibrated wrenches.
 - 5. Non-slip critical bolts shall be tightened such that all plies of connecting material have been brought into snug contact with a minimum torque of 75 to 100 ft-lbs.

- F. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.

- G. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds. Do not enlarge unfair holes in members by burning or by use of drift pins. Ream holes that must be enlarged to admit bolts.

- H. Cutting and Fitting: Should any difficulties be encountered, the Contractor shall request written instructions from the Engineer before proceeding with the work. No cutting of sections, either flanges, webs, stems or angles shall be done without permission of the Engineer, unless cutting is shown.

- I. Touch-Up Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP-3 power-tool cleaning.
2. Apply a compatible prime of same type as shop primer used on adjacent surfaces.

3.3 QUALITY CONTROL

- A. An independent testing and inspection agency shall be engaged to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports. Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, noting any deviations therefrom.
- B. Testing work shall be done under supervision of a registered engineer. After completion of the work of this Section, testing agency shall certify that work conforms to structural drawings. This certification shall bear registered engineer's seal.
- C. Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished. Testing agency may inspect structural steel at plant before shipment; however, Engineer reserves right, at any time before final acceptance, to reject material not complying with specified requirements.
- D. Correct deficiencies in structural steel work which inspection and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any noncompliance of original work, and as may be necessary to show compliance of corrected work.
- E. Field Bolted Connections: Inspect in accordance with AISC specifications. Check at least one bolt on every connection. Non-slip critical bolts tightened to a snug fit condition only require a visual inspection. Slip critical bolts require a turn of the nut or calibrated wrench method inspection.
- F. Shop and Field Welding: Inspect and test during fabrication and/or erection of structural steel. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies. Perform visual inspection of all welds, and perform ultrasonic tests of full penetration welds in accordance with ASTM E 164.

3.4 CONSTRUCTION WASTE MANAGEMENT

- A. Refer to Section 05 05 00 – Common Work Results for Metals.

END OF SECTION 05 10 00

SECTION 05 31 00 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Extent of metal decking is indicated on drawings, including basic layout and type of deck units required.
- B. Related Work Specified Elsewhere:
 - 1. Division 09 Section "Painting" for field painting of underside of exposed decking.
- C. Work Provided by Others:
 - 1. By the Owner – Payment of costs for testing and inspection as described hereinafter.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated or specified:
 - 1. AISI "Specification for the Design of Cold-Formed Steel Structural Members".
 - 2. AWS D1.3 "Structural Welding Code".
 - 3. SDI "Design Manual for Floor Decks and Roof Decks".
- B. Qualification of Field Welding: Qualify welding process and welding operators in accordance with AWS "Welder Qualification" procedures of AWS D1.1.
- C. Testing: Welded decking and shear connectors in place are subject to inspection and testing. Remove work found to be defective and replace with new acceptable work.
- D. FM Listing: Provide metal roof deck units which have been evaluated by Factory Mutual and are listed in "FM Approval Guide" for Class I construction.
- E. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

1.4 SUBMITTALS

- A. LEED Submittals: Refer to Section 05 05 00 – Common Work Results for Metals.

1. Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
 - a. Include statement indicating costs for each product having recycled content.
 2. Credit MR 5.1 and 5.2: Local/Regional Materials.
- B. Product Data: Upon Engineer's request submit manufacturer's specifications and installation instructions for each type of decking and accessories. Include manufacturer's certification showing compliance with these specifications.
1. Alternate mechanical attachment of deck to structure shall require pertinent cut sheets, load tables, ESR Reports and all product data prior to acceptance.
- C. Shop Drawings: Submit detailed drawings showing layout and types of deck panels, anchorage details, and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories. Drawings shall show shear stud connector layout.
- D. Shop drawings shall indicate the date of the structural drawings that were used to prepare the shop drawings.
- E. Shop drawing submittals shall consist of a direct reading transparency plus 2 prints of each drawing.
- F. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include the following:
1. Epic Metals Corp.
 2. United Steel Deck, Inc.
 3. Verco Manufacturing Co.
 4. Vulcraft Div/Nucor Corp.
 5. Wheeling Corrugating Co Div/Wheeling-Pittsburgh Steel.

2.2 MATERIALS

- A. Steel for Painted Metal Roof Deck Units: ASTM A 611, Grade C.
- B. Steel for Galvanized Metal Roof Deck: ASTM A653. Finish shall be ASTM A924, G60 galvanized finish.

- C. Steel for non-composite form deck: High tensile steel (black) with a maximum fiber stress not exceeding 30 Ksi under total dead and live loads and a maximum live load deflection of 1/240.
- D. Deck and accessories that are to be spray-fireproofed shall be galvanized.
- E. Sheet Metal Accessories: ASTM A 653. Finish shall be ASTM A 924, G60 galvanized finish.
- F. Galvanizing Repair Paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with Military Specifications MIL-P-21035 (Ships).
- G. Primer Paint: Manufacturer's baked-on, lead-free, rust-inhibitive paint, for application to metal surfaces which have been chemically cleaned and phosphate chemical treated. Paint shall be compatible with finish coats on architecturally exposed deck.

2.3 FABRICATION

- A. General: Form deck units in lengths to span 3 or more supports, with flush, telescoped or nested 2" laps at ends and interlocking or nested side laps.
- B. Quality of Deck: When delivered to the site, deck units shall be accurately formed, reasonably flat, in alignment and free from warp, so that installation, fitting with other units, and attachment to supports can be satisfactorily performed. Deck sections not meeting these requirements, in the Architect/Engineer's opinion, will be rejected and shall be replaced at no extra cost.
- C. Roof Deck Units: Provide deck configuration complying with SDI "Roof Deck Specifications", of metal thickness, depth and width as shown.
- D. Non-composite Floor Deck Units (Form Deck): Provide fluted sections of metal thickness, depth and width as shown.

2.4 ACCESSORIES

- A. Roof Sump Pans: Fabricate from single piece of 14 gage galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 4" wide. Recess pans not less than 4" below roof deck surface, unless otherwise required by deck configuration. Holes for drains will be cut in the field.
- B. Metal Closure Strips: Fabricate metal closure strips for openings between decking and other construction of 18 gage sheet steel. Form to provide tight-fitting closures at open ends of flutes and sides of decking.
- C. Provide metal pour stop at all edges of concrete construction (including floor openings) except where edge angle or alternative pour stop is indicated on drawings is detailed. Pour stop shall be of gage as recommended by manufacturer for specific conditions with a minimum of 20 gage.

2.5 SHOP PAINTING

- A. Chemically clean and phosphate treat (non-galvanized) metal roof deck units and accessories and apply 1 coat of paint baked-on by manufacturer's standard method.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein.
- B. Placing Deck:
 - 1. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.
 - 2. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
 - 3. Do not use deck units for storage or working platforms until permanently secured.
- C. Fastening Deck:
 - 1. Fasten deck units to steel supporting members as noted on drawings.
 - 2. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work. Use welding washers where indicated on drawings.
 - 3. Mechanically fasten side laps of adjacent deck units as noted on drawings.
- D. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.
- E. Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown.
- F. Roof Sump Pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12" o.c. with at least one weld at each corner.
- G. No light gage framing, mechanical, electrical, or other equipment shall be suspended from or attached to any metal roof deck. Ceilings, ductwork and lights may be hung from the composite floor deck after concrete has reached 75% of its design strength. Contractor shall list allowable hanger tab capacity on shop drawings. Hung loads shall not exceed tab capacity.
- H. Closure Strips: Provide metal closure strips at open, uncovered ends and edges of decking, and in voids between decking and other construction. Weld into position to provide a complete decking installation.
- I. Touch-Up Painting: After decking installation, wire brush, clean and touch-up scarred areas, welds and rust spots on top and bottom surfaces of decking units and supporting steel members. Use same type as shop paint.

3.2 QUALITY CONTROL

- A. An independent testing and inspection agency shall be engaged to inspect deck installation including deck welding and to certify that the work is in conformance with Contract Documents.
- B. Inspection work shall be done under supervision of a registered engineer. After completion of the work of this Section, testing agency shall certify that work conforms to Contract Documents. This certification shall bear registered engineer's seal.

END OF SECTION 05 30 00

SECTION 05 41 00 - PRE-ENGINEERED, PRE-FABRICATED LIGHT GAUGE STEEL TRUSSES – ADD. 1

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes pre-engineered, pre-fabricated light gauge cold-formed steel framing elements. Work includes:
 - 1. Light gauge cold-formed steel roof trusses.
 - 2. Anchorage, bracing and bridging.
- B. Related Sections:
 - 1. Section 07 41 13, "Standing-Seam Metal Roof Panels"

1.2 REFERENCES

- A. Reference standards:
 - 1. ASTM:
 - a. ASTM A653/A653M -06: "Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process."
 - b. ASTM A780-01 "Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings".
 - 2. American Welding Society (AWS)
 - a. AWS D1.1 "Structural Welding Code – Steel."
 - b. AWS D1.3 "Structural Welding Code – Sheet Steel."

1.3 PERFORMANCE REQUIREMENTS

- A. AISI "Specifications". Calculate structural characteristics of cold-formed steel truss members according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members (latest edition)".
- B. Structural Performance: Design, engineer, fabricate, and erect cold-formed steel trusses to withstand specified design loads within limits and under conditions required.
 - 1. Design Loads: See the "General Structural Notes" sheet in the construction documents.
 - 2. Deflection Limits: Live load deflection meeting the following (unless otherwise specified):
 - a. Roof Trusses: Vertical deflection less than or equal to 1/240 of the span.

3. Design framing systems to provide for movement of framing members without damage or overstressed sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 120° F (67° C).
4. Specifically, the prefabricated light gauge steel roof truss manufacturer (vendor) shall provide the following services:
 - a. Design and supply a complete light gauge steel roof system stamped by a registered engineer to include all of the following components:
 - 1) Light gauge steel trusses for gravity and lateral loads with truss sizes, gauges and connections at truss joints.
 - 2) Design and stamp truss to truss connections and truss to bearing connections for gravity, lateral and uplift loads.
 - 3) Design and stamp the top cord, bottom cord and web permanent bracing locations.
 - 4) Design and stamp the roof deck structural support at eave edge, valley, hip and ridge transition plans to support corrugated steel or plywood decking.
 - 5) Design the roof deck shear transfer framing required to transfer the roof deck shear to the building structure. The Engineer-Of-Record or Architect is responsible to determine the roof diaphragm, to determine the location and magnitude of the roof shear transfer and to determine location within the building structure through which this shear will pass.
 - 6) Provide stamped calculations and shop drawings for project submittal requirements.

1.4 SUBMITTAL

- A. Submit manufacturer's product data and installation instructions for each type of cold-formed steel framing and accessory required.
- B. Submit shop drawings showing member, type, location, spacing, size and gauge of member, methods of attachment to supporting members and all necessary details. Indicate supplemental bracing, strapping, splices, bridging, accessories and details required for proper installation.
- C. Submit detailed roof truss layouts.
- D. Submit truss drawings, sealed and signed by a qualified registered Professional Engineer, verifying the truss ability to meet local code and design requirements. Specifically include the engineering and design for all of the following.
 1. Description of design criteria.
 2. Engineering analysis depicting member stresses and truss deflection.
 3. Truss member sizes, gauges and connection at truss joints; truss to truss attachment details.
 4. Truss reaction at all bearing locations; truss to bearing attachment details.
 5. Top chord, bottom chord and web permanent bracing requirements; construction and temporary bracing per the Light Gauge Steel Engineers Association (LGSEA) "Field Installation Guidelines" Dated October 1999.
 6. Eave edge, valley, hip and ridge structural support for corrugated metal roof deck.

7. Roof deck shear transfer framing required for transferring the roof deck shear to the building structure.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabrication shall be performed by a cold-formed steel truss fabricator with experience in designing and fabricating cold-formed steel truss systems equal in material, design, and extent to the systems required for this Project.
- B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code-Steel." And AWS D1.3 "Structural Welding Code-Sheet Steel."
 1. Quality welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
 2. Welding of any nature to these trusses is specifically prohibited unless permission is received from the manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's unopened containers or bundles, fully identified by name brand, type and grade. Exercise care to avoid damage during unloading, storing and erection.
- B. Store trusses on blocking pallets, platforms or other supports off the ground and in an upright position sufficiently braced to avoid damage from excessive bending.
- C. Protect trusses and accessories from corrosion, deformation, damage and deterioration when stored at job site. Keep trusses free of dirt and other foreign matter.

1.7 PROJECT CONDITIONS

- A. During construction, adequately distribute all loads applied to trusses so as not to exceed the carrying capacity of any one joist, truss or other component.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable light gauge metal truss fabrication and installation:
 1. Okaw Truss, Inc.
368 E. State Route 133
Arthur, Illinois 61911
Phone: 217-543-3371
Fax: 217-543-3376
 2. Progressive System, Inc.
8095 Riley Street

Zeeland, MI 49465
Phone: 616-748-1384
Fax: 616-748-1838

3. Tri-State Cold-Formed Steel Components, LLC
140 Arnold Dr., Suite #1
Shepherdsville, KY 40165
Phone: 502-957-1234
Fax: 502-957-1230
4. Stark Steel
A Division of Stark Truss Co., Inc.
1556 Perry Drive, SW
Canton, OH 44706
Phone: 330-478-2181
Fax: 330-477-2361

2.2 COMPONENTS

- A. Provide manufacturer's standard steel truss members, bracing, bridging, blocking, reinforcements, fasteners, and accessories with each type of steel framing required, as recommended by the manufacturer for the applications indicated and as needed to provide a complete light gauge cold-formed steel truss package.

2.3 MATERIALS

- A. Materials:
 1. All components gauges: Fabricate components of structural quality steel sheet per ASTM A653/A653M-95 with minimum yield strength of 45,000 psi.
 2. Bracing, bridging and blocking members: Fabricate components of commercial quality steel sheet per ASTM A653/A653M-95 with minimum yield strength of 33,000 psi.
- B. Steel truss components: Provide manufacturers standard shape sections with sizes and gauges as required by design (20 gauge minimum).
- C. The following design thickness shall be used in truss member design.
 1. Design Uncoated-Steel Thickness: 20 gauge, 0.0350 inch.
 2. Design Uncoated-Steel Thickness: 18 gauge, 0.0460 inch.
 3. Design Uncoated-Steel Thickness: 16 gauge, 0.0570 inch.
 4. Design Uncoated-Steel Thickness: 14 gauge, 0.0730 inch.
- D. Finish: Provide components with protective zinc coating complying with ASTM A653/A653M-95, minimum G60 coating.
- E. Fastenings:
 1. Manufacturer recommended self-drilling, self-tapping screws with corrosion resistant plated finish. Fasteners shall be of sufficient size and number to ensure the strength of the connection.

2. Welding of any nature to these trusses is specifically prohibited unless permission is received from the truss manufacturer.
3. Other fasteners as accepted by truss engineer.

2.4 FABRICATION

- A. Factory fabricate cold-formed steel trusses plumb, square, true to line and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.
 1. Fabricate truss assemblies in jig templates.
 2. Cut truss members by sawing or shearing or plasma cutting.
 3. Fasten cold-formed steel truss members by screw fastening, or other methods as standard with fabricator. Wire tying or welding of framing members is not permitted.
 - a. Locate mechanical fasteners and install according to cold-formed steel truss component manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
- B. Care shall be taken during handling, delivery and erection. Use of a crane or lull with a spreader bar is recommended for trusses longer than 30 foot. Brace, block or reinforce truss as necessary to minimize member and connection stresses.
- C. Fabrication Tolerances: Fabricate trusses to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet (1:960) and as follows:
 1. Spacing: Space individual trusses no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Sequences: Fabricate each cold formed steel truss to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine structure, substrates and installation conditions. Do not proceed with cold-formed steel truss installations until satisfactory conditions have been corrected. Verify that the bearing elevations are correct before trusses are installed.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 INSTALLATION, GENERAL

- A. General

1. Erection of trusses, including proper handling, safety precautions, temporary bracing and other safeguards or procedures are the responsibility of the General Contractor and the Installation Subcontractor. The use of the crane or lull with a spreader bar is recommended for trusses over 30 foot.
 2. Exercise care and provide erection bracing required to prevent toppling or dominoeing of trusses during erection as identified in the Light Gauge Steel Engineers Association (LGSEA) publication "Field Installation Guide For Cold-Formed Steel Roof Trusses" October, 1999.
- B. Erect trusses with plane of truss webs vertical and parallel to each other, accurately located at design spacing indicated.
- C. Provide proper lifting equipment suited to sizes and types of trusses required, applied at lift points recommended by truss fabricator and use spreader bars for larger span trusses. Exercise care to avoid damage to truss members during erection and to keep horizontal bending of the trusses to a minimum.
- D. Provide framing anchors as indicated or accepted on the engineering design drawing or erection drawings. Anchor trusses securely at bearing points and the anchor must be attached to the correct side of the truss as shown in the truss drawings and attachment details.
- E. Install roof framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations.
1. DO NOT cut truss members without prior approval of truss manufacturer.
 2. Fasten cold-formed steel roof framing by mechanical fasteners only per truss manufacturer's recommendation. Wire tying or welding of roof framing is not permitted.
 - a. Welding of any nature to these trusses is strictly prohibited unless specific permission is received from the truss manufacturer.
 - b. Locate mechanical fasteners and install according to cold-formed roof framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
 - c. Install roof framing in one-piece lengths, unless splice connections are indicated.
 - d. Provide temporary bracing per Light Gauge Steel Engineers Association (LGSEA) publication "Field Installation Guide For Cold-Formed Steel Roof Trusses" and leave in place until trusses are permanently stabilized.
- F. Erection Tolerances: Install trusses to a maximum allowable tolerance variation from plumb, level, and true to line of ¼ inch in 10 feet (1:480) and as follows:
1. Space individual trusses no more than plus or minus ¼ inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 ROOF TRUSS INSTALLATION

- A. Install, bridge, and brace trusses according to manufacturer's recommendations and requirements of this Section.
- B. Space trusses as shown on the plans.

- C. Do not alter, cut, or remove truss members or connections of trusses.
- D. Erect trusses with plane of truss webs plumb and parallel to each other, align, and accurately position at spacing indicated.
- E. Erect trusses without damaging truss members or connections.
- F. Align truss bottom chords with load-bearing studs or continuously reinforce track to transfer loads to structure. Anchor trusses securely at all bearing points.
- G. Install construction continuous bridging, bracing, cross bracing and diagonal bracing per Light Gauge Steel Engineers Association (LGSEA) publication "Field Installation Guide for Cold-Formed Steel Roof Trusses" October 1999.
- H. Attach trusses to trusses per truss manufacturer's recommendation.
- I. Attach trusses to bearing per truss manufacturer's recommendation.
- J. Attach permanent truss lateral and diagonal bracing per manufacturer's recommendation.
- K. Attach roof deck or sheathing structural support per truss manufacturer's recommendation.

3.4 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanizing repair paint according to ASTM A 780 and the manufacturer's instructions.

END OF SECTION 05 41 00

SECTION 07 14 16 - COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Polyurethane waterproofing.
 - 2. Molded-sheet drainage panels.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review waterproofing requirements including, but not limited to, the following:
 - a. Surface preparation specified in other Sections.
 - b. Minimum curing period.
 - c. Forecasted weather conditions.
 - d. Special details and sheet flashings.
 - e. Repairs.
 - f. Field quality control.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
 - 2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
- B. Shop Drawings:
 - 1. Indicate locations and extent of waterproofing.
 - 2. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer.
 - 1. Do not apply waterproofing to a damp or wet substrate, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F above dew point.
 - 2. Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.
- B. Maintain adequate ventilation during application and curing of waterproofing materials.

1.7 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace waterproofing that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain waterproofing materials and molded-sheet drainage panels from single source and from single manufacturer.

2.2 POLYURETHANE WATERPROOFING

- A. Single-Component, Modified Polyurethane Waterproofing: ASTM C836/C836M and coal-tar free.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Anti-Hydro International, Inc.
 - b. CETCO is a subsidiary of Minerals Technologies Inc.
 - c. Carlisle Coatings & Waterproofing Inc.
 - d. Neogard; Hempel Group.
 - e. Polyguard Products, Inc.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials recommended in writing by waterproofing manufacturer for intended use and compatible with one another and with waterproofing.
- B. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated.
- C. Sheet Flashing: 50-mil-minimum, nonstaining, uncured sheet neoprene.
 - 1. Adhesive: Manufacturer's recommended contact adhesive.
- D. Joint Reinforcing Strip: Manufacturer's recommended fiberglass mesh or polyester fabric.
- E. Joint Sealant: Multicomponent polyurethane sealant, compatible with waterproofing; ASTM C920, Type M, Class 25 or greater; Grade NS for sloping and vertical applications and Grade P for deck applications; Use NT exposure; and as recommended by manufacturer for substrate and joint conditions.
 - 1. Backer Rod: Closed-cell polyethylene foam.

2.4 MOLDED-SHEET DRAINAGE PANELS

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft..

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
 - 2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean, prepare, and treat substrates in accordance with manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.
- D. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.
 - 1. Abrasive blast clean concrete surfaces uniformly to expose top surface of fine aggregate in accordance with ASTM D4259 with a self-contained, recirculating, blast-cleaning apparatus. Remove material to provide a sound surface free of laitance, glaze, efflorescence, curing compounds, concrete hardeners, or form-release agents. Remove remaining loose material and clean surfaces in accordance with ASTM D4258.
- E. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

3.3 PREPARATION AT TERMINATIONS, PENETRATIONS, AND CORNERS

- A. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.
- B. Apply waterproofing in two separate applications, and embed a joint reinforcing strip in the first preparation coat when recommended by waterproofing manufacturer.

3.4 JOINT AND CRACK TREATMENT

- A. Prepare, treat, rout, and fill joints and cracks in substrate in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M. Before coating surfaces, remove dust and dirt from joints and cracks in accordance with ASTM D4258.
 - 1. Comply with ASTM C1193 for joint-sealant installation.
 - 2. Apply bond breaker on sealant surface, beneath preparation strip.
 - 3. Prime substrate along each side of joint and apply a single thickness of preparation strip at least 6 inches wide along each side of joint. Apply waterproofing in two separate applications and embed a joint reinforcing strip in the first preparation coat.
- B. Install sheet flashing and bond to deck and wall substrates where required in accordance with waterproofing manufacturer's written instructions.
 - 1. Extend sheet flashings for 4 inches onto perpendicular surfaces and items penetrating substrate.

3.5 INSTALLATION OF WATERPROOFING

- A. Apply waterproofing in accordance with manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.

- B. Start installing waterproofing in presence of manufacturer's technical representative.
- C. Apply primer over prepared substrate unless otherwise instructed in writing by waterproofing manufacturer.
- D. Unreinforced Waterproofing Applications: Mix materials and apply waterproofing by spray, roller, notched squeegee, trowel, or other application method suitable to slope of substrate.
 - 1. Apply one or more coats of waterproofing to obtain a seamless membrane free of entrapped gases and pinholes, with a dry film thickness of 90 mils.
 - 2. Apply waterproofing to prepared wall terminations and vertical surfaces.
 - 3. Verify manufacturer's recommended wet film thickness of waterproofing every 100 sq. ft..
- E. Reinforced Waterproofing Applications: Mix materials and apply waterproofing by roller, notched squeegee, trowel, or other suitable application method.
 - 1. Apply first coat of waterproofing, embed membrane-reinforcing fabric, and apply second coat of waterproofing to completely saturate reinforcing fabric and to obtain a seamless reinforced membrane free of entrapped gases and pinholes, with an average dry film total thickness of 80 mils.
 - 2. Apply reinforced waterproofing to prepared wall terminations and vertical surfaces.
 - 3. Verify manufacturer's recommended wet film thickness of waterproofing every 100 sq. ft..
- F. Cure waterproofing, taking care to prevent contamination and damage during application and curing.

3.6 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, in accordance with manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

3.7 PROTECTION

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Protect installed insulation drainage panels from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- D. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION 07 14 16

SECTION 07 19 00 - WATER REPELLENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrating water repellents.

B. Related Requirements:

1. Section 04 20 00 "Unit Masonry" for integral water-repellent admixture for unit masonry assemblies.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Penetrating water repellents.

B. Product Data Submittals:

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Applicator.
- B. Product Certificates: For each type of water repellent.
- C. Preconstruction Test Reports: For water-repellent-treated substrates.
- D. Sample Warranty: For special warranty.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

1.6 FIELD CONDITIONS

- A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied in accordance with manufacturers' written instructions and warranty requirements:
1. Concrete surfaces and mortar have cured for not less than 28 days.
 2. Building has been closed in for not less than 30 days before treating wall assemblies.
 3. Ambient temperature is above 40 deg F and below 100 deg F and will remain so for 24 hours.
 4. Substrate is not frozen and substrate-surface temperature is above 40 deg F and below 100 deg F.
 5. Rain or snow is not predicted within 24 hours.
 6. Not less than 24 hours have passed since surfaces were last wet.
 7. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree(s) to repair or replace materials that fail to maintain water repellency specified in "Performance Requirements" Article within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Water Absorption: Minimum 90 percent reduction of water absorption after 24 hours for treated compared to untreated specimens when tested according to the following:
1. Cast-in-Place Concrete: ASTM C642.
 2. Precast Concrete: ASTM C642.
 3. Cast Stone: ASTM C1195.
 4. Concrete Masonry Units: ASTM C140.
 5. Clay Brick: ASTM C67.
 6. Natural Stone: ASTM C97/C97M.
 7. Portland Cement Plaster (Stucco): ASTM D6532.
- B. Water Penetration and Leakage through Masonry: Minimum 85 percent reduction in leakage rate of treated compared to untreated specimens, in accordance with ASTM E514/E514M.
- C. Durability: Maximum 5 percent loss of water-repellent performance after 2500 hours of weathering in accordance with ASTM G154 compared to water-repellent-treated specimens before weathering.
- D. Chloride-Ion Intrusion in Concrete: NCHRP Report 244, Series II tests.

1. Reduction of Water Absorption: 80 percent.
2. Reduction in Chloride Content: 80 percent.

2.2 PENETRATING WATER REPELLENTS

- A. Penetrating Low-VOC Silane/Siloxane-Blend Water Repellent: Clear, containing 5 percent or more active content of silane and siloxane blend with 400 g/L or less of VOCs.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide PROSOCO, Inc; Saltguard WB or a comparable product by one of the following:
 - a. Ghostshield.
 - b. TK Products Construction Coatings, a Fenix Group SPC Company.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
 1. Verify that surfaces are clean and dry in accordance with water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
 2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
 3. Verify that required repairs are complete, cured, and dry before applying water repellent.
- B. Test pH level in accordance with water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, in accordance with repellent manufacturer's written instructions.
- B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product in accordance with water-repellent manufacturer's written instructions and as follows:
 1. Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents in accordance with ASTM E1857.
 2. Clay Brick Masonry: ASTM D5703.

- C. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.
- D. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.
- E. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
 - 1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION OF WATER REPELLENTS

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.
- B. Apply coating of water repellent on surfaces to be treated using 15 psi-pressure spray with a fan-type spray nozzle roller or brush to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.
- C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 FIELD QUALITY CONTROL

- A. Testing of Water-Repellent Material: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when water repellent is being applied:
 - 1. Owner will engage the services of a qualified testing agency to sample water-repellent material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of water-repellent material with product requirements.
 - 3. Owner may direct Contractor to stop applying water repellents if test results show material being used does not comply with product requirements. Contractor to remove noncomplying material from Project site, pay for testing, and correct deficiency of surfaces treated with rejected materials, as approved by Architect..
- B. Coverage Test: In the presence of Architect, hose down a dry, repellent-treated surface to verify complete and uniform product application. A change in surface color will indicate incomplete application.

1. Notify Architect seven days in advance of the dates and times when surfaces will be tested.
2. Reapply water repellent until coverage test indicates complete coverage.

3.5 CLEANING

- A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.
- B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 07 19 00

SECTION 07 25 00 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Building wrap.
 2. Flexible flashing.

1.2 ACTION SUBMITTALS

- A. Product Data:
1. Building wrap.
 2. Flexible flashing.
- B. Product Data Submittals: For building wrap, include data on air and water-vapor permeance based on testing in accordance with referenced standards.
- C. Shop Drawings: Show details of building wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.

1.3 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap: ASTM E1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84; UV stabilized; and acceptable to authorities having jurisdiction.
1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; DuPont Tyvek CommercialWrap D or a comparable product by one of the following:
 - a. Dorken Systems Inc.
 - b. Kingspan Insulation LLC.
 2. Water-Vapor Permeance: Minimum 75 perms per ASTM E96/E96M, Desiccant Method (Procedure A).

3. Air Permeance: Maximum 0.004 cfm/sq. ft. at 0.3-inch wg when tested in accordance with ASTM E2178.
4. Allowable UV Exposure Time: Not more than 180 days.

Flame Propagation Test: Materials and construction to be as tested in accordance with NFPA 285.

- B. Acrylic Seam Tape: Composite tape consisting of a pressure-sensitive acrylic adhesive, bonded to a polyethylene or polypropylene film for sealing joints and penetrations in building wrap. Provide tape from same manufacturer as approved wrap product.
- C. Primer for Building Wrap: Product recommended in writing by flexible flashing manufacturer for substrate.
- D. Fasteners with Self-Gasketing Washers: Commercial building wrap manufacturer's recommended pneumatically or hand-applied fasteners with 2-inch-diameter, high-density polyethylene cap washers with UV inhibitors.

2.2 FLEXIBLE FLASHING

- A. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin. Provide flashing from same manufacturer as approved wrap product.
 1. Flame Propagation Test: Materials and construction to be as tested in accordance with NFPA 285.
- B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.
- C. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F1667.

PART 3 - EXECUTION

3.1 INSTALLATION OF WATER-RESISTIVE BARRIER

- A. Building Wrap or Drainage Wrap: Comply with manufacturer's written instructions and warranty requirements.
 1. Seal seams, edges, fasteners, and penetrations with tape.
 2. Extend into jambs of openings and seal corners with tape.

3.2 INSTALLATION OF FLEXIBLE FLASHING

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 1. Prime substrates as recommended by manufacturer.

2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
3. Lap flashing over water-resistive barrier at bottom and sides of openings.
4. Lap water-resistive barrier over flashing at heads of openings.
5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

PART 4 - END OF SECTION 07 25 00

SECTION 07 41 13.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Standing-seam metal roof panels.
- B. Related Requirements:
 - 1. Section 07 42 93 "Soffit Panels" for metal panels used in horizontal soffit applications.
 - 2. Section 07 72 53 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface, allowing it to melt and drain off slowly.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review structural loading limitations of deck during and after roofing.
 - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 8. Review temporary protection requirements for metal panel systems during and after installation.
 - 9. Review procedures for repair of metal panels damaged after installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.3 ACTION SUBMITTALS

- A. Product Data: For standing-seam metal roof panels. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.
- 1.4 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For Installer.
 - B. Product Test Reports: For standing-seam metal roof panels, for tests performed by a qualified testing agency.
 - C. Sample Warranties: For special warranties.
- 1.5 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For metal panels to include in maintenance manuals.
- 1.6 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
 - B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
 - C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
 - D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
 - 3. Deflection Limits: As indicated on Drawings.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 - 1. Uplift Rating: UL 90.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

- A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
 - 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and smooth with striations in pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; Cornerstone Building Brands; SuperLok® (SLMSMBCI) or a comparable product by one of the following:
 - a. ATAS International, Inc.
 - b. CENTRIA, a Nucor Brand.
 - c. Dimensional Metals, Inc.
 - d. Metal Sales Manufacturing Corporation.
2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 24 Gauge.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: **Insert color.**
3. Clips: Two-piece floating to accommodate thermal movement.
 - a. 0.030-inch-nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
4. Joint Type: As standard with manufacturer.
5. Panel Coverage: 16 inches.
6. Panel Height: 2.0 inches.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 milsthick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
 3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle Residential; a division of Carlisle Construction Materials.
 - b. Drexel Metals.
 - c. GCP Applied Technologies Inc.
 - d. Henry Company.
 - e. Kirsch Building Products, LLC.
 - f. Owens Corning.
- B. Felt Underlayment: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felts.
- C. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 120-inch-long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.
- E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot-long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- F. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coatings, designed to withstand design loads.
- G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF UNDERLAYMENT

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.
 1. Apply over the entire roof surface.
- B. Slip Sheet: Install at locations required by manufacturer.

- C. Flashings: Install flashings to cover underlayment.

3.4 INSTALLATION OF STANDING-SEAM METAL ROOF PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 - 1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
 - 5. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.

- c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 - 1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
 - 1. Provide elbows at base of downspouts to direct water away from building.
 - 2. Connect downspouts to underground drainage system indicated.
- J. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13.16

SECTION 07 42 13.13 - FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exposed-fastener, lap-seam metal wall panels.

B. Related Requirements:

1. Section 07 42 93 "Soffit Panels" for metal panels used in horizontal soffit applications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.3 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

1. Exposed-fastener, lap-seam metal wall panels.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.
1. Include Samples of trim and accessories involving color selection.
- 1.4 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For Installer.
 - B. Product Test Reports: For exposed-fastener, lap-seam metal wall panels, for tests performed by a qualified testing agency.
 - C. Sample Warranties: For special warranties.
- 1.5 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For metal panels to include in maintenance manuals.
- 1.6 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
 - B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
 - C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
 - D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 EXPOSED-FASTENER, LAP-SEAM METAL WALL PANELS

- A. Provide factory-formed metal panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.
- B. Tapered-Rib-Profile, Exposed-Fastener Metal Wall Panels: Formed with raised, trapezoidal major ribs and a flat pan between major ribs.
1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; Cornerstone Building Brands; PBU or a comparable product by one of the following:
 - a. ATAS International, Inc.
 - b. CENTRIA, a Nucor Brand.
 - c. McElroy Metal, Inc.
 - d. Metal Sales Manufacturing Corporation.
 - e. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
 2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 26 Gauge.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: Insert color.
 3. Major-Rib Spacing: 6 inches o.c.
 4. Panel Coverage: 36 inches.
 5. Panel Height: 0.75 inch.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 - 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
 - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF METAL PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

- B. Fasteners:
 - 1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
 - 1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
 - 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
 - 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
 - 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
 - 5. Flash and seal panels with weather closures at perimeter of all openings.

- E. Watertight Installation:
 - 1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
 - 2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - 3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
 - 1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
 - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of

corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 13.13

SECTION 07 42 93 - SOFFIT PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal soffit panels.

B. Related Requirements:

1. Section 07 42 13.13 "Formed Metal Wall Panels" for lap-seam metal wall panels.

1.2 PREINSTALLATION MEETINGS

- ##### A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Metal soffit panels.

B. Product Data Submittals:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

C. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

1.4 INFORMATIONAL SUBMITTALS

- ##### A. Qualification Data: For Installer.

- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: As indicated on Drawings.
 3. Deflection Limits: As indicated on Drawings.
 4. .
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METAL SOFFIT PANELS

- A. Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Flush-Profile Metal Soffit Panels: Solid panels formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges; with flush joint between panels.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; Cornerstone Building Brands; FW-120 or a comparable product by one of the following:
 - a. ATAS International, Inc.
 - b. CENTRIA, a Nucor Brand.
 - c. Dimensional Metals, Inc.
 - d. McElroy Metal, Inc.
 - e. Metal Sales Manufacturing Corporation.
 - f. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
 - g. Ultra Seam, Inc.
 - 2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 24 Gauge.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: **<Insert color>**.
 - 3. Panel Coverage: 12 inches.
 - 4. Panel Height: 1.5 inches.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

- a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF METAL SOFFIT PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Shim or otherwise plumb substrates receiving metal panels.
 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 3. Install screw fasteners in predrilled holes.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Install flashing and trim as metal panel work proceeds.
 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
1. Apply panels and associated items true to line for neat and weathertight enclosure.
 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
- E. Watertight Installation:
1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels and elsewhere as needed to make panels watertight.
 2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 93

SECTION 07 72 53 - SNOW GUARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rail-type, seam-mounted snow guards.

1.2 ACTION SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Rail-type, seam-mounted snow guards.
- B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.
 - 1. Include details of rail-type snow guards.
- C. Samples:
 - 1. Rail-Type Snow Guards: Bracket, 12-inch-long rail, and installation hardware.
- D. Delegated Design Submittals: For snow guards, include analysis reports signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Include calculation of number and location of snow guards.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that the engineer is licensed in the state in which the Project is located.
- B. Product Test Reports: For each type of snow guard, for tests performed by a qualified testing agency, indicating load at failure of attachment to roof system identical to roof system used on this Project.

1.4 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit adhesive-mounted snow guards to be installed, and adhesive cured, according to adhesive manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design snow guards, including attachment to roofing material and roof deck, as applicable for attachment method, based on the following:
1. Roof snow load.
 2. Snow drifting
 3. Roof slope.
 4. Roof type.
 5. Roof dimensions.
 6. Roofing substrate type and thickness.
 7. Snow guard type.
 8. Snow guard fastening method and strength.
 9. Snow guard spacing.
 10. Coefficient of Friction Between Snow and Roof Surface: 0.
 11. Factor of Safety: 3.
- B. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- C. Structural Performance: Snow guards to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
1. Snow Loads: As indicated on Drawings.

2.2 RAIL-TYPE SNOW GUARDS

- A. Rail-Type, Seam-Mounted Snow Guards:
1. **Manufacturers:** Subject to compliance with requirements, and with written approval of the metal roof manufacturer, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. [Alpine SnowGuards.](#)
 - b. [Berger, division of OmniMax International, Inc.](#)
 - c. [IceBlox Inc.](#)
 - d. [LMCurbs.](#)
 - e. [PMC Industries, Inc.](#)
 - f. [Rocky Mountain Snow Guards, Inc.](#)
 - g. [S-5! Metal Roof Innovations, Ltd.](#)
 - h. [TRA Snow and Sun, Inc.](#)
 2. Description: Snow guard rails fabricated from metal pipes, bars, or extrusions, anchored to brackets and equipped with two rails.

1. Bars: ASTM A240/A240M, Type 304 stainless steel; 320-grit polished finish, oil-ground, uniform, fine, directionally textured finish.
 - a. Profile: Round.
2. Seam Clamps: ASTM A240/A240M, Type 304 stainless steel; with stainless steel set screws incorporating round nonpenetrating point; designed for use with applicable roofing system to which clamp is attached.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.
 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and prepare substrates for bonding snow guards.
- B. Prime substrates according to snow guard manufacturer's written instructions.

3.3 INSTALLATION

- A. Install snow guards according to manufacturer's written instructions.
 1. Space rows as recommended by manufacturer.
- B. Attachment for Standing-Seam Metal Roofing:
 1. Do not use fasteners that will penetrate metal roofing or fastening methods that void metal roofing finish warranty.
 2. Rail-Type, Seam-Mounted Snow Guards:
 - a. Install brackets to vertical ribs in straight rows.
 - b. Secure with stainless steel set screws, incorporating round nonpenetrating point, on same side of standing seam.
 - c. Torque set screw in accordance with manufacturer's written instructions.
 - d. Install cross members to brackets.

END OF SECTION 07 72 53

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer.
- C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
 - 1. Joint-sealant location and designation.
 - 2. Manufacturer and product name.
 - 3. Type of substrate material.
 - 4. Proposed test.
 - 5. Number of samples required.
- D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.
- E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- F. Field-Adhesion-Test Reports: For each sealant application tested.

- G. Sample Warranties: For special warranties.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Adhesion Testing: Use ASTM C794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Compatibility Testing: Use ASTM C1087 to determine sealant compatibility when in contact with glazing and gasket materials.
 - 3. Stain Testing: Use ASTM C1248 to determine stain potential of sealant when in contact with stone and masonry substrates.
 - 4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
 - 5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
 - 7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each kind of sealant and joint substrate.
 - 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

- 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.6 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Joint Sealant Products: See Schedule in Part 3.

2.2 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material,) Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.
 - 4. Provide flush joint profile according to Figure 8B in ASTM C1193.
 - 5. Provide recessed joint configuration of recess depth according to Figure 8C in ASTM C1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

 - 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

Type 1 - General Purpose Paintable Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF, single component, non-staining, non-bleeding, non-sagging, paintable.

1. Applications: Generally Interior Sealant for painted conditions.
 - a. Generally all non-traffic interior locations.
 - b. Interior perimeter of window and door frames.
 - c. Control and construction joints.
 - d. Miscellaneous openings and penetrations.
 - e. Joints between dissimilar materials.
 - f. Interior wall and ceiling control joints.
 - g. Interior joints between door and window frames and wall surfaces.
 - h. Joints on precast beams and planks.
 - i. Perimeter joints between interior wall surfaces and frames of interior doors, windows, storefronts, louvers, elevator entrances and similar openings.
 - j. Other interior joints for which no other type of sealant is indicated.
 - k. Other joints as indicated.

- B. Type 2 - General Purpose Paintable Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 50, Uses M, O, and A; single component, paintable.
1. Applications: Generally Exterior Sealant for painted conditions.
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between concrete and other materials.
 - c. Joints between metal frames and other materials.
 - d. Control and expansion joints in cast-in-place concrete.
 - e. Joints between precast concrete units.
 - f. Control and expansion joints in stone masonry.
 - g. Butt joints between metal panels.
 - h. Joints between different materials listed above.
 - i. Perimeter joints between materials listed above and frames of doors, windows, storefronts, louvers and similar openings.
 - j. Control and expansion joints in soffits and overhead surfaces.
 - k. Other exterior joints in vertical surfaces and non-traffic horizontal surfaces for which no other sealant is specified.
- C. Type 3 - General Purpose Color Matched Exterior Sealant: Silicone; Non-Staining, Neutral Moisture Curing, ASTM C920, Grade NS, Class 50, Uses M, O, and A; single component, custom color matched to adjacent finishes, reduced dirt pick-up.
1. Applications: Generally Exterior Sealant for non-painted conditions.
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between concrete and other materials.
 - c. Joints between metal frames and other materials.
 - d. Control and expansion joints in cast-in-place concrete.
 - e. Joints between precast concrete units.
 - f. Control and expansion joints in stone masonry.
 - g. Butt joints between metal panels.
 - h. Joints between different materials listed above.
 - i. Perimeter joints between materials listed above and frames of doors, windows, storefronts, louvers and similar openings.
 - j. Control and expansion joints in soffits and overhead surfaces.
 - k. Other exterior joints in vertical surfaces and non-traffic horizontal surfaces for which no other sealant is specified.
- D. Type 4 - General Purpose Traffic Bearing Sealant: Urethane; ASTM C920, Grade NS, Class 50, single component, paintable.
1. Applications: Generally Interior and Exterior Sealant subject to traffic for painted conditions.
 - a. Interior and Exterior applications subject to traffic.
 - b. Control, expansion and isolation joints in cast-in-place concrete.
 - c. Joints between architectural precast concrete paving units.
 - d. Joints between different materials listed above.
 - e. Other interior and exterior traffic bearing joints in horizontal and sloped traffic surfaces.

- E. Type 6 - Mildew Resistant Acid Curing Sealant: Silicone; ASTM C920, Grade NS, Class 50, Uses M, O, and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - 1. Applications: Generally Interior Sealant for areas subject to water.
 - a. Perimeter of all plumbing fixtures and adjoining walls, floors, and counters.
 - b. All countertop backsplashes and all interfaces where a sink is located in the countertop.
 - c. Plumbing piping which penetrates a wall or floor and is exposed to view.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior standard steel doors and frames.

1.2 DEFINITIONS

- ##### A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

- ##### A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- ##### B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Exterior standard steel doors and frames.

B. Product Data Submittals: For each product.

1. Include construction details, material descriptions, core descriptions, and finishes.

C. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.

- D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 HOLLOW METAL DOORS AND FRAMES

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. [Ceco Door; AADG, Inc.; ASSA ABLOY.](#)
 - 2. [Curries, AADG, Inc.; ASSA ABLOY Group.](#)
 - 3. [Custom Metal Products.](#)
 - 4. [North American Door Corp.](#)
 - 5. [Republic Doors and Frames; a Allegion brand.](#)
 - 6. [Steelcraft; Allegion plc.](#)

2.2 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A..
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule on Drawings.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
 - d. Edge Construction: Model 2, Seamless.
 - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.

- f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
 - g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
 - h. Core: Manufacturer's standard.
2. Frames:
- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
 - b. Construction: Full profile welded.
3. Exposed Finish: Prime.

2.3 FRAME ANCHORS

A. Jamb Anchors:

- 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
- 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
- 3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

- 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.4 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

2.5 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.6 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 - 2. Fire-Rated Openings: Install frames in accordance with NFPA 80.
 - 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 4. Solidly pack mineral-fiber insulation inside frames.
 - 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 6. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

3.3 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint in accordance with manufacturer's written instructions.
- C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 08 11 13

SECTION 08 36 13 - SECTIONAL DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sectional-door assemblies.
- B. Related Requirements:

1.3 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components, profile door sections, and finishes.
 - 2. For power-operated doors, include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Shop Drawings: For each installation and for components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 4. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard size.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranties: For manufacturer's warranty and finish warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sectional doors to include in maintenance manuals.
- B. Manufacturer's warranty.
- C. Finish warranty.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
- B. Regulatory Requirements: Comply with provisions in the ICC A117.1 applicable to sectional doors.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Failure of components or operators before reaching required number of operation cycles.
 - c. Faulty operation of hardware.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use; rust through.
 - e. Delamination of exterior or interior facing materials.
 - 2. Warranty Period: Five years from date of Substantial Completion.
- B. Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain sectional doors from single source from single manufacturer.
 - 1. Obtain operators and controls from sectional door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Provide sectional doors that comply with performance requirements specified without failure from defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
 - 1. Design Wind Load: Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward.
 - 2. Testing: In accordance with ASTM E330/E330M or DASMA 108 for garage doors and complying with DASMA 108 acceptance criteria.
 - 3. Deflection Limits: Design sectional doors to withstand design wind loads without evidencing permanent deformation or disengagement of door components.
 - a. Deflection of door sections in horizontal position (open) shall not exceed 1/120 of door width.
 - b. Deflection of horizontal track assembly shall not exceed 1/240 of door height.
 - 4. Operability under Wind Load: Design sectional doors to remain operable under uniform pressure (velocity pressure) of 20 lbf/sq. ft. wind load, acting inward and outward.

2.3 SECTIONAL-DOOR ASSEMBLY

- A. Steel Sectional Door: Provide sectional door formed with hinged sections and fabricated so that finished door assembly is rigid and aligned with tight hairline joints; free of warp, twist, and deformation; and complies with requirements in DASMA 102.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Overhead Door Corporation; Thermacore Model #592 or a comparable product by one of the following:
 - a. Amarr; an ASSA ABLOY Group company.
 - b. Clopay Building Products.
 - c. Haas Door; a Nofziger Company.
 - d. Wayne Dalton; a division of Overhead Door Corporation.
- B. Operation Cycles: Door components and operators capable of operating for not less than 50,000 operation cycles. One operation cycle is complete when door is opened from closed position to the open position and returned to closed position.
- C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. when tested in accordance with ASTM E283 or DASMA 105.
- D. U-Value: 0.057 Btu/sq. ft. x h x deg F.
- E. Steel Door Sections: ASTM A653/A653M, zinc-coated (galvanized), cold-rolled, commercial steel sheet with G60 zinc coating.
 - 1. Door-Section Thickness: 2 inches.
 - 2. Section Faces:

- a. Thermal-Break Construction: Provide sections with continuous thermal-break construction separating the exterior and interior faces of door.
 - b. Exterior Face: Fabricated from single sheets, not more than 24 inches high; with horizontal meeting edges rolled to continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove, weather- and pinch-resistant seals and reinforcing flange return.
 - 1) Steel Sheet Thickness: 0.015-inch nominal coated thickness.
 - 2) Surface: Manufacturer's standard, ribbed, textured.
 - c. Interior Face: Enclose insulation completely within steel exterior facing and interior facing material, with no exposed insulation. Provide the manufacturers standard interior-facing material:
- 3. End Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet not less than 16 gauge nominal coated thickness and welded to door section.
 - 4. Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free insulation of type indicated below:
 - a. Foamed-in-Place Insulation: Polyurethane, foamed in place to completely fill interior of section and pressure bonded to face sheets to prevent delamination under wind load.
 - b. Fire-Resistance Characteristics: Maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, in accordance with ASTM E84.
- F. Track: Manufacturer's standard, galvanized-steel, standard-lift track system. Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides.
- 1. Material: Galvanized steel, ASTM A653/A653M, minimum G60 zinc coating.
 - 2. Size: 2 inches wide.
 - 3. Track Reinforcement and Supports: Provide galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches apart for door-drop safety device.
 - a. Vertical Track: Incline vertical track to ensure weathertight closure at jambs. Intermittent jamb brackets attached to track and wall.
 - b. Horizontal Track: Provide continuous reinforcing angle from curve in track to end of track, attached to track and supported at points by laterally braced attachments to overhead structural members.
- G. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom of door.
- 1. Flexible jamb and header seals.
- H. Hardware: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless steel, or other corrosion-resistant fasteners, to suit door type.

1. Hinges: Heavy-duty, galvanized-steel hinges of not less than 0.079-inch nominal coated thickness at each end stile and at each intermediate stile, in accordance with manufacturer's written recommendations for door size.
 - a. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is impossible.
 - b. Provide double-end hinges where required for doors more than 16 ft. wide unless otherwise recommended by door manufacturer in writing.
 2. Rollers: Heavy-duty rollers with steel ball bearings in case-hardened steel races, mounted to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Match roller-tire diameter to track width.
 - a. Roller-Tire Material: Manufacturer's standard.
 3. Push/Pull Handles: Equip each door with galvanized-steel lifting handles on each side of door, finished to match door.
- I. Counterbalance Mechanism:
1. Torsion Spring: Adjustable-tension torsion springs complying with requirements of DASMA 102 for number of operation cycles indicated, mounted on torsion shaft.
 2. Cable Drums and Shaft for Doors: Cast-aluminum cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised.
 - a. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.
 - b. Provide one additional midpoint bracket for shafts up to 16 ft. long and two additional brackets at one-third points to support shafts more than 16 ft. long unless closer spacing is recommended in writing by door manufacturer.
 3. Cables: Galvanized-steel, multistrand, lifting cables with cable safety factor of at least 7 to 1.
 4. Cable Safety Device: Include a spring-loaded steel or bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if lifting cable breaks.
 5. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
 6. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.
- J. Manual Door Operator:
1. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum 25 lbf force for door operation. Provide alloy-steel hand chain with chain holder secured to operator guide.
- K. Electric Door Operator: Electric door operator assembly of size and capacity recommended by door manufacturer for door and operation cycles specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control

stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24 V ac or dc.
3. Safety: Listed in accordance with UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. or lower.
4. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
5. Operator Type: Jackshaft, side mounted.
6. Motor: Reversible-type with controller (disconnect switch) for interior, clean, and dry motor exposure. Use adjustable motor-mounting bases for belt-driven operators.
 - a. Motor Size: As required to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor 1/2 hp.
 - b. Electrical Characteristics:
 - 1) Phase: 3 phase.
 - 2) Volts: 460 V.
7. Limit Switches: Equip motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.
8. Obstruction Detection: Automatic external entrapment protection consisting of automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
 - a. Monitored Entrapment Protection: Photoelectric sensor designed to interface with door-operator control circuit to detect damage to or disconnection of sensor and complying with requirements in UL 325.
9. Control Station: Surface mounted, three-position (open, close, and stop) control.
 - a. Operation: Push button.
 - b. Interior-Mounted Unit: Full-guarded, surface-mounted, standard-duty, weatherproof-type, NEMA ICS 6, Type 4 enclosure.
 - c. Features: Provide the following:
 - 1) Vehicle detection operation.
 - 2) Radio-control operation.
10. Transmitter: Provide (4) transmitters for remote control operation.
11. Emergency Manual Operation: Chain type designed so required force for door operation does not exceed 25 lbf.
12. Emergency Operation Disconnect Device: Hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

13. Motor Removal: Design operator so motor can be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- L. Metal Finish: Comply with NAAMM/NOMMA's "Metal Finishes Manual for Architectural and Metal Products (AMP 500-06)" for recommendations for applying and designating finishes.
 1. Baked-on Kynar PVDF Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; in accordance with manufacturer's written instructions.
- B. Tracks:
 1. Fasten vertical track assembly to opening jambs and framing with fasteners spaced not more than 24 inches apart.
 2. Hang horizontal track assembly from structural overhead framing with angles or channel hangers attached to framing by welding or bolting, or both. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install automatic garage doors openers in accordance with UL 325.

3.3 STARTUP SERVICES

- A. Engage a factory-authorized service representative to perform startup service.
 1. Complete installation and startup checks in accordance with manufacturer's written instructions.

2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust doors and seals to provide weather-resistant fit around entire perimeter.
- D. Touchup Painting Galvanized Material: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A780/A780M.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 08 36 13

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Primers.
 - 2. Finish coatings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include preparation requirements and application instructions.
 - 2. Indicate VOC content.
- B. Product Schedule: Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by Sherwin-Williams Company (The); or a comparable product by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Paints; PPG Industries, Inc.
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range.
- C. Paint Products: See Schedule in Part 3.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Fiber-Cement Board: 12 percent.
 - 3. Masonry (Clay and Concrete Masonry Units): 12 percent.

4. Wood: 15 percent.
 5. Portland Cement Plaster: 12 percent.
 6. Gypsum Board: 12 percent.
- C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.
 - D. Exterior Gypsum Board Substrates: Verify that finishing compound is dry and sanded smooth.
 - E. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers.
 - F. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
 - 2. Sand surfaces that will be exposed to view, and remove sanding dust.
 - 3. Prime edges, ends, faces, undersides, and backsides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 INSTALLATION

- A. Apply paints in accordance with manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Paint entire exposed surface of window frames and sashes.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed to view:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.

- f. Plastic conduit.
- g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 - 3. Allow empty paint cans to dry before disposal.
 - 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

- A. CMU Type 1 – Standard Application
 - 1. Primer: Loxon Acrylic Block Surfacer
 - 2. First Coat: Exterior Latex A-100 Satin
 - 3. Second Coat: Exterior Latex A-100 Satin
 - 4. Sheen: Satin
- B. Hollow Metal Doors and Frames Type 1 - Standard Application
 - 1. Primer: Pro Industrial Pro-Cryl Universal Primer

2. First Coat: Pro Industrial Acrylic Semi-Gloss
3. Second Coat: Pro Industrial Acrylic Semi-Gloss
4. Sheen: Semi-Gloss

C. Ferrous Metals Type 1

1. Primer: Pro Industrial Pro-Cryl Universal Primer
2. First Coat: Pro Industrial Acrylic Semi-Gloss
3. Second Coat: Pro Industrial Acrylic Semi-Gloss
4. Sheen: Semi-Gloss

D. Non-Ferrous Metals Type 1

1. Primer: Pro Industrial Pro-Cryl Universal Primer
2. First Coat: Pro Industrial Acrylic Semi-Gloss
3. Second Coat: Pro Industrial Acrylic Semi-Gloss
4. Sheen: Semi-Gloss

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Primers.
 - 2. Finish coatings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include preparation requirements and application instructions.
 - 2. Indicate VOC content.
- B. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Basis-of-Design Product:** Subject to compliance with requirements, provide products by [Sherwin-Williams Company \(The\)](#); or a comparable product by one of the following:
 - 1. [Benjamin Moore & Co.](#)
 - 2. [PPG Paints; PPG Industries, Inc.](#)
- B. Source Limitations: Obtain each paint product from single source from single manufacturer as scheduled.

2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. **VOC Content:** For field applications that are inside the weatherproofing system, verify paints and coatings comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 50 g/L.
 - 3. Dry-Fog Coatings: 150 g/L.
 - 4. Primers, Sealers, and Undercoaters: 100 g/L.
 - 5. Rust-Preventive Coatings: 100 g/L.
 - 6. Zinc-Rich Industrial Maintenance Primers: 100 g/L.
 - 7. Pretreatment Wash Primers: 420 g/L.
 - 8. Shellacs, Clear: 730 g/L.
 - 9. Shellacs, Pigmented: 550 g/L.
- C. Colors: As selected by Architect from manufacturer's full range.
- D. Paint Products: See Schedule in Part 3.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Fiber-Cement Board: 12 percent.
 - 3. Masonry (Clay and CMUs): 12 percent.
 - 4. Wood: 15 percent.
 - 5. Gypsum Board: 12 percent.
 - 6. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- F. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in equipment rooms:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Metal conduit.
 - e. Plastic conduit.
 - 2. Paint the following work where exposed in occupied spaces:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Metal conduit.
 - e. Plastic conduit.
 - f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - g. Other items as directed by Architect.
 - 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 3. Allow empty paint cans to dry before disposal.
 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. CMU Type 1 – Standard Application
1. Primer: PrepRite Block Filler
 2. First Coat: ProMar 200 Zero VOC Semi-Gloss
 3. Second Coat: ProMar 200 Zero VOC Semi-Gloss
 4. Sheen: Semi-Gloss
- B. Hollow Metal Doors and Frames Type 1 - Standard Application
1. Primer: Pro Industrial Pro-Cryl Universal Primer
 2. First Coat: Pro Industrial Acrylic Semi-Gloss
 3. Second Coat: Pro Industrial Acrylic Semi-Gloss
 4. Sheen: Semi-Gloss
- C. Ferrous Decking Including Trusses - Standard Application
1. Primer: Pro Industrial Pro-Cryl Universal Primer
 2. First Coat: Pro Industrial Water Borne Acrylic Dryfall Semi-Gloss
 3. Second Coat: Pro Industrial Water Borne Acrylic Dryfall Semi-Gloss
 4. Sheen: Semi-Gloss
- D. Non-Ferrous Decking Including Trusses - Standard Application
1. Primer: Pro Industrial Pro-Cryl Universal Primer
 2. First Coat: Pro Industrial Water Borne Acrylic Dryfall Semi-Gloss
 3. Second Coat: Pro Industrial Water Borne Acrylic Dryfall Semi-Gloss
 4. Sheen: Semi-Gloss

END OF SECTION 09 91 23

SECTION 10 14 53 – TRAFFIC SIGNAGE

PART 1 - GENERAL

1.1 WORK REQUIRED

- A. Section includes post-mounted exterior signage for traffic control and parking designation.

1.2 REFERENCES

- A. Ohio Department of Transportation (O.D.O.T.) Construction and Material Specifications, current edition.
- B. Ohio Manual on Uniform Traffic Control Devices for signs within public rights-of-way, current edition.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with requirements of local authorities having jurisdiction in executing signage work.
- B. Obtain all required permits related to the Work of this Section.

1.4 SUBMITTALS

- A. Shop drawings are required.
 - 1. Sign posts.
 - 2. Anchors and fasteners.

PRODUCTS (Not Used)

PART 2 - EXECUTION

2.1 GENERAL

- A. Concrete: 4500 psi concrete as specified in Division 32, "Concrete Paving".
- B. Anchors and Fasteners: Stainless steel, furnish for a complete installation.

2.2 POST-MOUNTED PARKING SIGNS

- A. Parking Signs.
 - 1. Exterior "Accessible Parking" Signs
 - a. 12 inch by 18 inch, 0.080" aluminum with 1 inch radius corners. Bolt through top and bottom of sign face into sign post with vandal resistant fasteners.

- b. See detail for sign heights.
- c. Signage Finishes: Baked enamel finish.
- d. Parking sign posts per detail. Posts shall be installed per detail.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and as-built conditions of grading for conditions affecting sign locations. Bring deviations from proposed planned locations to the attention of the construction manager.
- B. Do not begin installation before final grading is completed unless otherwise permitted by the construction manager.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install accessible signage in bollards as indicated on the drawings.

3.3 CLEANING

- A. After complete signage installation, remove spots, dirt and debris. Remove concrete splatters off sign posts.
- B. Repair damaged finishes or replace at the Architect's direction.

END OF SECTION 10 14 53

SECTION 31 05 19 - GEOSYNTHETICS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes synthetic geotextiles and grids for soil stabilization, subsurface drainage application, erosion and sedimentation control, and other uses specified in other Sections.
- B. Related Sections:
 - 1. Division 33- "Subdrainage"

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM).
 - 1. ASTM D 1388 "Standard Test Method for Stiffness of Fabrics."
 - 2. ASTM D 1777 "Standard Test Method for Thickness of Textile Materials."
 - 3. ASTM D 4101 "Standard Specification for Propylene Injection and Extrusion Materials."
 - 4. ASTM D 4218 "Standard Test Method for Determination of Carbon Black in Polyethylene Compounds by the Muffle-Furnace Method."
- B. Army Corps of Engineers (COE).
- C. Geosynthetic Research Institute (GRI)
 - 1. GG1-87 "Geogrid Tensile Strength".
 - 2. GG2-87 "Geogrid Junction Strength"

1.3 SUBMITTALS

- A. Manufacturers Product Data demonstrating compliance of products with specified requirements.

PART 2 - PRODUCTS

2.1 GEOTEXTILES

- A. Nonwoven Geosynthetic: Minimum physical properties:
 - 1. Grab Tensile Strength: 135 pounds.
 - 2. Grab Elongation: 50 percent.
 - 3. Puncture Strength: 100 pounds.
 - 4. Mullen Burst Strength: 250 pounds.
 - 5. Water Flow Rate: 110 gpm/sq.ft.
 - 6. Permeability: 0.3 cm/s.
- B. Woven Geosynthetic: Minimum physical properties:
 - 1. Grab Tensile Strength: 200 pounds.

2. Grab Elongation: 25 percent.
3. Puncture Strength: 85 pounds.
4. Mullen Burst Strength: 450 PSI.
5. Water Flow Rate: 17 gpm/sq.ft.
6. Permittivity: 0.13 per sec.

C. Geogrid: Minimum physical properties:

1. Geogrid: regular grid structure formed by biaxially drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross sections sufficient to permit significant mechanical interlock with the material being reinforced. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being reinforced and shall also have high continuity of tensile strength through all ribs and junctions of the grid structure. The geogrid shall maintain its reinforcement and interlock capabilities under repeated dynamic loads while in service and shall be resistant to ultraviolet degradation, to damage under normal construction practices and to all forms of biological or chemical degradation normally encountered in the material being reinforced.
2. Geogrid property requirements:

PROPERTY	TEST METHOD	UNITS	VALUE
Interlock			
Aperture size ¹ MD CMD	I.D. Calipered ²	in in	1.0 (nom) 1.3 (nom)
Open area	COE Method ³	percent	70 (min)
Thickness Ribs Junctions	ASTM D1777-64	in in	0.03 (nom) 0.11 (nom)
Reinforcement			
Flexural rigidity	ASTM D1388-64 ⁴	mg-cm	250,000 (min)
Tensile modulus	GRI GG1-87 ⁵	lb/ft	14,000 (min)
Junctions Strength Efficiency	GRI GG2-87 ⁶	lb/ft percent	765 (min) 90 (min)
PROPERTY	TEST METHOD	UNITS	VALUE
Material			
Polypropylene	ASTM D4101 Group1/ Class 1/Grade 2	percent	98 (min)
Carbon black	ASTM 4218	percent	0.5 (min)

Dimensions			
Roll length			

		ft	164
Roll width		ft	9.8 and 13.1
Roll weight		lb	71 and 95

Notes:

1. MD dimension is along roll length. CMD dimension is across roll width.
2. Maximum inside dimension in each principal direction measured by calipers.
3. Percent open area measured without magnification by Corps of Engineers method as specified in CW 02215 Civil Works Construction Guide, November 1977.
4. ASTM D1388-64 modified to account for wide specimen testing as described in Tensar test method TTM-5.0 "Stiffness of Geosynthetics".
5. Secant modulus at 2 percent elongation measured by GRI test method GG1-87 "Geogrid Tensile Strength". No offset allowances are made in calculating secant modulus.
6. Geogrid junction strength and junction efficiency measured by GRI test method GG2-87 "Geogrid Junction Strength".

PART 3 - EXECUTION (Not Used.)

END OF SECTION

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and removing site utilities.
 - 7. Temporary erosion and sedimentation control measures.

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Contractor shall be the fully responsibility to become familiar with the site's possible below grade features, including but not limited to, rooms, vaults, utilities, etc. and shall conduct a walk through with the owner's representative prior to construction. Contractor shall contact the various utility companies to locate their facilities prior to starting construction. No additional compensation shall be paid to the contractor for repair to damage caused by their work force to facilities which are not intended to be disturbed.
- C. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Construction Manager.
- D. Salvable Improvements: Carefully remove items as directed to be salvaged and store on Owner's premises.
- E. Utility Locator Service: Notify Call Before You Dig for area where Project is located before site clearing.
- F. Do not commence site clearing operations until temporary erosion and sedimentation control and plant protection measures are in place.

- G. The project shall utilize a Certified Arborist from a reputable, experienced, third party independent tree service firm that has successfully completed temporary tree and plant protection and pruning work similar to the conditions present on this Project site as necessary.
- H. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Erection of sheds or structures.
 - 4. Impoundment of water.
 - 5. Excavation or other digging unless otherwise indicated.
 - 6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- I. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 20 00 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Wrap a 1-inch blue vinyl tie tape flag around each tree trunk at 54 inches above the ground.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion and sedimentation control Drawings and requirements of authorities having jurisdiction.

- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by the construction manager.

3.4 EXISTING UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
- C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Construction Managers' written permission.
- D. Excavate for and remove underground utilities indicated to be removed.
- E. Removal of underground utilities is included in earthwork sections and with applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security and utilities sections and Section 02 41 16 "Structure Demolition".

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain.
 - 2. Grind down stumps and remove roots, obstructions, and debris completely.
 - 3. Use only hand methods for grubbing within protection zones.
 - 4. Chip removed tree branches and dispose of off-site.

- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than one inch in any dimension; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Do not stockpile topsoil within protection zones.
 - 2. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
 - 3. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.
- C. Burning of materials shall not be permitted.

END OF SECTION 31 10 00

<u>SITE CLEARING</u>	<u>31 10 00 - 6</u>
2022 SERVICE CENTER UPGRADE AND RECONFIGURATION PROJECT - GP 1311	2020377.06
BID / PERMIT	01/15/2023

SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Geotechnical Engineering Report by GPD Group dated September 7, 2022 shall be obtained for the site-specific earth characteristics and recommendations to include, but not limited to items such as site preparation, foundation systems, slab design, excavations, pavements, subsurface drainage, and seismic considerations. Geotechnical services shall be performed by a qualified, experienced, third party, independent, licensed (in the state which the subject site resides), reputable geotechnical engineering testing firm. The site-specific Geotechnical Engineering Report takes precedence over specifications shown herein. Contractor shall become familiar with Geotechnical Engineering Report prior to earth moving activities. On-site testing during construction shall also be provided by a qualified, experienced, third party, independent, licensed (in the state which the subject site resides), reputable geotechnical engineering testing firm. The project owner retains the rights to omit or expand this geotechnical testing requirement.
- C. The Local Jurisdiction having Authority's Specifications and requirements shall be adhered to and takes precedence over specifications shown herein for all work within the Jurisdiction's Rights of way, outside of the subject property's boundary.

1.2 SUMMARY

- A. Section Includes:
 - 1. Excavating and filling for rough grading the Site.
 - 2. Preparing subgrades for slabs-on-grade, walks, pavements, and turf and grasses, and plantings.
 - 3. Excavating and backfilling for buildings and structures.
 - 4. Drainage course for concrete slabs-on-grade.
 - 5. Subbase course for concrete walks and pavements.
 - 6. Subbase course and base course for asphalt paving.
 - 7. Subsurface drainage backfill for walls and trenches.
 - 8. Excavating and backfilling trenches for utilities and pits for buried utility structures.
- B. Related Sections:
 - 1. Section 01 30 00 "Administrative Requirements".
 - 2. Section 01 40 00 "Quality Requirements" for general requirements for testing, analysis of soils / materials, and inspections.
 - 3. Section 01 50 00 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.
 - 4. Section 01 74 19 "Construction Waste Management and Disposal" for additional requirements.

5. Section 03 30 00 "Cast-in-Place Concrete"
6. Section 31 10 00 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
7. Section 32 92 00 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
8. Section 33 46 00 "Subdrainage" for drainage of foundations, underslab, retaining-wall, and landscaping.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices for earth moving.
- B. Quantity allowances for earth moving are to be assigned by the construction manager, owner, and/or architect at time of bidding.

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.
- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by construction manager. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Construction manager. Unauthorized excavation, as well as remedial work directed by Construction manager, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades, filling of holes, pits, and excavations.
- H. Finish Grade: Elevation of final top surface improvement as indicated on drawings.

- I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- M. Unit price: An amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.
- N. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct pre-excavation conference at the subject project work area.
 - 1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
 - a. Verify that survey benchmark(s) and intended elevations (lines, levels, contours, and datum locations) for the required improvements.
 - b. Personnel and equipment needed to make progress and avoid delays.
 - c. Coordination of Work with utility locator service.
 - d. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - e. Extent of trenching by hand or with air spade.
 - f. Field quality control.
 - g. Coordination of Access and Traffic Control.
 - h. Adjacent historic or vibration / sound sensitive buildings, properties, facilities, etc.
 - i. Other owner or local authority having jurisdiction specified agenda items specific to the site.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 - 1. Geotextiles.
 - 2. Controlled low-strength material, including design mixture.
 - 3. Detectable Warning tapes.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D 2487.
 - 2. Laboratory compaction curve according to ASTM D 698.
- C. Pre-excavation Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.8 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.
- B. Source of Soil Materials Quality Control:
 - 1. Where soil materials are to be supplied to the project site, testing and analysis of the material samples, from the actual source stockpile, is to be completed prior to delivery to the site.
 - 2. If tests indicate materials do not meet specified requirements or the source stockpile from which the test material was taken no longer exists, a new and current material test from the actual stockpile to be used is to be completed for acceptance prior to delivery to the site.
 - 3. Provide materials of each type from the same source of the approved test results throughout the course of construction or retesting of a new material source shall be provided prior to delivery to the site.
- C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.9 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by the Construction Manager and/or the project owner.

- C. Utility Locator Service: Notify the Local Utility Protection Service for area where Project is located before beginning earth moving operations. The contractor shall contract with a private locator service for utilities onsite, which are not marked by the public service.
- D. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Section 01 50 00 "Temporary Facilities and Controls" and 31 10 00 "Site Clearing," are in place.
- E. Do not commence earth moving operations until plant-protection measures are in place.
- F. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations. Fill Composition Test Reports shall be provided to the project team with the results of laboratory tests on proposed and actual materials used on-site.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487 and Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145 or a combination of these groups; free of lumps larger than 3 inches, rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 and Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145 or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

- E. Base Course: Naturally or artificially graded mixture of crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve; or Local DOT / Transportation Cabinet or CA-6 Federal Highway Specification. All materials shall have angular faces with no sandstone content.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve. Engineered Fill / Structural Fill shall be per site specific Geotechnical Engineering Report.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Course: Narrowly graded mixture of washed, crushed stone, or crushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve. Free of shale, clay, friable material and debris.
- I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch and 0 to 5 percent passing a No. 4 sieve.
- J. Sand: ASTM C 33; Natural river or bank sand; fine aggregate, free of silt, clay, loam, friable or soluble materials and organic matter. Well-graded Soil Classification Group SW according to ASTM D 2487.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 TOPSOIL

- A. Topsoil: Fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds, and other litter or stones larger than 1 inch.
 - 1. Minimum topsoil depth: 6-inches.
 - 2. Stockpile existing topsoil on-site for reuse.
- B. Any topsoil provided from off-site supplies shall be a silt loam soil with a pH of 5.5 to 7.0. Organic content shall be no less than 1% and no more than 12% by weight as determined by loss through ignition. The mechanical analysis shall be:

U.S. Standard Sieve Size	Percent Finer by Weight
3/4"	100%
No. 4	90 - 100%
No. 200	0 - 10%

The clay content of the material passing the No. 200 sieve shall not be greater than 60% determined by the hydrometer test.

- C. Tests will be performed by the project's independent third-party laboratory on topsoil stockpile and off-site supplies.

- D. All topsoil shall be screened prior to placement. Rock-hounding topsoil in place will not be permitted.

2.3 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf (700 N); ASTM D 4632.
3. Sewn Seam Strength: 142 lbf (630 N); ASTM D 4632.
4. Tear Strength: 56 lbf (250 N); ASTM D 4533.
5. Puncture Strength: 56 lbf (250 N); ASTM D 4833.
6. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
7. Permittivity: 0.2 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 247 lbf (1100 N); ASTM D 4632.
3. Sewn Seam Strength: 222 lbf (990 N); ASTM D 4632.
4. Tear Strength: 90 lbf (400 N); ASTM D 4533.
5. Puncture Strength: 90 lbf (400 N); ASTM D 4833.
6. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.4 CONTROLLED LOW-STRENGTH MATERIAL

- A. Controlled Low-Strength Material: Self-compacting, low-density, flowable concrete material produced from the following:

1. Portland Cement: ASTM C 150, Type I.
2. Fly Ash: ASTM C 618, Class C or F.
3. Normal-Weight Aggregate: ASTM C 33, 3/4-inch nominal maximum aggregate size.
4. Foaming Agent: ASTM C 869.
5. Water: ASTM C 94.
6. Air-Entraining Admixture: ASTM C 260.

- B. Produce low-density, controlled low-strength material with the following physical properties:

1. As-Cast Unit Weight: 36 to 42 lb/cu. ft. at point of placement, when tested according to ASTM C 138.
2. Compressive Strength: 140 psi, when tested according to ASTM C 495.

- C. Produce conventional-weight, controlled low-strength material with 140-psi compressive strength when tested according to ASTM C 495.

2.5 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades. Determine the prevailing groundwater level prior to excavations.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area. Provide temporary measures to maintain surface water diversion(s) until no longer required.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

- D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.
- E. Pump discharge water will not be permitted to drain offsite or into the storm sewer system directly. All discharge water shall be directed to a sediment basin or run through a filter bag prior to release.
- F. If soils with excessive moisture are present, due to the lack of dewatering or surface water control, the affected soils shall be removed and replaced with satisfactory soil materials deemed suitable by classification.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Notify construction manager and/or architect of unexpected subsurface conditions immediately upon discovery and discontinue affected work until resolution is agreed upon.
- C. Do not interfere with the 45-degree bearing splay of foundations.
- D. Hand trim excavations as necessary to remove loose matter.
- E. Remove excess and unsuitable materials from the site.
- F. Slope and step banks of excavations deeper than 3 feet to the material's angle of repose or less to prevent any slippage. Provide all necessary shoring and safety measures in accordance with all laws and regulation.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations 6 to 12 inches (150 to 300 mm) above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.

3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended as bearing surfaces.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Protect roots and only cut according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line where applicable.

- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for additional bedding course.
5. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

- D. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Protect and only cut roots according to the direction of the Project's Certified Arborist's.

3.8 SUBGRADE INSPECTION

- A. Notify Construction Manager when excavations have reached required subgrade.
- B. Compact subgrade to a density equal to or greater than the requirements for the subsequent fill material.
- C. If Construction Manager determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- D. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 2. Scarify subgrade surface to a depth of 6 inches to identify soft spots, recompact, and proof-roll.
 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by on-site geotechnical engineer and construction manager, and replace with compacted backfill or engineered fill as directed.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Construction Manager, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Construction Manager.
 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Construction Manager.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
 2. Maintain separation of differing materials to prevent intermixing and contamination.
 3. Protect stockpiles from erosion and deterioration of materials.

3.11 BACKFILL

- A. Place and compact backfill to contours and elevations necessary using unfrozen satisfactory materials in excavations promptly and systematically to allow time for natural and mechanical settlement, but not before completing the following:
 - 1. Compact subgrade to the density equal to or greater than requirements for subsequent fill material.
 - 2. Until ready to backfill, maintain excavations and prevent loose materials from falling into excavation and do not become compromised with surface or ground water.
 - 3. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 4. Surveying locations of underground utilities for Record Documents.
 - 5. Testing and inspecting underground utilities, including underground tanks/vaults appropriately anchored to avoid flotation or shifting during and after backfilling.
 - 6. Verify structural ability and stability of unsupported walls and other features to support imposed loads by filling and compaction.
 - 7. Removing concrete formwork.
 - 8. Removing trash and debris.
 - 9. Removing temporary shoring and bracing, and sheeting.
 - 10. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, wet, frost, snow, ice, porous, or spongy surfaces.
- C. Placement of materials shall be done such that it does not disturb or damage other work.
- D. Maintain optimum moisture content of fill materials to attain the required compaction density.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, wet, frost, snow, ice, porous, or spongy surfaces.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil material; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 03 30 00 "Cast-in-Place Concrete".
- D. Trenches under Roadways: All work shall be in accordance with the local Jurisdiction having Authority. After installing and testing, completely encase piping or conduit in a Low-Strength Mortar before placing roadway subbase course. Concrete is specified in Section 03 30 00 "Cast-in-Place Concrete".
- E. Backfill voids with satisfactory soil material while removing shoring and bracing.
- F. Place and compact initial backfill of subbase material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- G. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the pipe or conduit. Coordinate backfilling with utilities testing.
- H. Place and compact final backfill of satisfactory soil material to final subgrade elevation in maximum 8-inch lifts compacted to minimum 98 percent of maximum dry unit weight according to ASTM D 698 at a moisture content within 1.5% of optimum for cohesive or silty borrow. Controlled lifts of granular material should be compacted to 80% relative density per ASTM D-4254.
- I. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- J. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows under the direction of the geotechnical engineer:
 1. Under grass and planted areas, use satisfactory soil material.
 2. Under walks and pavements, use satisfactory soil material.
 3. Under steps and ramps, use engineered fill.
 4. Under building slabs, use engineered fill.
 5. Under footings and foundations, use engineered fill.
 6. General fill, use graded soil material free of lumps larger than 3 inches, rocks larger than 2 inches, and debris conforming to ASTM D 2487 Group Symbol CL.
 7. See Geotechnical Engineering Report for additional requirements.
 8. Reshape and recompact fills subject to vehicular traffic.
- C. Structural Fill:
 1. Under the direction of construction manager and on-site geotechnical engineer to use engineered fill or subsoil excavated on-site material of graded, free of lumps larger than 3 inches, rocks larger than 2 inches, debris, waste, frozen materials, vegetation, and other deleterious matter conforming to ASTM D 2487 Group Symbol CL.
 2. Maximum depth per lift: 6 inches, compacted to minimum 98 percent of maximum dry unit weight according to ASTM D 698.
- D. Under Interior Slabs-On-Grade:
 1. Use granular subbase material.
 2. Maximum depth per lift: 4 inches, compacted to minimum 98 percent of maximum dry unit weight according to ASTM D 698.
- E. At Footings:
 1. Compact to minimum 98 percent of maximum dry unit weight according to ASTM D 698.

2. Do not backfill against unsupported foundation walls.
- F. Granular Fill – Gravel: Pit run washed stone; free of shale, clay, friable material and debris graded in accordance with ASTM D 2487 Group Symbol GW.
- G. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
1. Use drainage course material in conformance with Part 3.17 "Subsurface Drainage" of this specification and Section 33 41 00 "Subdrainage".
- H. Around and Over Underground Tanks:
1. Use initial fill of sand material: 12 inches, compacted to minimum 95 percent of maximum dry density according to ASTM D 1557 or to minimum 98 percent of maximum dry unit weight according to ASTM D 698.
 2. Place and compact final backfill of satisfactory soil material to final subgrade elevation in maximum 8-inch lifts compacted to minimum 98 percent of maximum dry unit weight according to ASTM D 698.
- I. At Grass Lawn and Planting Areas:
1. Place and compact final backfill of satisfactory soil material to final subgrade elevation in maximum 8-inch lifts compacted to minimum 98 percent of maximum dry unit weight according to ASTM D 698.
 2. See Part 2.2 "Topsoil" of these specifications.
- J. Place soil fill on subgrades free of mud, wet, frost, snow, ice, porous, or spongy surfaces.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 1.5 percent above or 1.5 percent below of optimum moisture content.
1. Do not place backfill or fill soil material on surfaces that are muddy, wet, frost, snow, ice, porous, or spongy surfaces.
 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 1.5 percent and is too wet to compact to specified dry unit weight.
 3. Maintain optimum moisture content of fill materials to attain the required compaction density.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in equal continuous layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers, and not more than 6 inches in depth for granular fill materials which shall be fully consolidated.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698, if not otherwise specified:

1. Under load-bearing foundation surfaces, structures, building slabs, and steps, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 100 percent.
 2. Under pavements, walkways, and similar construction, scarify and recompact top 8 inches below subgrade and compact each layer of backfill or fill soil material at 98 percent.
 3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 90 percent.
- D. Placed backfill and fill soils within areas intended to have a soil profile restoration / areas to be naturalized / intended to be restore to good hydrologic conditions shall have the upper and deeper soil root zone(s) altered / amended in accordance with the local soil conservation authority's guidance requirements.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
 3. Positive drainage shall be provided in all areas at all times. Do not allow water to pond on-site or block water along adjacent properties causing undue ponding.
- B. Site Rough Grading: Slope grades to direct water away from buildings at minimum 2 inches in 10 feet (unless noted otherwise) and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
1. Turf or Unpaved Areas: Plus or minus 1 inch.
 2. Walks: Plus or minus 1/2 inch.
 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

- A. Subdrainage Pipe: Specified in Section 33 46 00 "Subdrainage."
- B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
1. Compact each filter material layer to 98 percent of maximum dry unit weight according to ASTM D 698.

- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer to 98 percent of maximum dry unit weight according to ASTM D 698.
 - 2. Place and compact impervious fill over drainage backfill in 6-inch thick compacted layers to final subgrade.

3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase and base course and base course on subgrades free of mud, wet, frost, snow, ice, porous, or spongy surfaces.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 - 1. As directed, install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place base course material over subbase course under hot-mix asphalt pavement.
 - 3. Shape subbase and base course to required crown elevations and cross-slope grades.
 - 4. Place subbase and base course 6 inches (150 mm) or less in compacted thickness in a single layer.
 - 5. Place subbase and base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
 - 6. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 698.
- C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of base course material and compact simultaneously with each subbase and base layer to not less than 98 percent of maximum dry unit weight according to ASTM D698.

3.19 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Place drainage course on subgrades free of mud, wet, frost, snow, ice, porous, or spongy surfaces.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 - 1. As directed, install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place drainage course 6 inches (150 mm) or less in compacted thickness in a single layer.
 - 3. Place drainage course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
 - 4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 98 percent of maximum dry unit weight according to ASTM D698.

3.20 FIELD QUALITY CONTROL

- A. Special Inspections: The project is to engage a qualified, experienced, third-party, independent, special inspector to perform the following special inspections:
1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 2. Determine that fill material and maximum lift thickness comply with requirements.
 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
 4. Provide for visual inspection of load-bearing excavated surfaces before placement of foundations.
 5. Testing inspector shall provide the project team and owner with written comprehensive reports with photographic documentation of the activities performed and the results of the observations and testing conducted.
- B. Testing Agency: The project will engage a qualified, experienced, third party, independent, licensed (in the state which the subject site resides), reputable geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Construction Manager and/or Architect.
- E. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.
- F. Testing agency shall test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length, but no fewer than two tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.
- G. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by the Construction Manager; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property. Grade all areas for positive drainage and fully stabilize bare earth areas.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property as directed. Stockpile or spread soil as directed by Construction Manager and/or Owner.
 - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Leave all project, borrow, and utilized areas in a clean and neat condition.

END OF SECTION 31 20 00

SECTION 31 23 19 - DEWATERING

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes construction dewatering.
- B. Related Requirements:
 - 1. Section 31 20 00 "Earthwork" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.
 - 2. Section 33 46 00 "Subdrainage" for permanent foundation wall, and footing drainage.

1.3 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Using photograph or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer that has specialized dewatering work.
- B. Regulatory Requirements: Comply with water disposal requirements authorities having jurisdiction.

1.5 FIELD CONDITIONS

- A. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from this data.
 - 1. Make additional test borings and conduct other exploratory operations necessary for dewatering.
 - 2. The geotechnical report is included elsewhere in Project Manual.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
 - 1. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
 - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
 - 3. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
 - 4. Remove dewatering system when no longer required for construction.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
 - 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
 - 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Provide temporary grading to facilitate dewatering and control of surface water.
- D. Protect and maintain temporary erosion and sedimentation controls during dewatering operations.

3.2 INSTALLATION

- A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
 - 1. Space well points or wells at intervals required to provide sufficient dewatering.
 - 2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.
- B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.
- C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

- A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
 - 1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
 - 2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
 - 3. Maintain piezometric water level a minimum of 24 inches (600 mm) below surface of excavation.
- C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

- A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.
 - 1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.

2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
 3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.
- B. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.
- C. Prepare reports of observations.

3.5 PROTECTION

- A. Protect and maintain dewatering system during dewatering operations.
- B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 31 23 19

SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Local Jurisdiction having Authority's Specifications and requirements shall be adhered to and takes precedence over specifications shown herein for all work within the Jurisdiction's Rights of way, outside of the subject property's boundary.

1.2 SUMMARY

A. Section Includes:

- 1. Hot-mix asphalt paving.
- 2. Hot-mix asphalt overlay.
- 3. Cold milling of existing asphalt pavement.
- 4. Hot-mix asphalt patching.
- 5. Asphalt traffic-calming devices.
- 6. Asphalt surface treatments.
- 7. Pavement-marking paint.

B. Related Sections:

- 1. Section 02 41 16 "Structure Demolition".
- 2. Section 31 20 00 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, aggregate pavement shoulder and subgrade preparation.
- 3. Section 32 13 13 "Concrete Paving" for concrete pavement and for separate concrete curbs, gutters, and driveway aprons.
- 4. Section 32 13 73 "Concrete Paving Joint Sealants" for joint sealants and fillers at terminations.

1.3 DEFINITION

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.4 SUBMITTALS

- A. All submittals shall be made to the construction manager and owner.
- B. Product Data: For each type of product indicated within 10-days after being awarded the Project. Include technical data and tested physical and performance properties.

1. Job-Mix Designs: Certified mix design indicating conformance with local DOT or Transportation Cabinet specifications and approvals which is not past the stated expiration date.
- C. Samples of Material: Are to be provided to the Project's geotechnical engineer for the aggregates and asphalt binder which are to be used in the mix design.
- D. Qualification Data: For qualified manufacturer and installer.
- E. Material Certificates: For each paving material, from manufacturer.
- F. Material Test and Field Quality-Control Reports: For each paving material.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the local DOT / Transportation Cabinet of the state in which Project is located.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM D 3666 for testing indicated.
- C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of local DOT / Transportation Cabinet for asphalt paving work.
 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.
- D. Materials supplied to the project site shall be obtained from the same source throughout construction.
- E. Equipment: The necessary equipment to complete all work efforts shall be of good commercial quality which is appropriately sized for the work task being completed. All equipment shall meet the minimum standards and requirements of the local DOT / Transportation Cabinet specifications.
- F. Preinstallation Conference: Conduct conference at Project site.
 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review condition of subgrade and preparatory work.
 - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - e. Review protocol to maintain consistent delivery and installation of hot materials to not form cold joint or seams where not intended.
 - f. Review inspection and testing requirements, governing regulations, and proposed construction procedures.

- g. Review forecasted weather conditions and procedures for coping with inclement conditions.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacturer, and directions for storage.
- B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Shall be in accordance with the local DOT / Transportation Cabinet requirements; material product manufacturer's written instructions; and do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. Prime Coat: Minimum surface temperature of 50 deg F (15.6 deg C).
 - 2. Tack Coat: Minimum surface temperature of 50 deg F (15.6 deg C).
 - 3. Slurry Coat: Comply with weather limitations in ASTM D 3910.
 - 4. Asphalt Base Course and Binder Course: Minimum surface temperature of 40 deg F (4.4 deg C) and rising at time of placement.
 - 5. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.6 deg C) at time of placement.
- B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 degrees F for water-based materials, and not exceeding 95 degrees F.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; clean angular crushed stone or angular crushed gravel; free of shale, clay, friable material and debris.
- C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, or combinations thereof; clean, free of shale, clay, friable material and debris.
 - 1. For hot-mix asphalt, limit natural sand to a maximum of 10 percent by weight of the total aggregate mass.
- D. Aggregate Gradation for use in Base Course Hot-Mix Asphalt:
 - 1. Graded in accordance with ASTM C 136, with the following limits:
 - a. 2 inch sieve: 100 percent passing.

- b. 1 inch sieve: 95 percent passing.
 - c. 3/4 inch sieve: 95 to 100 percent passing.
 - d. 5/8 inch sieve: 75 to 100 percent passing.
 - e. 3/8 inch sieve: 55 to 85 percent passing.
 - f. No. 4 sieve: 35 to 60 percent passing.
 - g. No. 16 sieve: 15 to 35 percent passing.
 - h. No. 40: 10 to 25 percent passing.
 - i. No. 200: 5 to 10 percent passing.
- E. Aggregate Gradation for use in Surface Wearing Course Hot-Mix Asphalt:
- 1. Graded in accordance with ASTM C 136, with the following limits:
 - a. 2 inch sieve: 100 percent passing.
 - b. 1 inch sieve: 95 percent passing.
 - c. 3/4 inch sieve: 95 to 100 percent passing.
 - d. 5/8 inch sieve: 75 to 100 percent passing.
 - e. 3/8 inch sieve: 55 to 85 percent passing.
 - f. No. 4 sieve: 35 to 60 percent passing.
 - g. No. 16 sieve: 15 to 35 percent passing.
 - h. No. 40: 10 to 25 percent passing.
 - i. No. 200: 5 to 10 percent passing.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: Performance-Grade shall be utilized in accordance with local DOT / Transportation Cabinet Standard Specifications relative to the local pavement climate maps. PG binder shall in conformance with the requirements of AASHTO M 320, PG 64-22 and shall be adjusted for climate, location, traffic, reliability and RAP content.
- B. Asphalt Cement: ASTM D 3381 for viscosity-graded material; ASTM D 946 penetration-graded at 25 °C (77 °F). If needed, volume corrections for asphalt binders shall be made according to ASTM D 4311. Asphalt Cement shall be in accordance with the local DOT / Transportation Cabinet Standard Specifications.
- C. Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70 on close-textured surfaces; MC-250 on open-textured bases.
- D. Emulsified Asphalt Prime Coat: Asphalt emulsion prime coat shall be in compliance with the local DOT / Transportation Cabinet and conform to ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- E. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, homogeneous, slow setting, diluted in water, of suitable grade and consistency for application.
- F. Fog Seal: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.
- G. Water: Potable.

2.3 AUXILIARY MATERIALS

- A. Recycled Materials for Hot-Mix Asphalt Base Course Only (excluded use in surface course):
1. Reclaimed asphalt pavement (RAP) excludes reclaimed, unbound-aggregate base material.
 2. RAP shall consist of the material obtained from highways, streets, or asphalt parking lots by crushing, milling, or planing existing asphalt concrete pavements from sources and gradations that have performed satisfactorily in previous installations of an equivalent job-mix formula, equal to or better than performance of required hot-mix asphalt paving produced from all new materials, and in compliance with local DOT / Transportation Cabinet requirements.
 3. RAP shall not contain any proportion of recycled asphalt shingles (RAS).
 4. RAP shall be processed through an appropriate crusher of an asphalt concrete production facility yard so that the resulting material will contain no particles larger than the maximum aggregate size of the asphalt concrete mixture in which it will be used. The material shall have a reasonably uniform gradation from fine to coarse.
 5. The material source stockpile shall be free of excessive moisture, saturated conditions, and kept separate from virgin aggregates, dirt, vegetation, rubbish/debris, and not contaminated by foreign materials.
 6. RAP limits shall be per ODOT 401.04 Standard RAP limits when permitted. No RAP shall be accepted in the surface course.
- B. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Provide in granular, liquid, or wettable powder form.
- C. Sand: ASTM D 1073 or AASHTO M 29, Grade Nos. 2 or 3.
- D. Paving Geotextile: AASHTO M 288 paving fabric; nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
- E. Joint Sealant: ASTM D 6690, Type II or III, hot-applied (low modulus), single-component, polymer-modified bituminous sealant manufactured especially for improving strength and performance of the parent asphalt sealant.
1. For material to be covered by an asphalt pavement overlay shall be low modulus conforming to ASTM D 6690, modified; refer to manufacturer's recommendations.
- F. Pavement marking paint: Refer to the requirements in the construction documents.
- G. Wheel Stops: Precast, air-entrained concrete, 2500-psi minimum compressive strength, 4-1/2 inches high by 9 inches wide by 72 inches long. Provide chamfered corners, drainage slots on underside, and holes for anchoring to substrate.
1. Dowels: Galvanized steel, 3/4-inch diameter, 10-inch minimum length.

2.4 MIXES

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction per local DOT / Transportation Cabinet specifications designed in accordance with procedures in AI MS-2, "Asphalt Mix Design Methods" and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Use only dry materials to avoid foaming and other irregularities. Mix uniformly.
3. Base Course:
 - a. Asphalt cement content shall be 3.0 to 6.0 percent by weight of mixture in accordance with AI MS-2.
 - b. Mix shall have a nominal maximum particle size of ½-inch (12.5mm) or ¾-inch (19.0mm).
 - c. Recycled asphalt pavement (RAP only) in the base course is limited to 20 percent maximum. No recycled asphalt shingles (RAS) in any asphalt mix will be permitted.
4. Surface Wearing Course:
 - a. Asphalt cement content shall be 5.0 to 7.0 percent by weight of mixture in accordance with AI MS-2.
 - b. Mix shall have a nominal maximum particle size of 3/8-inch (9.5mm).
 - c. Mix shall have minimum of 80 percent passing the 3/8-inch (9.5mm) sieve. The aggregate grading curve shall be on the fine side of the maximum density line, unless otherwise required by the local DOT / Transportation Cabinet.
 - d. No recycled asphalt material (RAP or RAS) in the surface course mix will be permitted.
5. Asphalt mixture properties shall meet the following minimum requirements; if conflict occurs with the local DOT / Transportation Cabinet requirements, the more restrictive shall take precedence:
 - a. Coarse aggregate angularity ASTM D 5821: 75 percent of coarse aggregate portion shall have at least one fractured face.
 - b. Fine aggregate angularity AASHTO T 304: 40 percent minimum.
 - c. Flat and elongated pieces, 5:1 ratio ASTM D 4791: 10 percent maximum.
 - d. Sand equivalency ASTM D 2419: 40 percent minimum.
 - e. Natural sand content: 10 percent maximum.
 - f. Air voids at OAC: 3.5 +/- 0.5 percent
 - g. VMA based on the bulk dry specific gravity (Gsb):
 - 1) 3/8-inch (9.5mm) mixes: 15.0 percent.
 - 2) 1/2-inch (12.5mm) mixes: 14.0 percent.
 - 3) 3/4-inch (19.0mm) mixes: 13.0 percent.
 - h. Dust proportion based on the effective binder content: 0.6 to 1.2.
6. When RAP is used in the base course mix design, the following requirements shall be adhered to:
 - a. The gradation of the aggregate in the RAP shall be used in calculation of the mix gradation and fractured faces. Fine aggregate angularity, sand equivalent and flat and elongated particles shall not be measured for the RAP aggregate.
 - b. The percentage of asphalt in the RAP shall be considered when determining the optimum asphalt content.
 - c. Asphalt content of the total mixture for mix batching shall include virgin and reclaimed asphalt binder. The asphalt binder in the RAP shall be considered as part of the trial mix binder content.
 - d. The specific gravity of the virgin binder shall be used as the specific gravity of the binder in the RAP for mixture design.
 - e. The effective specific gravity of the aggregate in the TAP shall be determined and used as the bulk specific gravity of the RAP aggregate for calculation purposes.
 - f. Use mixing and compaction temperatures for intended asphalt binder grade.

B. Emulsified-Asphalt Slurry: ASTM D3910

1. Use of Emulsified-Asphalt Slurry shall only be applied after being pre-approved by an informed owner of the finish product prior to use. Provide mockup application over a 5 ft. x 5 ft. area agreed upon with the owner.
2. Utilize Type 1 for surface sealing of lightly trafficked parking lot areas.
3. Utilize Type 2 for moderate traffic areas, filling minor surface voids, correction of surface erosion, and application of a minimal wearing surface.
4. Type 3 only to be utilized as directed for limited new wearing surface, low spot build-up, or managing skid resistance.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry, compacted, and in suitable condition to begin paving which are able to support the paving and imposed equipment loads.
- B. Verify gradients and elevations of base are correct to maintain consistent asphalt layer thicknesses at no less than the intended minimum depths.
- C. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

3.2 PREPARATION

- A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the work.
- B. Refer to Section 31 20 00 "Earth Moving" for subgrade inspection.
- C. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 2. Proofroll with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding.
 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by on-site geotechnical engineer and construction manager, and replace with compacted backfill or engineered fill as directed.
- D. Saw cut, using straight and true lines, all existing pavements, which do not have the necessary clean edges, to remain in place and abut against the new asphalt.
- E. Proceed with paving only after unsatisfactory conditions have been corrected.
- F. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections required for the proposed improvements.
1. Mill to the required depth for installation of the proposed improvements.
 2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
 3. Control rate of milling to prevent tearing of existing asphalt course.
 4. Repair or replace curbs, driveway aprons, manholes, and other construction damaged during cold milling.
 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 6. Patch surface depressions deeper than 1 inch (25 mm) after milling, before wearing course is laid.
 7. Handle milled asphalt material in accordance with approved waste management plan requirements in Section 01 74 19 "Construction Waste Management and Disposal."
 8. Keep milled pavement surface free of loose material and dust.
 9. Tight corners and areas with are not able to be reached with the primary milling machine shall have the equal depth of material removed either by hand work or other means. Remove unsound fractured full depth pieces when encountered and provide patch to affected area prior to mass placement of new materials.
 10. Do not allow milled materials to accumulate on-site.

3.4 PATCHING

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- C. Patching: Partially fill excavated pavements with hot-mix asphalt base course mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface wearing course layer finished flush with adjacent surfaces.

3.5 REPAIRS

- A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.
1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.

- B. Crack and Joint Filling: Having a width or 1/8-inch or greater - Remove existing joint filler material, all vegetation, and debris from cracks or joints to a depth of minimum 5/8-inch and sterilize cleaned area.
 - 1. Clean and prepare cracks and joints in existing hot-mix asphalt pavement in accordance with the joint material manufacturer's recommendations.
 - 2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.
 - 3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Joint sealant to be filled to be 1/16-inch to 1/8-inch below the pavement surface with the sealant left slightly concave once cooled.
 - 4. All preparation and applications of joint materials shall be in accordance with the manufacturer's written instructions.
 - 5. If sealant does not bond to the pavement sides of the repaired crack, sealant shall be removed, correct de-bonding problem and reinstalled new sealant.

3.6 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Herbicide Treatment: Apply to areas of previously known vegetation growth. Apply herbicide in accordance with manufacturer's recommended rates and written application instructions. Application surface is to be dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
 - 1. Herbicide may be mixed with prime coat if formulated by manufacturer for that purpose for project with a widely known vegetation issue.
- C. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. (target application rate of 0.33 gal./sq.yd.). Apply enough material to penetrate and seal but not flood surface in accordance with manufacturer's instructions. Allow prime coat to cure.
 - 1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
 - 2. Protect primed substrate from damage until ready to receive paving. Traffic shall not be allowed over primed substrate.
- D. Tack Coat: Apply uniformly to surfaces of pavement in accordance with the following:
 - 1. Existing surfaces to receive the tack coat shall be thoroughly cleaned of all foreign matter and loose material and shall be dry before the tack coat is applied. Determination of adequate surface preparation shall be determined by the construction manager.
 - 2. Tack coat shall be installed over all new and exiting concrete and asphalt pavements and structures prior to installation of new asphalt concrete material over said substrate.
 - 3. Application shall be in accordance with manufacturer's instructions and completed with properly functioning tack distributor equipment, that has been calibrated with the last 12 months in accordance with ASTM D 2995, capable of maintaining temperature of material to ensure it will adequately flow and have the capability to develop sufficient pressure for

force the material through the spray bar nozzles, creating a fan shape spray set at the proper height to provide an overlap on the ground with a minimum double lap.

4. Application Rates (gallons/sq.yd.) as follows:
 - a. New Asphalt:
 - 1) Residual (straight tack) = 0.03 to 0.04
 - 2) Undiluted = 0.05 to 0.06
 - 3) Diluted (1:1) = 0.10 to 0.12
 - b. Oxidized Asphalt:
 - 1) Residual (straight tack) = 0.05 to 0.06
 - 2) Undiluted = 0.08 to 0.09
 - 3) Diluted (1:1) = 0.15 to 0.18
 - c. Milled Asphalt Surface:
 - 1) Residual (straight tack) = 0.05 to 0.06
 - 2) Undiluted = 0.08 to 0.09
 - 3) Diluted (1:1) = 0.15 to 0.18
 - d. Milled Concrete Surface:
 - 1) Residual (straight tack) = 0.04 to 0.05
 - 2) Undiluted = 0.06 to 0.08
 - 3) Diluted (1:1) = 0.12 to 0.15
 - e. Portland Cement Concrete:
 - 1) Residual (straight tack) = 0.04 to 0.05
 - 2) Undiluted = 0.06 to 0.08
 - 3) Diluted (1:1) = 0.12 to 0.15
 - f. Vertical Face, longitudinal construction joints shall be treated using a rate that will thoroughly coat the vertical face without excessive runoff.
5. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
6. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.7 HOT-MIX ASPHALT PLACEMENT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 1. Place hot-mix asphalt base course in number of lifts and thicknesses necessary to be in compliance with the local DOT / Transportation Cabinet requirements.
 2. Place hot-mix asphalt surface course in single lift.
 3. Spread mix at a minimum temperature of 260 deg F.
 4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 5. Placement of material shall be paved in the direction of traffic unless otherwise directed by the construction manager or owner.
 6. Placement of material shall be installed in accordance with all ADA and Universal Access requirements for accessible stalls, aisles, and pathways of travel.
 7. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
 8. Place hot-mix asphalt within 24 hours of applying prime or tack coat; surface shall be free of water.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips in a timely manner maintaining the proper temperature to extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
 2. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface. Roll surface to fully consolidate after corrected irregularities.
- D. The final finished grades of the new Hot Mix Asphalt Concrete pavements must be smooth and true to contours. The final finished grades shall match adjacent pavement surfaces and concrete slabs and aprons.

3.8 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
1. Clean contact surfaces and apply tack coat to joints.
 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations".
 5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 6. Compact asphalt at joints to a density within 2 percent of specified course density.
 7. Apply joint sealer to cold and dissimilar material joints.

3.9 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers. Do not displace or extrude pavement from position.
1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density, Marshall Test Method: 96 percent of reference laboratory density in accordance with ASTM D 6927 or AASHTO T 245, but not less than 94 percent nor greater than 100 percent.
 2. Average Density, Rice Test Method: 94 percent of reference theoretical maximum density (TMD) in accordance with ASTM D 2041 or AASHTO T 209, but not less than 92 percent nor greater than 97 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement and protect from mechanical injury for 1 day or until it has cooled and hardened with a temperature less than 135 degrees F.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.10 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the required thickness within the following tolerances:
1. Base Course: Plus or minus 1/4 inch.
 2. Surface Course: Plus 1/4 inch, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Base Course: 1/4 inch.
 2. Surface Course: 1/8 inch.
 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.
- C. Overall Variance from True Elevation: within 1/2 inch.
- D. Asphalt Traffic-Calming Devices: Compact and form asphalt to the shapes intended and within a tolerance of plus or minus 1/8-inch of height intended above the pavement surface.

3.11 PAVEMENT MARKING

- A. Refer to construction documents.

- B. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Construction Manager.
- C. Apply pavement markings in two applications. The first application to be completed after placement of the final surface course, just prior to opening to traffic. Allow paving to age for 30 days before final pavement marking application.
- D. Sweep and clean surface to eliminate loose material and dust.
- E. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.
 - 1. As directed, broadcast glass beads, in conformance with the local DOT / Transportation Cabinet, uniformly into wet pavement markings at a rate of 6 lb/gal.
- F. Paint markings shall be provided for the required ADA/accessible areas and parking stalls. Contractor shall comply with the current local and federal rules, guidelines and codes for color, quantity, dimensions and associated.

3.12 SURFACE TREATMENTS

- A. Fog Seals: As directed apply fog seal at a rate of 0.10 to 0.15 gal./sq. yd. to existing asphalt pavement and allow to cure. With fine sand (black beauty), lightly dust areas receiving excess fog seal.
- B. Slurry Seals: As directed apply slurry coat in a uniform thickness in accordance with ASTM D3910 and allow to cure.
 - 1. Roll slurry seal where thickness exceeds ¼-inch to remove ridges and provide a uniform, smooth surface.

3.13 WHEEL STOPS

- A. Install wheel stops in bed of adhesive as recommended by manufacturer.
- B. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.14 FIELD QUALITY CONTROL

- A. Refer to Section 01 40 00 "Quality Requirements", for general requirements of quality control.
- B. Testing Agency: The project is to engage a qualified, experienced, third-party, independent, testing agency to perform tests and inspections in accordance with AI MS-2, unless otherwise specified.
- C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined in accordance with ASTM D 3549.

- D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with ASTM D 979 or AASHTO T 168.
 - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D 2041, and compacted in accordance with job-mix specifications.
 - 2. In-place density of compacted pavement will be determined by testing core samples in accordance with ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three (3) cores taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method in accordance with ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- F. Replace and compact hot-mix asphalt where core tests were taken.
- G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.15 DISPOSAL

- A. Except for material indicated to be recycled which are to be transported to the respective processing facility, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill or approved legal disposal location.
- B. Do not allow milled materials to accumulate on-site.
- C. General: Handle asphalt-paving waste in accordance with approved waste management plan required in Section 01 74 19 "Construction Waste Management and Disposal."

END OF SECTION 32 12 16

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Walk and curbed walk.
 - 2. Pavement.
 - 3. Curbs and gutters.
 - 4. Exterior steps and ramps.
- B. Related Sections:
 - 1. Section 03 30 00 "Cast-in-Place Concrete" for general building applications of concrete.
 - 2. Section 07 92 00 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and asphalt paving or adjacent construction.
 - 3. Section 31 20 00 "Earth Moving".

1.3 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; Current Edition.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; Current Edition
- C. ACI 301 - Specifications for Structural Concrete; Current Edition.
- D. ACI 302.1R - Guide to Concrete Floor and Slab Construction; Current Edition.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; Current Edition.
- F. ACI 305R - Guide to Hot Weather Concreting; Current Edition.
- G. ACI 306R - Guide to Cold Weather Concreting; Current Edition.
- H. ACI 308R - Guide to External Curing of Concrete; Current Edition.
- I. ACI 330 – Specifications for Concrete Jointing, Current Edition.
- J. ACI 330R – Guide for Design and Construction of Concrete Parking Lots, Current Edition.

- K. ACI 330.2R – Site Paving for Industrial and Trucking Facilities, Current Edition.
- L. ACI 347R - Guide to Formwork for Concrete; Current Edition.
- M. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; Current Edition.
- N. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; Current Edition.
- O. ASTM C33/C33M - Standard Specification for Concrete Aggregates; Current Edition.
- P. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; Current Edition.
- Q. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; Current Edition.
- R. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; Current Edition.
- S. ASTM C150/C150M - Standard Specification for Portland Cement; Current Edition.
- T. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; Current Edition.
- U. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; Current Edition.
- V. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; Current Edition.
- W. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; Current Edition.
- X. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; Current Edition.
- Y. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; Current Edition.
- Z. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; Current Edition.
- AA. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; Current Edition.
- BB. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); Current Edition.
- CC. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; Current Edition.

- DD. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; Current Edition.
- EE. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; Current Edition.
- FF. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; Current Edition.

1.4 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and silica fume pozzolans.
- B. W/C Ratio: The ratio by weight of water to cement.
- C. W/Cm Ratio: The ratio by weight of water to cementitious materials.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- B. Other Action Submittals:
 - 1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments which complies with the requirements of ACI 301 and 318.

1.6 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.
 - 5. Curing compounds.
 - 6. Applied finish materials.
 - 7. Bonding agent or epoxy adhesive.
 - 8. Joint fillers.
- C. Material Test Reports / Letter from Source Quarry: For the following:
 - 1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity; verification of freeze/thaw and D-Cracking resistance for exterior pavements.
- D. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A producer experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment that is registered with and approved by authorities having jurisdiction or the local DOT / Transportation Cabinet of the state in which Project is located.
 - 1. Manufacturer certified according to local DOT / Transportation Cabinet or NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. ACI Publications: Comply with ACI 301, 318 and respective ACI requirements.
- C. Materials supplied to the project site shall be obtained from the same source throughout construction. If originating source becomes out of compliance, an alternative source meeting the same characteristics and requirements may be utilized only after notification has been provided to the owner/construction manager. The final appearance of alternative source materials shall be blended / transition where it would not be a noticeable change from original work.
- D. The necessary equipment to complete all work efforts shall be of good commercial quality which is appropriately sized for the work task being completed. All equipment shall meet the minimum standards and requirements of the local DOT/Transportation Cabinet specifications.
- E. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- F. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to subject work including, but not limited to, the following:
 - a. Review proposed sources of concrete materials, including capabilities and location of plant that will produce the concrete.
 - b. Review condition of subgrade and preparatory work.
 - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - e. Review protocol to maintain consistent delivery and installation of materials to not intentionally form cold joints where not intended.
 - f. Review inspection and testing requirements, governing regulations, and proposed construction procedures.
 - g. Review forecasted weather conditions and procedures for coping with inclement conditions.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Shall be in accordance with the local DOT / Transportation Cabinet requirements.
- B. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- C. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 degrees F for water-based materials, and not exceeding 95 degrees F.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301.

2.2 FORMS MATERIALS

- A. Form Materials: Conform to ACI 301.
 - 1. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces, stain-free final concrete appearance with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 2. Form Coatings Release Agent: Provide commercial formulation form-coating compounds with a maximum VOC of 350 g/L that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 1064/A 1064M, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.
- C. Epoxy-Coated Welded-Wire Reinforcement: ASTM A884/A884M, Class A, plain steel.
- D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- E. Galvanized Reinforcing Bars: ASTM A767/A767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A615/A615M, Grade 60; deformed bars.
- F. Epoxy-coated Reinforcement Bars: ASTM A 775/A 775M with ASTM A 615/A 615M, Grade 60; deformed bars.
- G. Plain-Steel Wire: ASTM A 1064/A 1064M, galvanized.

- H. Deformed-Steel Wire: ASTM A1064/A1064M.
- I. Epoxy-Coated-Steel Wire: ASTM A884/A884M, Class A; coated, deformed.
- J. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 555M, with ASTM A 615/A 615M, Grade 60 plain-steel bars. True to length with ends square and free of burrs.
- K. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- L. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- M. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
- N. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.
- O. Zinc Repair Material: ASTM A 780/A 780M.
- P. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, ordinary portland cement Type I or II. May be supplement with the following:
 - a. Silica Fume: Shall be dry densified meeting the requirements of ASTM C 1240 and be in accordance with ACI 211.1.
 - b. Fly Ash: Shall meet the requirements of ASTM C 618, Class C or F, except the loss on ignition must not exceed 5.0 percent and be in accordance with ACI 211.1.
 - c. Slag Cement: Shall meet the requirements of ASTM C 989, Grade 100 minimum.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4S (adjust for regional application), low-shrinkage, uniformly/well graded. Provide aggregates from a single source which are approved by the local DOT / Transportation Cabinet, or with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials, or a letter from the source quarry documenting record of no alkali reactivity. Materials shall be resistant to freeze/thaw, D-Cracking, sulfate attack and are not alkali-carbonate aggregates or susceptible to alkali-aggregate reactivity.
 - 1. Maximum Coarse-Aggregate Size: 1 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

- C. Water: Potable and complying with ASTM C 94/C 94M. Clean, and not detrimental to concrete.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
- E. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 1315, Type 2, Class A, dissipating, in accordance with ACI 308.

2.6 CONCRETE SEALER:

- A. Manufacturer's standard, clear, waterborne, penetrating, and breathable, silane-siloxane sealer shall be applied after curing period and per manufacturer's recommendations.
- B. Other water-based silane-siloxane sealers applied per manufacturer's recommendations and approval at the discretion of the Construction Manager.
- C. Concrete sealer shall be supplied with a written statement from the manufacture guaranteeing compatibility with the curing agent applied.

2.7 RELATED MATERIALS

- A. Slab Isolation Joint Filler: 1/2 inch thick, height equal to full slab thickness contacting surface. Top section that is to be surface sealed shall form a 1/2 inch deep, or per joint sealant manufactures recommendations, sealant pocket.
 - 1. Material: ASTM D1751, Preformed, cellulose fiber non-extruding bituminous type or sponge rubber (ASTM D1752).
- B. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

- C. Epoxy-Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
 - 1. Types I and II for nonload bearing; Types IV and V for load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- D. Chemical Surface Retarder: Water-soluble, liquid, set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
 - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 4000 psi
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 4 inches maximum without water reducer.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 - 1. Air Content: 6.5 percent average plus or minus 1.5 percent (target content of 7.0 percent) for 1-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use plasticizing and retarding admixture in concrete as required for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- F. Cementitious Materials:
 - 1. Cementitious material content shall be per concrete mix design specifically tailored to the actual field conditions present at time of placement; design intent of 550 pounds per cubic yard.
 - 2. Pozzolan Materials maximum content:
 - a. Silica Fume may be used to replace portland cement, up to maximum 7.0 percent total cement weight.
 - b. Fly Ash or Slag Cement may be used to replace portland cement, up to maximum 20.0 percent total cement weight.
- G. Fibers: Use fibers according to manufacturer's written instructions. All fibers shall be polypropylene or polyethylene synthetic fibers engineered and designed for intended use, complying with ASTM C 1116/C 1116M, type III.

1. For shrinkage crack control in all concrete used for curb, walk, exterior steps, ramps construction: Micro – synthetic fibers shall be utilized at 1.5 pounds per cubic yard minimum.
 2. For use as W.W.F. replacement in all concrete used for vehicular pavement construction: Macro – synthetic fibers 1.5 to 2.25 inches in length shall be utilized at 3.5 to 4.0 pounds per cubic yard, per manufacture’s written instructions for equivalent W.W.F. replacement and in accordance with Modified ASTM C 1609.
- H. Slag aggregates and steel slag aggregate: The use of slag aggregates and/or steel slag aggregate shall not be permitted in any concrete mix.
- I. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer’s written instructions.

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.
- C. Do Not Add Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump. Utilize the appropriate admixture to achieve desired workability.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry, compacted, and in suitable condition to begin paving which are able to support the paving and imposed equipment loads.
- B. Verify gradients and elevations of base are correct to maintain consistent material thicknesses at no less than the intended minimum depths.
- C. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

3.2 PREPARATION

- A. Protection: Provide protective materials, procedures, and worker training to prevent materials from spilling, coating, or building up on surfaces adjacent to the work.
- B. Refer to Section 31 20 00 "Earth Moving" for subgrade inspection.
- C. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 - 2. Proofroll with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding.
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by on-site geotechnical engineer and construction manager, and replace with compacted backfill or engineered fill as directed.
- D. Saw cut, using straight and true lines, all existing pavements, which do not have the necessary clean edges, to remain in place and abut against the new concrete.
- E. Proceed with paving only after unsatisfactory conditions have been corrected.
- F. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork for grade and alignment prior to concrete material arriving to project site to following tolerances:
 - 1. Top of forms not more than 1/8 inch in 10 feet.
 - 2. Vertical face on longitudinal axis, nor more than 1/4 inch in 10 feet.
 - 3. All ADA areas and pathways shall be confirmed to meet the current accessibility requirement including, but not limited to, not exceeding the maximum slopes, minimum dimensions, and respective perimeters. Areas and pathways shall have a zero tolerance for exceeding the maximum and minimum values.
- C. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.
- F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.
- G. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

3.5 JOINTS

- A. General: All Joints shall conform to ACI 330 and comply with ACI 318-6.3, 6.4, ACI 301, Section 6 and the provisions of Section 07 92 00 "Joint Sealants" related to exterior concrete joints and sealants.
 - 1. Provide/Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline. Joint angles less than 60 degrees shall not be permitted.
 - 2. When joining along existing concrete paving, place transverse joints to align with previously placed joints. Staggered/Offset or "T" intersecting joints, interior corners, angles less than 60 degrees, slabs less than 18-inches wide and odd shapes shall not be permitted.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation/expansion joints.
 - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 - 2. Provide tie bars at sides of paving strips where indicated.
 - 3. Butt Joints: shall have a 20 percent, no less than 2.0-inch, thickened edges at end of panel and tapered over a minimum of 48-inches to normal section thickness for vehicular pavements. Use bonding agent/adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Keyed Joints: Shall not be permitted.
 - 5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation (Expansion) Joints: Provide isolation joints of preformed joint-filler strips the full depth of the contacting surfaces which abutting other structures or fixed objects, and where indicated.
 - 1. Locate expansion joints in accordance with ACI 330.
 - 2. Extend joint fillers full width and full depth of joint.
 - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface in accordance with joint sealer manufacturer's requirements. Surface of joint shall be sealed.

4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap or form. Remove protective top edge after concrete has been placed on both sides of joint, at the time when sealing the joint is to occur.
- D. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut minimum width required (typically 1/8-inch-wide) for joint sealer material installation. Cut joints into concrete as soon as surface will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
 - a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
 3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Place all concrete in accordance with ACI 304R and ACI 304.2R.
- B. Do not place concrete until base and forms have been checked for line and grade. Moisten base if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment. Provide box out collars around manholes, other structures, and structural columns, posts and similar.
- C. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- D. Remove snow, ice, or frost and excess water from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces or on areas with ponding water, ensure positive drainage.
- E. Placement of material shall be installed in accordance with all ADA and Universal Access requirements for accessible stalls, aisles, pathways of travel, and other related areas.

- F. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete. Transport and placement of concrete shall not be more than 90 minutes after the water has been added to the dry ingredients at the batch plant.
- G. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing or placing.
- H. Use bonding agent/adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- I. Deposit and spread concrete in a continuous operation between transverse joints. If interrupted for more than ½ hour, place a construction joint. Do not push or drag concrete into place or use vibrators to move concrete into place.
- J. Place concrete using methods which prevent segregation of mix. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- K. Screed paving surface with a straightedge and strike off.
- L. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- M. Curbs and Gutters: Produce curbs and gutters to required cross section, lines, grades, finish, and jointing. Automatic machine may be used for curb and gutter placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results that meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not which project specification, remove and replace with formed concrete as specified.
- N. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
 - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.
- O. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306R and the following:
 - 1. When the air temperature has fallen to or may be expected to fall below 40 degrees F, provide adequate means to maintain the temperature, in the area where concrete is being placed, at between 50 degrees F and 70 degrees F for at least 7 days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Maintain the heat and protection, if necessary, to ensure that the ambient temperature does not fall more than 30 degrees F in the 24 hours following the 7-day period. Avoid rapid dry-out of concrete due to overheating and avoid thermal shock due to sudden cooling or

heating. If heaters are utilized, they shall be properly vented to direct exhaust gasses away from the curing concrete.

2. When air temperature has fallen to or is expected to fall below 40 degrees F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 55 degrees F and not more than 85 degrees F at point of placement.
3. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Ascertain that forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost, snow and ice before placing concrete.
4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, or set-control admixtures, unless approved by the Civil Engineer, in mix designs.
5. Do not apply de-icing chemicals to concrete less than 40 days old. This is due to a new recommendation by the Portland Cement Associations that for a durable finish concrete, the concrete should be giving a minimum 30-day drying period after moist curing if concrete is placed in the fall and will be exposed to freeze-thaw cycles and deicers when saturated.

P. Hot-Weather Placement: When hot weather conditions exist that would impair the quality and strength of concrete, place concrete in compliance with ACI 305R and as herein specified:

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 80 degrees F when the temperature is rising and below 85 degrees F when the temperature is falling. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature provided the water equivalent of the ice is calculated in the total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas before placing concrete.
4. Do not place concrete at a temperature so as to cause difficulty from loss of slump, flash set, or cold joints.
5. Do not use set-control admixtures unless pre-approved in mix designs.

3.7 FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. After striking-off and consolidating concrete, smooth surface by screening and floating. Use hand method only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
- C. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared, and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

- D. After floating, test surface for trueness with a 10-foot straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide a continuous smooth finish.
- E. Work edges of slabs, and formed joints with an edging tool, and round to 1/2 inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
- F. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
 - 1. Exterior slabs, sidewalks, flow channels, flumes, curbs, and other similar concrete pavement types shall have a non-slip finish by scoring the surface with a medium-hair broom, perpendicular to the line of traffic. Repeat operation if required to provide a texture acceptable to the Construction Manager.
 - 2. Retaining walls, wing walls, light pole bases, and other surfaces exposed to view upon completion of work shall be given a rubbed finish as specified below:
 - a. Immediately upon removal of the forms, the surfaces to be rubbed shall be pointed up, thoroughly wetted and then rubbed with a No. 20 carborundum brick and water so as to produce a true, even, and smooth surface. When necessary to fill pinholes, and upon areas which have been reconstructed, rubbing shall be done by carborundum brick and a thin cement grout composed of 1 part of cement and 2 parts of fine washed silicone sand, all of which shall pass a No. 20 sieve. The surfaces finished with grout shall be carefully scraped with a steel edge so as to remove all surplus grout, after which it shall be given a final rub with a wood float until all skin and form marks shall be removed. No "wash" composed of cement and water, or cement, sand and water shall be used in this process.
- G. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Construction Manager.

3.8 CONCRETE PROTECTION, CURING, AND SEALING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture-retaining-cover curing, curing compound, or a combination of these in accordance with ACI 301 as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

- d. Concrete which is moisture cured shall have a penetrating sealer, anti-spalling compound applied as specified.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.
 3. Curing Compound: Apply first coat of two perpendicular uniform applications in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period. A second coat of two perpendicular uniform applications in continuous operation by power spray or roller according to manufacturer's written instructions to concrete surface no sooner than 28 days and no later than 40 days after placement, to clean, dry concrete free of oil, dirt, and other foreign materials.
- E. Sealer, Anti-Spalling Treatment: Penetrating Sealer (silane/siloxane), anti-spalling compound shall be applied over concrete. Apply compounds to concrete surfaces no sooner than 28 days after placement, to clean, dry concrete free of oil, dirt, and other foreign material. Apply penetrating sealer, anti-spalling compound in two sprayed applications. First application at rate of 40 square yards per gallon; second application, 60 square yards per gallon. Allow complete drying between applications.
- F. All formed concrete work subject to lateral loading (retaining walls and similar) shall not receive such loads until 28 days of cure time unless approved by the concrete testing agency and construction manager.

3.9 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
1. Elevation: ADA Areas and Pathways – 1/8 inch. All other areas - 3/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot long, unlevelled straightedge not to exceed 1/2 inch. ADA Areas and Pathways – Abrupt / unlevelled vertical rises shall not exceed 1/4 inch in height. Horizontal gaps shall not exceed 1/2 inch in width.
 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 5. Lateral Alignment and Spacing of Dowels: 1 inch.
 6. Vertical Alignment of Dowels: 1/4 inch.
 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 8. Joint Spacing: 3 inches.
 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
 10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: The project is to engage a qualified, experienced, third-party, independent, testing agency to perform tests and inspections in accordance with ACI, unless otherwise specified.

- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from two – 6x12 cylinders or three – 4x8 cylinders specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three-consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Construction Manager but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by the Construction Manager.
- G. Concrete paving will be considered defective if it does not pass tests and inspections in accordance with ACI procedures for evaluating concrete. Investigation testing may be required to validate any suspect areas.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

3.11 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is cracked (which has not been placed/finished in accordance with ACI standards); broken, chipped; damaged; defective; or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by the Construction Manager.
- B. Deficiencies that shall be considered defective work shall be:
 - 1. Difference in elevation between panels of 1/4 inch or greater.
 - 2. Cracks of any length that are 1/8 inch wide or wider.
 - 3. Surface spalling covering in excess of 20% of the area of any 1 panel or 30% of the contiguous area of 2 or more adjacent panels.
 - 4. A hole that is 1/2 inch or greater in depth and 2 inches or greater in diameter.
 - 5. Residual splatter.
 - 6. Pop-outs, blistering, dusting, delamination, crazing, mortar flaking, scaling, honeycombing.
 - 7. Elevation difference of 1/4 inch in 10 feet caused by settling, that has not caused an elevation difference between panels.
 - 8. Multiple hairline cracking within the same area.
 - 9. Footprints, bike tire tracks, animal tracks, or the like, created while concrete was not cured.
- C. Drill test cores, where directed by the Construction Manager, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- D. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- E. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.12 CLEAN-UP

- A. For duration of work, Contractor is to maintain work area free of waste material, debris, and the like.
 - 1. Contractor shall provide on-site containers as necessary for work of this Section. Locate as directed by Construction Manager.
 - 2. Upon completion and when directed by Construction Manager, Contractor shall remove all excess material, debris, and equipment occasioned by the work.

END OF SECTION 32 13 13

SECTION 32 13 73 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Cold-applied joint sealants.
 - 2. Hot-applied joint sealants.
 - 3. Joint-sealant backer materials.
 - 4. Primers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience. Color of sealant to match pavement.

2.2 COLD-APPLIED JOINT SEALANTS

- A. Single-Component, Nonsag, Silicone Joint Sealant: ASTM D 5893/D 5893M, Type NS.
1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc.; RoadSaver Silicone.
 - b. Dow Corning Corporation; 888.
 - c. Pecora Corporation; 301 NS.
- B. Single-Component, Self-Leveling, Silicone Joint Sealant: ASTM D 5893/D 5893M, Type SL.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc.; RoadSaver Silicone SL.
 - b. Dow Corning Corporation; 890-SL.
 - c. Pecora Corporation; 300 SL.
- C. Multicomponent, Nonsag, Urethane, Elastomeric Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 983.
 - b. Meadows, W.R., Inc.; Pourthane NS.
 - c. Pecora Corporation; DynaTred
 - d. Sika Corporation U.S.; Sikaflex-2C NS
- D. Single Component, Pourable, Urethane, Elastomeric Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.
1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Meadows, W.R., Inc.; Pourthane SL.
 - b. Pecora Corporation; NR-201
 - c. Sika Corporation U.S.; Sikaflex-1C SL

2.3 HOT-APPLIED JOINT SEALANTS

- A. Hot-Applied, Single-Component Joint Sealant: ASTM D 6690, Type II.
1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crafco Inc.; RoadSaver 220.
 - b. Right Pointe; JTS 3405 Rubber 009.
 - c. Meadows, W.R., Inc.; HI-SPEC

2.4 JOINT-SEALANT BACKER MATERIALS

- A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D 5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.
- D. Backer Strips for Cold- and Hot-Applied Joint Sealants: ASTM D 5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.5 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of joint-sealant backings.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 - 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:
 - 1. Place joint sealants so they fully contact joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
 - 1. Remove excess joint sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

- A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.
- B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.5 PAVING-JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Joints within concrete paving and between concrete and asphalt paving.
 - 1. Joint Location:
 - a. Joints between concrete and asphalt paving.
 - b. Joints between concrete curbs and asphalt paving.
 - c. Other joints as indicated.
 - 2. Joint Sealant: Hot-applied, single-component joint sealant.
 - 3. Joint-Sealant Color: Manufacturer's standard.

END OF SECTION 32 13 73

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Chain-link fences.
 - 2. Swing gates.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Fence and gate posts, rails, and fittings.
 - b. Chain-link fabric, reinforcements, and attachments.
 - c. Accessories: barbed wire
 - d. Gates and hardware.
- B. Shop Drawings: For each type of fence and gate assembly.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include accessories, hardware, gate operation, and operational clearances.
- C. Samples for Initial Selection: For each type of factory-applied finish.
- D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:
 - 1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.
- E. Delegated-Design Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.5 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design chain-link fence and gate frameworks.
- B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.
 - 1. Design Wind Load: 90 mph.
 - a. Minimum Post Size: Determine according to ASTM F 1043 for post spacing not to exceed 10 feet for Material Group IA, ASTM F 1043, Schedule 40 steel pipe.
 - b. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.
- C. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

2.2 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
 - 1. Fabric Height: As indicated on drawings.
 - 2. Steel Wire for Fabric: 9 Gauge GBW 2" mesh.

3. Selvage: Knuckled at both selvages.

2.3 FENCE FRAMEWORK

- A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
 1. Fence Height: As indicated on Drawings.
 2. Top and Bottom Rail: 1 5/8" O.D. SS40 Pipe, 1.83 lbs. per foot. Top rail 21' in length, joined with 1 5/8" sleeve.
 3. Line Post: 2 1/2" O.D. SS40 Pipe, 3.11 lbs per foot. Line posts set 10' on center maximum spacing.
 4. Terminal Post: 3" O.D. SS40 PIPE, 4.64 lbs. per foot.
 5. Bracing: Terminal posts braced to the nearest line post with 1 5/8" O.D. SS40 PIPE.

2.4 TENSION WIRE

- A. 7 ga. coil spring class I tension wire attached to bottom of fence fabric with 9 ga. aluminum hog ring spaced 24" on center.

2.5 BARBED WIRE

- A. 3 strands of 12 1/2 GA. 4 PT. ON 5" centers class III barb wire on pressed steel barb wire arm.

2.6 OBSTACLE WIRE:

- A. 24" (24" spacing) stainless steel barbed obstacle wire attached with 9 ga. aluminum hog ring.

2.7 TIE WIRE:

- A. 8 1/4" 9 ga. e-z aluminum tie wire & 6 1/2" 9 ga. e-z aluminum tie wire spaced 15" on center for line posts & 24" on center for rails.

2.8 SWING GATES

- A. General: ASTM F 900 for gate posts and single or double swing gate types per contract plans.
 1. Gate Leaf Width: As indicated.
 2. Framework Member Sizes and Strength: Based on gate fabric height of 72 inches or less.

- B. Pipe and Tubing:
 - 1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework.
 - 2. Gate Posts: Round tubular steel.
 - 3. Gate Frames and Bracing: Round tubular steel.
- C. Frame Corner Construction: Welded.
- D. Hardware:
 - 1. Hinges: 360-degree inward and outward swing.
 - 2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

2.9 FITTINGS

- A. Provide fittings according to ASTM F 626.
- B. Post Caps: Provide for each post.
 - 1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 - 1. Top Rail Sleeves: Aluminum Alloy 6063 not less than 6 inches long.
 - 2. Rail Clamps: Line and corner boulevard clamps for connecting bottom rails to posts.
- E. Tension and Brace Bands: Aluminum Alloy 6063.
- F. Tension Bars: Aluminum, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Mill-finished aluminum rod and turnbuckle or other means of adjustment.
- H. Barbed Wire Arms: Pressed steel or cast iron, with clips, slots, or other means for attaching strands of barbed wire for each post unless otherwise indicated, and as follows:
 - 1. Provide line posts with arms that accommodate top rail or tension wire.
 - 2. Provide corner arms at fence corner posts unless extended posts are indicated.
 - 3. Single-Arm Type: Type I, slanted arm.
- I. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
 - a. 8 1/4" 9 ga. e-z aluminum tie wire & 6 1/2" 9 ga. e-z aluminum tie wire spaced 15" on center for line posts & 24" on center for rails.

- J. Finish:
 - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.
 - a. Polymer coating over metallic coating.
 - 2. Aluminum: Mill finish.

2.10 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a certified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
 - 1. Install fencing on established boundary lines inside property line.

- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.
 - b. Posts Set into Sleeves in Concrete: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
 - c. Posts Set into Holes in Concrete: Form or core drill holes not less than 5 inches deep and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.
- E. Line Posts: Space line posts uniformly at 10'-0" inches o.c. maximum
- F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Secure to posts with fittings.
- I. Chain-Link Fabric: Leave 1-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.

- K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- M. Barbed Wire: Install barbed wire uniformly spaced angled as indicated on Drawings. Pull wire taut, install securely to extension arms, and secure to end post or terminal arms

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests.
- B. Grounding Tests: Comply with requirements in Section 26 41 13 "Lightning Protection for Structures."
- C. Prepare test reports.

3.6 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

END OF SECTION 32 31 13

SECTION 32 91 13 - SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes planting soils and layered soil assemblies specified by composition of the mixes.
- B. Related Requirements:
 - 1. Section 32 92 00 "Turf and Grasses" for placing planting soil for turf and grasses.

1.3 ALLOWANCES

- A. Preconstruction testing is part of testing and inspecting allowance.

1.4 DEFINITIONS

- A. AAPFCO: Association of American Plant Food Control Officials.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- C. CEC: Cation exchange capacity.
- D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- F. Imported Soil: Soil that is transported to Project site for use.
- G. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- H. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

- I. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- J. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- L. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- M. SSSA: Soil Science Society of America.
- N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- O. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- P. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- Q. USCC: U.S. Composting Council.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
 - a. Manufacturer's qualified testing agency's certified analysis of standard products.
 - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
 - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

- B. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For each testing agency.
- B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.
- C. Field quality-control reports.

1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
 - 1. Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

1.9 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil.
 - 1. Notify Architect seven days in advance of the dates and times when laboratory samples will be taken.
- B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
 - 1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.10 SOIL-SAMPLING REQUIREMENTS

- A. General: Extract soil samples according to requirements in this article.
- B. Sample Collection and Labeling: Have samples taken and labeled by Owner under the direction of the testing agency.
 - 1. Number and Location of Samples: Minimum of eight representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.

2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.11 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Physical Testing:
 1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
 - a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
 - b. Hydrometer Method: Report percentages of sand, silt, and clay.
 2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
 3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
 4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).
- C. Chemical Testing:
 1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
 2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
 3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
 4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.
- D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol of SSSA NAPT NCR-13, including the following:
 1. Percentage of organic matter.
 2. CEC, calcium percent of CEC, and magnesium percent of CEC.

3. Soil reaction (acidity/alkalinity pH value).
 4. Buffered acidity or alkalinity.
 5. Nitrogen ppm.
 6. Phosphorous ppm.
 7. Potassium ppm.
 8. Manganese ppm.
 9. Manganese-availability ppm.
 10. Zinc ppm.
 11. Zinc availability ppm.
 12. Copper ppm.
 13. Sodium ppm.
 14. Soluble-salts ppm.
 15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
 16. Other deleterious materials, including their characteristics and content of each.
- E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
- F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil.
 2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Do not move or handle materials when they are wet or frozen.
 4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Regional Materials: Imported soil, manufactured planting soil, and soil amendments and fertilizers shall be manufactured within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

2.2 PLANTING SOILS SPECIFIED BY COMPOSITION

- A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.
- B. Planting-Soil Type: Imported, naturally formed soil from off-site sources and consisting of sandy loam, loam, silt loam, or loamy sand soil according to USDA textures; and modified to produce viable planting soil.
 - 1. Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep, not from bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and brome grass.
 - 2. Additional Properties of Imported Soil before Amending: Soil reaction of pH 6 to 7 and minimum of 4 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration.
 - 3. Unacceptable Properties: Clean soil of the following:
 - a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
 - b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
 - c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inch in any dimension.
 - 4. Amended Soil Composition: Blend imported, unamended soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
 - a. Ratio of Loose Compost to Soil: 1:4 by volume.
 - 5. Additional Properties of Manufacturer's Basic Soil before Amending: Soil reaction of pH 6 to 7 and minimum of 4 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration.
 - 6. Unacceptable Properties: Manufactured soil shall not contain the following:

- a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 5 percent by dry weight of the manufactured soil.
- c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inch in any dimension.

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.
 - 2. Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
 - 3. Form: Provide lime in form of ground mollusk shells.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Perlite: Horticultural perlite, soil amendment grade.
- E. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- F. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
 - 1. Feedstock: May include sewage sludge and may include animal waste.
 - 2. USCC reaction range requirement is pH of 5.0 to 8.5.
 - 3. Reaction: pH of 5.5 to 8.
 - 4. Soluble-Salt Concentration: Less than 4 dS/m.
 - 5. Moisture Content: 35 to 55 percent by weight.
 - 6. Organic-Matter Content: 30 to 40 percent of dry weight.
 - 7. Particle Size: Minimum of 98 percent passing through a 4-inch sieve.

- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 6 to 7.5, a soluble-salt content measured by electrical conductivity of maximum 5dS/m, having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.
- D. Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
 - 1. Partially Decomposed Wood Derivatives: In lieu of shredded and composted wood derivatives, mix shredded and partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.
- E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.5 FERTILIZERS

- A. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
- C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
- D. Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

PART 3 - EXECUTION

3.1 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

- A. Excavation: Excavate soil from designated area(s) to a depth of 6 inches and stockpile until amended.
- B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.
- D. Screening: Pass unamended soil through a 1-inch sieve to remove large materials.

3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.
- C. Mixing: Spread unamended soil to total depth of 6 inches, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - 1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
 - a. Mix fertilizer with planting soil no more than seven days before planting.

- 2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 12 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
- D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply manufactured soil on-site in its final, blended condition. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 4 inches.
- C. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply approximately half the thickness of planting soil over prepared, loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.
- D. Application: Spread planting soil to total depth of 6 inches but not less than required to meet finish grades after natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - 1. Lifts: Apply planting soil in lifts not exceeding 12 inches in loose depth for material compacted by compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- E. Compaction: Compact each lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.
- F. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.5 BLENDING PLANTING SOIL IN PLACE

- A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of 4 inches. Remove stones larger than 2 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- C. Mixing: Apply soil amendments, except compost, and fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.
 - 1. Mix fertilizer with planting soil no more than seven days before planting.

- D. Compaction: Compact blended planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
 - 1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 2000 sq. ft. of in-place soil or part thereof.
- C. Soil will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.7 PROTECTION

- A. Protection Zone: Identify protection zones according to Section 01 56 39 "Temporary Tree and Plant Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

3.8 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
 - 1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION 32 91 13

SECTION 32 92 00 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Seeding.
 - 2. Hydroseeding.
 - 3. Sodding.
 - 4. Turf renovation.
 - 5. Erosion-control material(s).

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 31 20 00 "Earth Moving" and drawing designations for planting topsoil.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.

- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Experience: Three years' experience in turf installation in addition to requirements in Section 01 40 00 "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
 - a. Landscape Industry Certified Technician - Exterior.
 - b. Landscape Industry Certified Lawncare Manager.
 - c. Landscape Industry Certified Lawncare Technician.
 - 5. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 FIELD CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods and when soil temperatures are near 65 degrees. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Project completion.
 1. Spring Planting: April 1st to May 31st.
 2. Fall Planting: August 15th to October 15th.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED MIXTURES

- A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixtures and blends composed of grass species, proportions, and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified. All seed to be certified and have identification available for the Construction Manager to see.
- B. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
- C. Seed species:
 1. Quality, State Certified: State-certified seed of grass species as listed below for solar exposure.
 2. Quality, for project area which do not have State Certified requirements: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
 3. Full Sun, Warm-Season Grass: Bermudagrass (*Cynodon dactylon*).
 4. Full Sun, Cool-Season Grass: Kentucky bluegrass (*Poa pratensis*), a minimum of three cultivars.
 5. Sun and Partial Shade, Cool-Season Grass: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).
 6. Shade, Cool-Season Grass: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety).
 - b. 35 percent rough bluegrass (*Poa trivialis*).

c. 15 percent redtop (*Agrostis alba*).

D. Unless otherwise directed, Lawn Turf (Rate: 300 lb/ac):			
	PROPORTION BY WEIGHT	MINIMUM PURITY	MINIMUM GERMINATION
Lolium perenne, Var. "Manhattan 5" Perennial Ryegrass	20%	98%	90%
Festuca arundinacea, Var. "3rd Millenium" Tall Fescue	35%	98%	90%
Festuca arundinacea, Var. "Bullseye" Tall Fescue	35%	98%	85%
Poa pratensis, Var. "Common" Kentucky Bluegrass	10%	95%	80%

E. Unless otherwise directed and shall in compliance with local Authority having Jurisdiction Temporary Seed Mix:

Lolium perenne, Var. Perennial Ryegrass	100%	95%	90%
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2.2 TURFGRASS SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species, Warm-Season Grass: Shall be in accordance with the regional varieties which have been proven to be successfully establish in a similar use.
- C. Turfgrass Species, Cool-Season Grass: Unless otherwise directed, sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Full Sun: Kentucky bluegrass (*Poa pratensis*), a minimum of three cultivars.
 - 2. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).
 - 3. Shade: Proportioned by weight as follows:
 - a. 50 percent chewings red fescue (*Festuca rubra* variety).
 - b. 35 percent rough bluegrass (*Poa trivialis*).
 - c. 15 percent redtop (*Agrostis alba*).

2.3 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- B. Post Emergent Herbicide with Fertilizer:

Acceptable Products

1. 20-3-3 with TRIMEC® Brand Herbicide & PCSCU
2. 15-0-8 + .86% Millenium SGN
3. 15-0-5 + 1.58% Viper

The rate of application to be used shall be based on results of laboratory tests conducted by the Contractor after final grading is completed.

2.4 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.
- C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.
- D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight.
 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- G. Asphalt Emulsion: ASTM D977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.6 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.
- C. Erosion-Control Mats: Cellular, nonbiodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 4-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Construction Manager and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF PREPARATION

- A. General: Prepare planting area for soil placement and add amenities to topsoil as required for healthy lawn growth. Refer to Section 31 20 00 "Earth Moving" for topsoil requirements.
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Construction Manager's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
- C. Fill cells of erosion-control mat with planting soil and compact before planting.
- D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING TURF

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

- B. Sow seed at a total rate of 5 to 8 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes that are 3:1 and exceeding 3:1 with erosion-control blankets installed and stapled according to manufacturer's written instructions, unless otherwise directed.
- E. Protect seeded areas with erosion-control mats where necessary and under the direction of the project's geotechnical engineer; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 3:1 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
- G. Protect seeded areas from hot, dry weather or drying winds by applying mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.6 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, commercial fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 - 3. Spray-apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 1000 lb/acre.

3.7 SODDING

- A. Lay sod within 24 hours of harvesting, unless a suitable preservation method is accepted by Construction Manager and Owner prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 3:1.
 - 2. Anchor sod on slopes exceeding 6:1 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.8 TURF RENOVATION

- A. Renovate existing turf per plan.
- B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 - 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).
- I. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches (100 mm) of existing soil. Install new planting soil to fill low spots and meet finish grades.
 - 1. Soil Amendment(s): According to requirements of the local conservation district.
 - 2. Initial Fertilizer: Commercial fertilizer applied according to manufacturer's recommendations.
- J. Apply seed and protect with straw mulch as required for new turf.
- K. Water newly planted areas and keep moist until new turf is established.

3.9 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting as necessary until the required maintenance period has expired and as much longer as necessary to establish a uniformly dense stand of specified grass and until accepted. And performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
 3. Contractor shall be responsible for securing a water source for irrigating the lawn area until established. If an adequate water source is not available on site, the contractor shall truck in from an outside source at no additional cost to the owner.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
1. Mow Kentucky bluegrass, annual ryegrass, red fescue to a height of 2 1/2 inches to 3 1/2 inches.
 2. Mow bentgrass to a height of 1/2 inch or less.
 3. Mow bermudagrass to a height of 1/2 to 1 inch.
 4. Mow carpetgrass, centipedegrass, perennial ryegrass, zoysiagrass to a height of 1 to 2 inches.
 5. Mow bahiagrass, turf-type tall fescue, St. Augustinegrass to a height of 2 to 3 inches.
- D. After lawn areas are established, at least 6 weeks after seedling emergence, apply a post emergent herbicide and fertilizer to the turf on the entire property, including curb lawn. Herbicide shall be installed per manufacturer's specifications and based on site location and weather conditions.
- E. Weeds not killed within a month of the post emergent application will be the responsibility of the contractor to remove to the engineer's satisfaction and without additional cost to the owner.
- F. Apply Post Emergent Herbicide and Fertilizer to the turf on the entire property, including curb lawn, until the required maintenance period has expired. Apply in early May, late June and early September. Newly seeded areas which have received Type 1 fertilizer or areas that need reseeded shall not receive Post Emergent Herbicide and Fertilizer until the following scheduled application. Extend herbicide and fertilizer treatment to the following calendar year if unable to provide all herbicide and fertilizer applications.
- G. All chemicals used must be mixed and applied according to manufacturer's specifications with consideration to site location and weather conditions.

- H. This work must include furnishing experienced, qualified, and LICENSED personnel to perform spray operations.

3.10 SATISFACTORY TURF AREAS

- A. Turf area installations shall meet the following criteria as determined by Construction Manager:
 - 1. Satisfactory Seeded Areas: The contractor shall mow and maintain, including irrigation, fertilization, and weed control as required to establish a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf and vegetation in detention areas that does not comply with requirements, and continue maintenance until the area is satisfactory.

3.11 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.12 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.13 MAINTENANCE SERVICE

- A. Turf Area Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Maintenance" Articles. Begin maintenance of lawns immediately after each area is planted and continue until acceptable lawn and Detention Area is established

with a dense stand of specified plant material covering at least 95% of the area, but not for less than the following periods:

1. Seeded Turf/Detention Areas: 90 days after acceptance of a densely established lawn with 95% coverage and all bare spots have been repaired and established.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
 - b. Sodded Turf: 30 days from date of planting completion or Substantial Completion whichever is later.

END OF SECTION 32 92 00

SECTION 33 05 00 - COMMON WORK RESULTS FOR UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Piping joining materials.
 - 2. Transition fittings.
 - 3. Sleeves.
 - 4. Identification devices.
 - 5. Grout.
 - 6. Flowable fill.
 - 7. Piped utility demolition.
 - 8. Piping system common requirements.
 - 9. Equipment installation common requirements.
 - 10. Painting.

1.3 DEFINITIONS

- A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- C. ABS: Acrylonitrile-butadiene-styrene plastic.
- D. CPVC: Chlorinated polyvinyl chloride plastic.
- E. PE: Polyethylene plastic.
- F. PVC: Polyvinyl chloride plastic.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

PART 2 - PRODUCTS

2.1 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness, unless otherwise indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 - 2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- G. Solvent Cements for Joining Plastic Piping:
 - 1. ABS Piping: ASTM D 2235.
 - 2. CPVC Piping: ASTM F 493.
 - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 - 4. PVC to ABS Piping Transition: ASTM D 3138.
- H. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.2 TRANSITION FITTINGS

- A. Transition Fittings, General: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
- B. Transition Couplings NPS 1-1/2 and Smaller:

1. Underground Piping: Manufactured piping coupling or specified piping system fitting.
 2. Aboveground Piping: Specified piping system fitting.
- C. AWWA Transition Couplings NPS 2 and Larger:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Mfg. Co.
 - b. Dresser, Inc.; DMD Div.
 - c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
 - d. JCM Industries.
 - e. Smith-Blair, Inc.
 - f. Viking Johnson.
 2. Description: AWWA C219, metal sleeve-type coupling for underground pressure piping.
- D. Plastic-to-Metal Transition Fittings:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Spears Manufacturing Co.
 2. Description: CPVC and PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint or threaded end.
- E. Plastic-to-Metal Transition Unions:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Colonial Engineering, Inc.
 - b. NIBCO INC.
 - c. Spears Manufacturing Co.
 2. Description: MSS SP-107, CPVC and PVC four-part union. Include brass or stainless-steel threaded end, solvent-cement-joint or threaded plastic end, rubber O-ring, and union nut.
- F. Flexible Transition Couplings for Underground Nonpressure Drainage Piping:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Mfg. Co.
 - b. Fernco, Inc.

- c. Mission Rubber Company.
 - d. Plastic Oddities.
2. Description: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

2.3 SLEEVES

- A. Galvanized-Steel Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast-Iron Sleeves: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Molded PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.
- E. PVC Pipe Sleeves: ASTM D 1785, Schedule 40.
- F. Molded PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.4 IDENTIFICATION DEVICES

- A. General: Products specified are for applications referenced in other utilities Sections. If more than single type is specified for listed applications, selection is Installer's option.
- B. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.
 - 1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
 - 2. Location: Accessible and visible.
- C. Stencils: Standard stencils prepared with letter sizes complying with recommendations in ASME A13.1. Minimum letter height is 1-1/4 inches for ducts, and 3/4 inch for access door signs and similar operational instructions.
 - 1. Material: Fiberboard.
 - 2. Stencil Paint: Exterior, oil-based, alkyd-gloss black enamel, unless otherwise indicated. Paint may be in pressurized spray-can form.
 - 3. Identification Paint: Exterior, oil-based, alkyd enamel in colors according to ASME A13.1, unless otherwise indicated.
- D. Snap-on Plastic Pipe Markers: Manufacturer's standard preprinted, semirigid, snap-on type. Include color-coding according to ASME A13.1, unless otherwise indicated.
- E. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, color-coded, pressure-sensitive-vinyl type with permanent adhesive.

- F. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers, extending 360 degrees around pipe at each location.
- G. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers, at least three times letter height and of length required for label.
- H. Lettering: Manufacturer's standard preprinted captions as selected by Architect.
- I. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
 - 1. Arrows: Either integrally with piping system service lettering to accommodate both directions of flow, or as separate unit on each pipe marker to indicate direction of flow.
- J. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils thick.
 - 1. Width: 1-1/2 inches on pipes with OD, including insulation, less than 6 inches; 2-1/2 inches for larger pipes.
 - 2. Color: Comply with ASME A13.1, unless otherwise indicated.
- K. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch sequenced numbers. Include 5/32-inch hole for fastener.
 - 1. Material: 0.032-inch-thick, aluminum.
 - 2. Material: 0.0375-inch-thick stainless steel.
 - 3. Material: 3/32-inch-thick plastic laminate with 2 black surfaces and a white inner layer.
 - 4. Material: Valve manufacturer's standard solid plastic.
 - 5. Size: 1-1/2 inches in diameter, unless otherwise indicated.
 - 6. Shape: As indicated for each piping system.
- L. Valve Tag Fasteners: Brass, wire-link or beaded chain; or brass S-hooks.
- M. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
 - 1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
 - 2. Thickness: 1/8 inch, unless otherwise indicated.
 - 3. Thickness: 1/16 inch, for units up to 20 sq. in. or 8 inches in length, and 1/8 inch for larger units.
 - 4. Fasteners: Self-tapping, stainless-steel screws or contact-type permanent adhesive.
- N. Plastic Equipment Markers: Manufacturer's standard laminated plastic, in the following color codes:
 - 1. Green: Cooling equipment and components.
 - 2. Yellow: Heating equipment and components.
 - 3. Brown: Energy reclamation equipment and components.
 - 4. Blue: Equipment and components that do not meet criteria above.

5. Hazardous Equipment: Use colors and designs recommended by ASME A13.1.
 6. Terminology: Match schedules as closely as possible. Include the following:
 - a. Name and plan number.
 - b. Equipment service.
 - c. Design capacity.
 - d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
 7. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.
- O. Plasticized Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with mat finish suitable for writing.
1. Size: 3-1/4 by 5-5/8 inches.
 2. Fasteners: Brass grommets and wire.
 3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
- P. Lettering and Graphics: Coordinate names, abbreviations, and other designations used in piped utility identification with corresponding designations indicated. Use numbers, letters, and terms indicated for proper identification, operation, and maintenance of piped utility systems and equipment.
1. Multiple Systems: Identify individual system number and service if multiple systems of same name are indicated.

2.5 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 2. Design Mix: 5000-psi, 28-day compressive strength.
 3. Packaging: Premixed and factory packaged.

2.6 FLOWABLE FILL

- A. Description: Low-strength-concrete, flowable-slurry mix.
1. Cement: ASTM C 150, Type I, portland.
 2. Density: 115- to 145-lb/cu. ft.
 3. Aggregates: ASTM C 33, natural sand, fine and crushed gravel or stone, coarse.
 4. Aggregates: ASTM C 33, natural sand, fine.
 5. Admixture: ASTM C 618, fly-ash mineral.
 6. Water: Comply with ASTM C 94/C 94M.
 7. Strength: 100 to 200 psigat 28 days.

PART 3 - EXECUTION

3.1 PIPED UTILITY DEMOLITION

- A. Disconnect, demolish, and remove piped utility systems, equipment, and components indicated to be removed.
 - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - 2. Piping to Be Abandoned in Place: Drain piping. Fill abandoned piping with flowable fill, and cap or plug piping with same or compatible piping material.
 - 3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - 4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make operational.
 - 5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

- B. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING INSTALLATION

- A. Install piping according to the following requirements and utilities Sections specifying piping systems.

- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on the Coordination Drawings.

- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

- D. Install piping to permit valve servicing.

- E. Install piping at indicated slopes.

- F. Install piping free of sags and bends.

- G. Install fittings for changes in direction and branch connections.

- H. Select system components with pressure rating equal to or greater than system operating pressure.

- I. Sleeves are not required for core-drilled holes.

- J. Permanent sleeves are not required for holes formed by removable PE sleeves.

- K. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of equipment areas or other wet areas 2 inches above finished floor level.
 - 2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
 - a. PVC Pipe Sleeves: For pipes smaller than NPS 6.
 - b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
- L. Verify final equipment locations for roughing-in.
- M. Refer to equipment specifications in other Sections for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and utilities Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- G. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.
- H. Soldered Joints: Apply ASTM B 813 water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.

- I. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- J. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.
- K. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
 - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
 - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- L. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- M. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- N. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
 - 1. Plain-End PE Pipe and Fittings: Use butt fusion.
 - 2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.
- O. Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 3. Install dielectric fittings at connections of dissimilar metal pipes.

3.5 EQUIPMENT INSTALLATION

- A. Install equipment level and plumb, unless otherwise indicated.
- B. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.

- C. Install equipment to allow right of way to piping systems installed at required slope.

3.6 PAINTING

- A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 IDENTIFICATION

- A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.

1. Stenciled Markers: According to ASME A13.1.
2. Plastic markers, with application systems. Install on insulation segment if required for hot noninsulated piping.
3. Locate pipe markers on exposed piping according to the following:
 - a. Near each valve and control device.
 - b. Near each branch, excluding short takeoffs for equipment and terminal units. Mark each pipe at branch if flow pattern is not obvious.
 - c. Near locations where pipes pass through walls or floors or enter inaccessible enclosures.
 - d. At manholes and similar access points that permit view of concealed piping.
 - e. Near major equipment items and other points of origination and termination.

- B. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of equipment.

1. Lettering Size: Minimum 1/4 inch high for name of unit if viewing distance is less than 24 inches, 1/2 inch high for distances up to 72 inches, and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
2. Text of Signs: Provide name of identified unit. Include text to distinguish among multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

- C. Adjusting: Relocate identifying devices that become visually blocked by work of this or other Divisions.

3.8 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of base.

3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 4000-psi, 28-day compressive-strength concrete and reinforcement as specified in Section 03 30 00 "Cast-in-Place Concrete."

3.9 GROUTING

- A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 33 05 00

SECTION 33 30 00 - SANITARY SEWERS

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 WORK REQUIRED

- A. The work to be performed under this section consists of furnishing all labor, materials, utilities and equipment necessary to install gravity sanitary sewer and manholes from 5' outside the building, make connection to existing system and other related items as specified herein and as indicated on the contract drawings. See Architectural and Plumbing drawings for building sanitary sewer connections.
- B. Upon completion, camera inspect all new or existing 4" and larger sanitary piping outside the building to the connection point.
 - 1. Notify Owner and Construction Manager of testing schedule in advance of testing.
 - 2. Clear any blockages in new piping, or attributable to new debris.
 - 3. Where applicable, notify Owner and Construction Manager of blockages in existing piping, or of any sections of existing piping that is collapsed or in poor condition.

1.3 REFERENCE SPECIFICATIONS

- A. The following publications shall apply to this section when indicated.
 - 1. Ohio Department of Transportation (ODOT) Construction and Material Specifications, current edition.
 - 2. Ohio EPA
 - 3. Stark County Sanitary Engineering Standards and Specifications

1.4 QUALITY ASSURANCE

- A. Each length of pipe, as delivered to the site, shall bear the manufacturer's stamped markings showing the size, class of pipe, and that it complies with the standard specifications referenced herein.
- B. Comply with the referenced standards of the following organizations:
 - 1. American Society of Testing and Materials (ASTM).

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- A. All work shall conform to regulations, codes, safety requirements, ordinances and law of federal, state and local governing bodies having jurisdiction.

1.6 SUBMITTALS

- A. Reports and tapes of tests performed.
- B. Submit manufacturer's data sheets for piping materials and each type of product to be installed.

1.7 PROTECTION AND DISPOSITION OF UTILITIES

- A. See Division 31 20 00 – "Earth Moving".

PART 2 - PRODUCTS

2.1 SEWER PIPE AND FITTING MATERIALS

- A. Gravity Sewer PVC Pipe: PVC pipe conforming to ASTM D 3034, minimum wall thickness of SDR 35. Cell classification shall be 12454-B (ASTM D-1784). Joints shall be the bell and spigot type per ASTM 3212 with gaskets per ASTM F-477.
- B. Transitional adapters are to be used from PVC to D.I.P. preferred single unit adapter is specified fittings 791056-CDD 6" or equal. Fernco fittings will not be permitted in place of adapters.
- C. PVC sanitary sewer repairs shall be made using solid sleeve couplings only. Fernco fittings shall not be permitted for sanitary repairs.

2.2 SEWER BEDDING MATERIAL

- A. See Division 31 – "Earth Moving". Slag, crushed concrete or other slacker aggregates are not permitted.

2.3 SEWER BACKFILL

- A. Backfill for sewers under pavement (including sidewalk) or structures shall use premium backfill consisting of granular material per Division 31 "Earth Moving". Backfill for sewers in other areas may be ordinary backfill. No frozen material of any kind is permitted.

2.4 SEWER PERFORMANCE REQUIREMENTS

- A. Gravity Flow, Non-pressure Piping Pressure Ratings: At least equal to system test pressure.

PART 3 - EXECUTION

3.1 TRENCHING AND BEDDING

- A. Sewer installations shall not begin until subgrade is established within 6" of finished grades.

- B. Trenching shall be accomplished as specified in Division 31 - "Earth Moving". Bedding material shall be placed and spread in 6" lifts. The material shall be placed from 6" below the bottom of the pipe to 12" above the top of the pipe. Before placing the bedding material, entire bedding surface shall be checked to assure firm and uniform bearing.

3.2 INSTALLATION OF PIPE

- A. The pipe shall be installed to the lines and grades as established on the contract drawings. The trench shall be dewatered and kept dry during the pipe laying operations.
- B. Where sanitary sewers cross waterlines at a clearance of less than 18 inches between pipe edges, the lower pipe shall be encased and the upper pipe monolithically cradled in 2500 PSI concrete.

3.3 FINAL CONNECTION

- A. Contractor shall install the sewer line to the lines and grades shown on the drawings. Installation shall meet the approval of the Stark County Sanitary Engineers.

3.4 TESTS

- A. Upon completion and before the final tie-in, the entire system shall be subjected to a low pressure air test. All test reports shall be submitted to the Architect and the Stark County Sanitary Engineer for review.
- B. The tests shall be performed in presence of the Stark County Sanitary Engineer and the Architect and the final acceptance of the system shall be subject to approval by the Architect, Utility service provider and the Stark County Sanitary Engineer. Sections of sewers that fail tests shall be repaired and retested to the satisfactory of the Architect and the Stark County Engineer.
- C. The Contractor is responsible for all costs associated with the specified testing. All tests shall be conducted by an independent, qualified laboratory chosen by the Contractor and approved by the Architect and the Stark County Engineer.
- D. The Stark County Engineer shall make the final determination as to the acceptability of the sewer, based on the above test results.

3.5 CONNECTION TO BUILDING SERVICE LATERALS

- A. Coordinate location of lateral connections to the building's sanitary sewer service with the building Plumbing Contractor. Final location of laterals is subject to the approval of the Architect and the Stark County Engineer.

3.6 RECORD DRAWINGS

- A. The Contractor shall take actual field measurements of the sanitary sewers and provide the Construction Manager with record prints of the same. Record drawings shall be made of the site utility plan. Provide a minimum of 2 sets of record drawings for the Stark County Engineer, plus those required by the Architect.

END OF SECTION 33 30 00

SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings.
 - 2. Nonpressure transition couplings.
 - 3. Cleanouts.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle manholes according to manufacturer's written rigging instructions.
- D. Handle catch basins and stormwater inlets according to manufacturer's written rigging instructions.

1.5 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without the construction manager's written permission.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Type PSM Sewer Piping:

1. Pipe: ASTM D 3034, SDR 35, PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

2.2 HDPE PIPE AND FITTINGS

- #### A.
- Pipe 12" or greater in diameter shall be corrugated high density polyethylene (HDPE) smooth interior pipe (unless otherwise noted on plan). HDPE pipe shall conform to ASTM D 3350 and joints per ASTM F477.

2.3 CONCRETE PIPE AND FITTINGS

A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76.

1. Bell-and-spigot ends and gasketed joints with ASTM C 443, rubber gaskets.
2. Per ODOT 706.02.

2.4 NONPRESSURE TRANSITION COUPLINGS

- #### A.
- Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Concrete Pipes: ASTM C 443, rubber.
2. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
3. For Fiberglass Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
4. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
5. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dallas Specialty & Mfg. Co.
 - b. Fernco Inc.
 - c. Logan Clay Pipe.

- d. Mission Rubber Company; a division of MCP Industries, Inc.
 - e. NDS Inc.
 - f. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
2. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Shielded, Flexible Couplings:
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Mfg.
 - b. Dallas Specialty & Mfg. Co.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 - 2. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
- E. Ring-Type, Flexible Couplings:
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fernco Inc.
 - b. Logan Clay Pipe.
 - c. Mission Rubber Company; a division of MCP Industries, Inc.
 - 2. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.5 CLEANOUTS

- A. Plastic Cleanouts:
- 1. See construction documents for details.
 - 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Canplas LLC.
 - b. IPS Corporation.
 - c. NDS Inc.
 - d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
 - e. Sioux Chief Manufacturing Company, Inc.
 - f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.

3. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.6 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:
 1. Cement: ASTM C 150, Type II.
 2. Fine Aggregate: ASTM C 33, sand.
 3. Coarse Aggregate: ASTM C 33, crushed gravel or limestone.
 4. Water: Potable.
- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.
 1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
 2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.
- C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.
 1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
 - a. Invert Slope: 1 percent through manhole.
 2. Benches: Concrete, sloped to drain into channel.
 - a. Slope: 4 percent.
- D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.
 1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
 2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.7 MANHOLES

- A. Standard Precast Concrete Manholes:
 1. Description: ASTM C 478, with ASTM C-433 joints meeting the requirements of ODOT Item 706.13, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
 2. Diameter: 48 inches minimum unless otherwise indicated.
 3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.
 4. Base Section: 8-inch minimum thickness for floor slab and 5-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.

5. Riser Sections: 5-inch minimum thickness, and lengths to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
9. Steps: Reinforced propylene plastic according to ODOT 711.31
10. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.
11. Manholes shall be constructed to support HS-20 highway loading.
12. Covers shall be heavy duty and be bolted or lockable to prevent tampering.
 - a. Cover shall have "STORM" as applicable cast into the surface.

2.8 CATCH BASINS

A. Standard Precast Concrete Catch Basins:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Catch basins in or adjacent to pavement shall be constructed to support HS-20 highway loading.
3. Base Section: 6-inch minimum thickness for floor slab and 8-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
4. Joint Sealant: ASTM C 990 bitumen or butyl rubber.
5. Grade Rings: Grade rings shall be precast concrete.
6. Steps shall be reinforced propylene plastic according to ODOT Item 711.31
7. Pipe Connectors: ASTM C 923 resilient, of size required, for each pipe connecting to base section.
8. Frames and Grates: Shall be of the sizes and types referenced and/or shown on the drawings, and shall conform to ODOT Item 711.12
 - a. Covers shall all be ADA compliant, heavy duty, and be bolted or lockable to prevent tampering.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Section 31 20 00 "Earth Moving."

3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
- F. Install gravity-flow, nonpressure drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow.
 - 2. Install piping with minimum cover as shown on the plans.
 - 3. Install PE corrugated sewer piping according to ASTM D 2321.
 - 4. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.

3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping according to the following:
 - 1. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
 - 2. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasketed joints.
 - 3. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use Light-Duty, top-loading classification cleanouts in lawn areas.
 - 2. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
- B. Set cleanout frames and covers in earth in cast-in-place concrete block, 24 by 24 by 14 inches deep. Set with tops 1 inch above surrounding earth grade.
- C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318.

3.6 CONNECTIONS

- A. Make connections to existing piping and underground manholes.
1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 4000 psi.
 2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 4000 psi.
 3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
 - a. Use concrete that will attain a minimum 28-day compressive strength of 4000 psi unless otherwise indicated.
 - b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
 4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.
- B. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.
 - a. Shielded flexible couplings for same or minor difference OD pipes.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
 - c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.7 CLOSING ABANDONED STORM DRAINAGE SYSTEMS

- A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
1. Close open ends of piping with at least 8-inch thick, brick masonry bulkheads.
 2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.

- B. Abandoned Manholes and Structures: Excavate around manholes and structures as required and use one procedure below:
 - 1. Remove manhole or structure and close open ends of remaining piping.
 - 2. Remove top of manhole or structure down to at least 36 inches below final grade. Fill to within 12 inches of top with stone or gravel. Fill to top with concrete.
- C. Backfill to grade according to Section 31 20 00 "Earth Moving."

3.8 IDENTIFICATION

- A. Materials and their installation are specified in Section 31 20 00 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
 - 1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.9 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
 - 1. Submit separate reports for each system inspection.
 - 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 - 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 - 4. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
 - 1. Do not enclose, cover, or put into service before inspection and approval.
 - 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours advance notice.
 - 4. Submit separate report for each test.
 - 5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

- a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
 - b. Option: Test plastic piping according to ASTM F 1417.
 - c. Option: Test concrete piping according to ASTM C 924.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.10 CLEANING

- A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 33 41 00

SECTION 33 46 00 - SUBDRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Perforated-wall pipe and fittings.
 - 2. Geotextile filter fabrics.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Drainage conduits, including rated capacities.

PART 2 - PRODUCTS

2.1 PERFORATED-WALL PIPES AND FITTINGS

- A. Perforated PE Pipe and Fittings:
 - 1. NPS 6 and Smaller: ASTM F 405 or AASHTO M 252, Type CP; corrugated, for coupled joints.
 - 2. NPS 8 and Larger: ASTM F 667; AASHTO M 252, Type CP; or AASHTO M 294, Type CP; corrugated; for coupled joints.
 - 3. Couplings: Manufacturer's standard, band type.
- B. Perforated PVC Sewer Pipe and Fittings: ASTM D 2729, bell-and-spigot ends, for loose joints.

2.2 SOIL MATERIALS

- A. Soil materials are specified in Section 31 20 00 "Earth Moving."

2.3 GEOTEXTILE FILTER FABRICS

- A. Description: Fabric of PP or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D 4491.

- B. Structure Type: Nonwoven, needle-punched continuous filament.
 - 1. Survivability: AASHTO M 288 Class 2.
 - 2. Styles: Flat and sock.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and areas for suitable conditions where subdrainage systems are to be installed.
- B. If subdrainage is required for landscaping, locate and mark existing utilities, underground structures, and aboveground obstructions before beginning installation and avoid disruption and damage of services.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 31 20 00 "Earth Moving."

3.3 FOUNDATION DRAINAGE INSTALLATION

- A. All associated components and installation shall be in accordance with the direction of the Project's geotechnical engineer's recommendations and actual site conditions.
- B. Unless otherwise directed, place impervious fill material on subgrade adjacent to bottom of footing after concrete footing forms have been removed. Place and compact impervious fill to dimensions indicated, but not less than 6 inches deep and 12 inches wide.
- C. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- D. Place supporting layer of drainage course over compacted subgrade and geotextile filter fabric, to compacted depth of not less than 4 inches.
- E. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with adhesive or tape per the manufactures written instructions.
- F. Install drainage piping as indicated in Part 3 "Piping Installation" Article for foundation subdrainage.
- G. Add drainage course to width of at least 6 inches on side away from wall and to top of pipe to perform tests.
- H. After satisfactory testing, cover drainage piping to width of at least 6 inches on side away from footing and above top of pipe to within 12 inches of finish grade.
- I. Install drainage course and wrap top of drainage course with flat-style geotextile filter fabric.

- J. Place layer of flat-style geotextile filter fabric over top of drainage course, overlapping edges at least 4 inches.
- K. Install drainage panels on foundation walls as follows:
 - 1. Coordinate placement with other drainage materials.
 - 2. Lay perforated drainage pipe at base of footing. Install as indicated in Part 3 "Piping Installation" Article.
 - 3. Separate 4 inches of fabric at beginning of roll and cut away 4 inches of core. Wrap fabric around end of remaining core.
 - 4. Attach panels to wall beginning at subdrainage pipe. Place and secure molded-sheet drainage panels, with geotextile facing away from wall.
- L. Place backfill material over compacted drainage course. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Final backfill to finish elevations and slope away from building.

3.4 UNDERSLAB DRAINAGE INSTALLATION

- A. All associated components and installation shall be in accordance with the direction of the Project's geotechnical engineer's recommendations and actual site conditions.
- B. Unless otherwise directed, excavate for underslab drainage system after subgrade material has been compacted but before drainage course has been placed. Include horizontal distance of at least 6 inches between drainage pipe and trench walls. Grade bottom of trench excavations to required slope, and compact to firm, solid bed for drainage system.
- C. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- D. Place supporting layer of drainage course over compacted subgrade and geotextile filter fabric, to compacted depth of not less than 4 inches.
- E. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with adhesive or tape per the manufactures written instructions.
- F. Install drainage piping as indicated in Part 3 "Piping Installation" Article for underslab subdrainage.
- G. Add drainage course to width of at least 6 inches on side away from wall and to top of pipe to perform tests.
- H. After satisfactory testing, cover drainage piping with drainage course to elevation of bottom of slab, and compact and wrap top of drainage course with flat-style geotextile filter fabric.
- I. Install horizontal drainage panels as follows:
 - 1. Coordinate placement with other drainage materials.
 - 2. Lay perforated drainage pipe at inside edge of footing.
 - 3. Place drainage panel over drainage pipe with core side up. Peel back fabric and wrap fabric around pipe. Locate top of core at bottom elevation of floor slab.
 - 4. Butt additional panels against other installed panels. If panels have plastic flanges, overlap installed panel with flange.

3.5 RETAINING-WALL DRAINAGE INSTALLATION

- A. All associated components and installation shall be in accordance with the direction of the Project's geotechnical engineer's recommendations and actual site conditions.
- B. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- C. Unless otherwise directed, place supporting layer of drainage course over compacted subgrade to compacted depth of not less than 4 inches.
- D. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with adhesive or tape per the manufactures written instructions.
- E. Install drainage piping as indicated in Part 3 "Piping Installation" Article for retaining-wall subdrainage.
- F. Add drainage course to width of at least 6 inches on side away from wall and to top of pipe to perform tests.
- G. After satisfactory testing, cover drainage piping to width of at least 6 inches on side away from footing and above top of pipe to within 12 inches of finish grade.
- H. Place drainage course in layers not exceeding 3 inches in loose depth; compact each layer placed and wrap top of drainage course with flat-style geotextile filter fabric.
- I. Place layer of flat-style geotextile filter fabric over top of drainage course, overlapping edges at least 4 inches.
- J. Install drainage panels on wall as follows:
 - 1. Coordinate placement with other drainage materials.
 - 2. Lay perforated drainage pipe at base of footing as described elsewhere in this Specification. Do not install aggregate.
 - 3. If weep holes are used instead of drainage pipe, cut 1/2-inch-diameter holes on core side at weep-hole locations. Do not cut fabric.
 - 4. Mark horizontal chalk line on wall at a point 6 inches less than panel width above footing bottom. Before marking wall, subtract footing width.
 - 5. Separate 4 inches of fabric at beginning of roll and cut away 4 inches of core. Wrap fabric around end of remaining core.
 - 6. Attach panel to wall at horizontal mark and at beginning of wall corner. Place core side of panel against wall. Use concrete nails with washers through product. Place nails from 2 to 6 inches below top of panel, approximately 48 inches apart. Construction adhesives, metal stick pins, or double-sided tape may be used instead of nails in accordance with the manufacturer's written instructions, unless otherwise directed. Do not penetrate waterproofing. Before using adhesives, discuss with waterproofing manufacturer.
 - 7. If another panel is required on same row, cut away 4 inches of installed panel core and wrap fabric over new panel.
 - 8. If additional rows of panel are required, overlap lower panel with 4 inches of fabric.
 - 9. Cut panel as necessary to keep top 12 inches below finish grade.
 - 10. For inside corners, bend panel. For outside corners, cut core to provide 3 inches for overlap.

- K. Fill to Grade: Place satisfactory soil fill material over compacted drainage course. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Fill to finish grade.

3.6 LANDSCAPING DRAINAGE INSTALLATION

- A. All associated components and installation shall be in accordance with the direction of the Project's geotechnical engineer's recommendations and actual site conditions
- B. Provide trench width to allow installation of drainage conduit. Grade bottom of trench excavations to required slope, and compact to firm, solid bed for drainage system.
- C. Lay flat-style geotextile filter fabric in trench and overlap trench sides.
- D. Unless otherwise directed, place supporting layer of drainage course over compacted subgrade and geotextile filter fabric, to compacted depth of not less than 4 inches.
- E. Install drainage conduits as indicated in Part 3 "Piping Installation" Article for landscaping subdrainage with horizontal distance of at least 6 inches between conduit and trench walls. Wrap drainage conduits without integral geotextile filter fabric with flat-style geotextile filter fabric before installation. Connect fabric sections with adhesive or tape per the manufactures written instructions.
- F. Add drainage course to top of drainage conduits.
- G. After satisfactory testing, cover drainage conduit to within 12 inches of finish grade.
- H. Install drainage course and wrap top of drainage course with flat-style geotextile filter fabric.
- I. Place layer of flat-style geotextile filter fabric over top of drainage course, overlapping edges at least 4 inches.
- J. Fill to Grade: Place satisfactory soil fill material over drainage course. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Fill to finish grade.

3.7 PIPING INSTALLATION

- A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.
 - 1. Foundation Subdrainage: Install piping level and with a minimum cover of 36 inches unless otherwise indicated.
 - 2. Underslab Subdrainage: Install piping level, unless otherwise directed.
 - 3. Retaining-Wall Subdrainage: When water discharges at end of wall into stormwater piping system, install piping level and with a minimum cover of 36 inches unless otherwise indicated.
 - 4. Landscape Subdrainage: Install piping pitched down in direction of flow, and minimum slope of 0.5 percent and with a minimum cover of 15 inches, unless otherwise directed.
 - 5. Lay perforated pipe with perforations down.

- 6. Excavate recesses in trench bottom for bell ends of pipe. Lay pipe with bells facing upslope and with spigot end entered fully into adjacent bell.
- B. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.
- C. Install thermoplastic piping in accordance with ASTM D 2321.

3.8 PIPE JOINT CONSTRUCTION

- A. Join perforated PE pipe and fittings with couplings according to ASTM D 3212 with loose banded, coupled, or push-on joints.
- B. Join perforated PVC sewer pipe and fittings according to ASTM D 3212 with loose bell-and-spigot, push-on joints.
- C. Special Pipe Couplings: Join piping made of different materials and dimensions with special couplings made for this application. Use couplings that are compatible with and fit materials and dimensions of both pipes.

3.9 CLEANOUT INSTALLATION

- A. Comply with requirements for cleanouts specified in Section 33 41 00 "Storm Utility Drainage Piping."
- B. Cleanouts for Foundation, Retaining-Wall, and Landscaping Subdrainage:
 - 1. Install cleanouts from piping to grade. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
 - 2. In vehicular-traffic areas, use NPS 4 cast-iron soil pipe and fittings for piping branch fittings and riser extensions to cleanout. Set cleanout frames and covers in a cast-in-place concrete anchor, 18 by 18 by 12 inches deep. Set top of cleanout flush with grade.
 - 3. In nonvehicular-traffic areas, use NPS 4 PVC pipe and fittings for piping branch fittings and riser extensions to cleanout. Set cleanout frames and covers in a cast-in-place concrete anchor, 12 by 12 by 4 inches deep. Set top of cleanout 1 inch above grade.
 - 4. Comply with requirements for concrete specified in Section 03 30 00 "Cast-in-Place Concrete."
- C. Cleanouts for Underslab Subdrainage:
 - 1. Install cleanouts and riser extensions from piping to top of slab. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
 - 2. Use NPS 4 cast-iron soil pipe and fittings for piping branch fittings and riser extensions to cleanout flush with top of slab.

3.10 CONNECTIONS

- A. Comply with requirements for piping specified in Section 33 41 00 "Storm Utility Drainage Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

- B. Connect low elevations of subdrainage system to existing site storm drainage system.
- C. Where required, connect low elevations of foundation or underslab subdrainage to stormwater sump pumps. Comply with local requirements and codes for sump pumps.

3.11 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. After installing drainage course to top of piping, test drain piping with water to ensure free flow before backfilling.
 - 2. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.
- B. Drain piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.12 CLEANING

- A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION 33 46 00

Appendix D

Title VI Requirements

The City of Canton, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat.252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, for which the Recipient receives Federal financial assistance from DOT, including the City of Canton.

Please also review Appendix A, Appendix C, Appendix D and Appendix E of the Standard Assurances which are included in the following pages.

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, *The City of Canton*, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21. *{Include City of Canton specific program requirements.}*
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin. *{Include City of Canton specific program requirements.}*
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or *The City of Canton* to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or *The City of Canton*, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or *The City of Canton* may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or *The City of Canton* may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the (Title of Recipient) pursuant to the provisions of Assurance 7(a):

- A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, (Title of Recipient) will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*
- C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the (Title of Recipient) will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the (Title of Recipient) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by (Title of Recipient) pursuant to the provisions of Assurance 7(b):

- A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.
- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non-discrimination covenants, (Title of Recipient) will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, (Title of Recipient) will there upon revert to and vest in and become the absolute property of (Title of Recipient) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. §794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 - 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*).

CANTON TITLE VI COMPLAINT PROCEDURE

I. FILING A COMPLAINT

Complaint Procedure - Any person who believes that he or she as a member of a protected class, has been discriminated against based on race, color, national origin, gender, age, disability, religion, low income status, or Limited English Proficiency (LEP) in violation of Title VI of the Civil Rights Act of 1964, as amended and its related statutes, regulations and directives, Section 504 of the Vocational Rehabilitation Act of 1973, Americans with Disabilities Act of 1990, as amended, the Civil Rights Restoration Act of 1987, as amended, and any other Federal nondiscrimination statute may submit a complaint. A complaint may also be submitted by a representative on behalf of such a person.

It is the policy of the City to conduct a prompt and impartial investigation of all allegations of discrimination and to take prompt effective corrective action when a claim of discrimination is substantiated.

No one may intimidate, threaten, coerce or engage in other discriminatory conduct against anyone because they have taken action or participated in an action to secure rights protected by the civil rights laws. Any individual alleging such harassment or intimidation may submit a complaint by following the procedure printed below.

Any individual who feels that he or she has been discriminated against may submit a written or verbal complaint to the designated Title VI Coordinator. A complaint must include the name, address and telephone number of the individual making the complaint (complainant) and a brief description of the alleged discriminatory conduct including the date of harm. An individual submitting a complaint alleging discrimination may include any relevant evidence, including the names of witnesses and supporting documentation.

Complaints should be directed to the Title VI Coordinator:

Andrea Perry
Director of Public Safety
218 Cleveland Ave S.W., 8th floor
Canton, Ohio 44702
Phone - 330-438-4303
Email – andrea.perry@cantonohio.gov

Within 60 days of the receipt of the complaint the City will conduct an investigation of the allegation based on the information provided and issue a written report of its findings to the complainant. The City will try to obtain an informal voluntary resolution to all complaints at the lowest level possible.

A complainant's identity shall be kept confidential except to the extent necessary to conduct an investigation. All complaints shall be kept confidential.

These procedures do not deny the right of any individual to file a formal complaint with any government agency or affect an individual's right to seek private counsel for any complaint alleging discrimination.

Complaints may also be filed with the following government agencies:

Ohio Department of Transportation
Office of Equal Opportunity
1980 West Broad Street
MS: 3270
Columbus, OH 43223

The U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Ohio Civil Rights Commission
Central Office
Rhodes State Office Tower
30 East Broad Street, 5th floor
Columbus, OH 43215
614-466-2785

Ohio Civil Rights Commission
Akron Regional Office
Bradley S. S. Dunn, Regional Director
Akron Government Bldg.
161 S. High Street, Suite 205
Akron, OH 44308
(330) 643-3100

Link to filing a complaint online with the Ohio Civil Rights Commission:

<https://crc.ohio.gov/FilingaCharge/ChargeFilingProcedure.aspx>

II COMPLAINT PROCESSING

The Title VI Coordinator will review the complaint upon receipt to ensure that all required information is provided, the complaint meets the filing deadline date which is 180 days from the date the alleged discriminatory act occurred, and falls within the jurisdiction of the City.

The Title VI Coordinator will then investigate the complaint. If the complaint is against the City then the Mayor's office or their designee will investigate the complaint. Additionally, a copy of the complaint will be forwarded to the City Law Director.

If the complaint warrants a full investigation, the Complainant will be notified in writing by certified mail. This notice will name the investigator and/or investigating agency.

The party alleged to have acted in a discriminatory manner will also be notified by certified mail as of the complaint. This letter will also include the investigator's name and will request that this party be available for an interview.

Any comments or recommendations from legal counsel will be reviewed by the Title VI Coordinator, Director of Public Service and Mayor's office.

Once the City has investigated the report findings, the City will adopt a final resolution. All parties associated with the complaint will be properly notified of the outcome of the City's investigative report.

If the complainant is not satisfied with the results of the investigation of the alleged discriminatory practice(s), she/he shall be advised of their right to appeal the City's decision.

Appeals must be filed within 180 days after the City's final resolution. Unless new facts not previously considered come to light, reconsideration of the City's determination will not be available.

The foregoing complaint resolution procedure will be implemented in accordance with the Department of Justice guidance manual entitled "Investigation Procedures Manual for the Investigation and Resolution of Complaints Alleging Violations of Title VI and Other Nondiscrimination Statutes," available online at:

<http://www.justice.gov/crt/about/cor/Pubs/manuals/complain.pdf>

Title VI Complaint Filing

Complaints filed with the City of Canton, Ohio based on violations of Title VI of the Civil Rights Act of 1964, must include the following information:

- Name of Complainant
- Date of Complaint
- Address of Complainant
- Telephone Number of Complainant
- Name of Agency / Department Accused of Discriminatory Practices
- Name of Individual Accused of Discriminatory Practices
- Address of Agency
- Date of Alleged Discrimination
- Description of Alleged Discrimination (see below)

11. Alleged Discrimination - If your complaint is in regard to discrimination in the delivery of services or discrimination that involved the treatment of you by others by the agency or department indicated above, please indicate below the basis on which you believe these discriminatory actions were taken.

- Race / Color / Religion
- National Origin
- Age · Sex, Gender
- Disability · Income Status
- Explanation of Alleged Discrimination - Please explain as clearly as possible what happened.

Provide the name(s) of witness(s) and others involved in the alleged discrimination. (Attach additional sheets if necessary and provide a copy of written material pertaining to your case.)

- Signature of Complainant · Date of Complaint

III ENVIRONMENTAL JUSTICE

In accordance with Title VI of the Civil Rights Act of 1964, each Federal agency shall ensure that all programs or activities receiving Federal financial assistance that affect human health or the environment do not directly, or through other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin. Part of Title VI reads, "No person in the United States shall, on the ground of race, color, or national origin be excluded

from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance.”

The three fundamental environmental justice (EJ) principles are:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

The City of Canton is committed to these three environmental justice principles in all work that the City performs.

IV. ADMINISTRATION – WORK PLAN

Pursuant to 23 CFR 200, the City of Canton has designated a Title VI Coordinator who is responsible for initiating, monitoring, and ensuring the City’s compliance with Title VI requirements for the following work plan:

- Administer, coordinate and Implement the Title VI Program plan and distribute internally and externally via website and update annually as required.
- Ensure that Assurances are being used in contracts for federal projects.
- Attend Title VI training.
- Collect public involvement data.
- Review written Title VI complaints and ensure every effort is made to resolve complaints informally at the local or regional level and review and update the City’s Title VI plan and procedures as required.
- Implement a plan that provides training to City Staff on the basic requirements of the Title VI implementation plan.

Title VI Coordinator:

Andrea Perry
Director of Public Safety
218 Cleveland Avenue, S.W., 8th floor
Canton, Ohio 44702
Phone – 330-438-4303
Email - andrea.perry@cantonohio.gov

V. LIMITED ENGLISH PROFICIENCY (LEP) POLICY

On August 11, 2000, the President signed an executive order, *Executive Order 13166: Improving Access to Service for Persons with Limited English Proficiency (LEP)*, to clarify Title VI of the Civil Rights Act of 1964. It has as its purpose, to ensure meaningful access to programs and services to otherwise eligible persons who are not proficient in the English language. In addition, The US Department of Transportation published *Policy Guidance Concerning Recipients' responsibilities to Limited English Proficient Person* in the December 14, 2005 Federal Register.

This guidance outlines the following four factors that the City uses to access the LEP populations in Canton.

1. The number and proportion of LEP persons eligible to be served or likely to be encountered by the City.
2. The frequency with which LEP individuals come into contact with the program, activity or service.
3. The nature and importance of the program, activity, or service provided by the program.
4. The resources available to the City and costs.

Summary of the four factor analysis

Factor 1- The number and proportion of LEP persons eligible to be served or likely to be encountered by the City can only be estimated until the actual number of persons who can speak English less than “very well” are documented as needing assistance by City Staff . With this Title VI Plan being in early development stages and considered a document that may need regular updates, US Census Bureau information is being used at this time. The total population is provided below to shown general distribution of race and ethnicity in the community. The estimated number of persons that may not speak English “very well” is following in the US Census Bureau 2006-2010 American Community Survey.

The U.S. Census Bureau provides statistics from 2010 for the City of Canton as follows:

Total population = 74,451

Population by Ethnicity:

Hispanic or Latino = 1,805 Non Hispanic or Latino = 72,646

Population by Race:

White = 53,150 African American = 16,854, Asian = 193, American Indiana or Alaska Native = 372,

Native Hawaiian and Pacific Islander = 0, Other = 431, Identified by two or more = 3,451.

The US Census Bureau 2006-2010 American Community Survey 5-Year Estimates under SELECTED SOCIAL CHARACTERISTICS estimates the number of people in Canton who speak a language other than English to be 2,945 with those speaking English less than “very well” estimated at 1.0% or approximately 983 individuals who may be considered limited in English proficiency.

Factor 1(continued)-

According to the census numbers above there may be up to 983 individuals who live in the City of Canton that *may* be considered as LEP. Based on actual contact between City Staff and the community there have been very few requests from anyone in the service area asking the City to provide language translation services. Therefore, the LEP population is probably even less than the estimate shown above.

Factor 2- The frequency with which LEP individuals come into contact with the program, activity or service:

Due to the infrequent requests for translation services, there appears to be a minimal need for translation services from the City. This may be attributed to the high percentage of younger people (87.6% for ages up to 17) who are available as family members for translation services.

Factor 3. The nature and importance of the program, activity, or service provided by the program:

If at any time a LEP individual requests translation services that are considered important such that denial or delay of access or services or information could have serious or even life-threatening implications, the City will provide, upon request, services to assist the LEP population including translation of vital City documents and interpretation services.

Factor 4. The resources available to the City and costs:

The City of Canton currently has several staff members who are bilingual in English and Spanish and are available to translate requests from the Hispanic population on a day to day basis. The City also provides many of their outreach services in the predominate languages of the community, English and Spanish. In addition, certified translation services are available through LanguageLine Solutions, a telephone translation service that is accessible for phone line translations services 24 hours a day. These are services the City provides upon request as discussed in factor 3 above. Page | 12

Summary of LEP Accommodation Plan

- The City of Canton strives to serve its population to the best of its ability and will provide upon request, services to assist the LEP population including translation of vital documents and interpretation services deemed necessary to provide meaningful access to City services.
- A U.S. Census Bureau ISpeak card is available as part of this document and on the City's webpage and is also available at City Hall located at 414 Main Street. This card allows LEP individuals to communicate their preferred language to City Staff whereas City Staff may then access a translation service called LanguageLine, phone number 1-800-752-6096 is available to City Staff or other translation services may be used as determined by the City.
- For language translation requests from the Hispanic or Latino community the City has several staff member who are bilingual and are available to provide translation services on a day to day basis.
- The City of Canton utilizes a voluntary public involvement survey to collect information regarding persons affected by proposed projects. The survey permits respondents to remain

anonymous, while voluntarily answering questions regarding their gender, ethnicity, race, age, sex, disability status, and household income. This voluntary public involvement survey is available at all public hearings and meetings. Once the survey data has been collected, it will be reviewed and then the survey will be placed in a file for future reference. In the case enough surveys are collected over time to show a significant increase in LEP populations, the City may consider changes to their LEP policy. Completed surveys shall be retained for a period of three years from the date of the meeting and/or completion of the related project, if applicable. See Appendix G for a sample of this Survey.

- The City reviews written Title VI complaints and ensures every effort is made to resolve complaints informally at the local or regional level and review and update the City's Title VI plan and procedures as required.
- Staff for the City will be provided training on the requirements for providing meaningful access to services for LEP persons. Considering the relatively small size of the City of Canton and limited financial resources, current training may be limited to web access to this document and its attachments by all City Staff, a log showing the names of all Staff that have been made aware of this document (sign off that they have read the document) and require that all new employees receive the same training.

(SAMPLE COPY)
Waste Disposal Agreement for Projects in the City of Canton

Items 1, 3 - 9 are optional and discretionary to the undersigned

THIS WASTE AGREEMENT, made this _____ day of _____ 20____, by and between _____ (called "Contractor"), and _____ of _____ (called "Land Owner"), concerning a certain construction contract between the Contractor and _____ in the City of Canton, OH for the _____ (project), as follows:

1. **MANNER OF WASTING:** Land Owner grants to Contractor the exclusive right to place dirt, earth, rock, topsoil, subsurface, unsuitable and/or other excess material (called "waste material") upon the area described in the following paragraph without requirement, limit, or restriction as to depth, amount, manner, or time.
2. **WASTE AREA:** The property upon which Contractor is permitted to place material is commonly known as _____ (address).
3. **TITLE TO WASTE AREA:** The Land Owner warrants that it has title to and the right to contract for placement of waste material in said area and agrees to defend and indemnify Contractor against any claim, suit, or damage arising out of such title or right to contract.
4. **ACCESS AND USE:** Land Owner hereby grants Contractor the right of ingress and egress to the waste area in locations to be selected by Contractor for all purposes necessary to the complete fulfillment of this agreement, and the right of quiet enjoyment in the intended use of such area.
5. **PAYMENT:** Contractor agrees to pay and Land Owner agrees to accept as full and final compensation for all rights granted and covenants contained herein and all claims of every nature the sum of _____ payable _____.
6. **BASIS OF MEASUREMENTS:** It is mutually agreed that measurement of the amount of materials wasted, where required, shall be made on the following basis: _____ and said measurement shall be binding upon the parties hereto for all purposes.
7. **DAMAGES:** Land Owner hereby waives any and all claims for damage to the waste area and to the area of ingress and egress except as specifically noted herein.
8. **RELEASE:** Upon receipt of final payment hereunder, and provided all terms of this agreement have been fulfilled, Land Owner hereby releases Contractor from further liability of any kind or nature hereunder.

WITNESSES:

CONTRACTOR:

Authorized Signature & Title

LANDOWNER:

Signature

9. **ENTIRE AGREEMENT:** It is agreed that the terms and conditions of this agreement are fully covered in the foregoing, and that any oral or written statements made by either party, or agents claiming to represent either party, not set forth herein, are not binding on the parties and are not considered as part of this Agreement.
10. **DISCLAIMER:** The City of Canton is not a party to the here above agreement. The Contractor and Landowner shall indemnify and save harmless the City of Canton from any claim that may arise from the here above agreement. The waste material is the property of the Contractor, not the City of Canton.

Signature Page
2022 Service Center Upgrade and Reconfiguration Project - GP 1331

To the Director of Public Service of the City of Canton:

The undersigned, having carefully examined the complete invitation to bid, herewith proposes to furnish all the labor and materials required to complete the **2022 Service Center Upgrade and Reconfiguration Project - GP 1331** in accordance with the specifications on file, including any and all work and materials that may be necessary to complete the project in a proper and workmanlike manner, and in accordance with the instructions in the bid packet and under the direction of and to the satisfaction of the Director of Public Service of said City.

The bidder hereby agrees that the Director of Public Service has the right to reject any and all bids and to accept the bid(s) deemed most beneficial to the City of Canton.

The bidder hereby certifies that the undersigned _____ is the only person interested in the bid and the bidder herewith certifies that no officer or employee of the City of Canton is in any manner interested therein.

The bidder herewith encloses a _____ **(BID BOND, CERTIFIED/CASHIER'S CHECK)** in the sum of \$ _____ dollars made payable to the CITY OF CANTON as a guaranty that if awarded the contract for the work included in the proposal, _____ will enter into contract therefore, with sureties satisfactory to the Director of Public Service, within the prescribed time of ten (10) days from the date of service of notice of award, otherwise such bond or checks shall become the property of said City, as liquidated damages of the failure on the bidder's part to do said contract within the specified time.

The bidder acknowledges receipt of Addenda Numbers: _____.

SIGNATURE OF BIDDER: _____.

NOTE: If bidder is a corporation, set forth the legal name of the corporation, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If bidder is a partnership, set forth the name of the firm, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

BIDDER'S SHEET
2022 Service Center Upgrade and Reconfiguration Project GP 1331

We (I), the above signed hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instruction, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

BASE BID								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
AUCTION SHED								
1	SPECIAL	AUCTION SHED. LUMP SUM COST SHALL INCLUDE ALL SCOPE SHOWN ON A-101, A-102, A-103, A-201, A-301, A-601. THIS INCLUDES ALL ELECTRICAL, MECHANICAL, STRUCTURAL WORK NOT EXPRESSLY LISTED AS A UNIT COST HEREIN.	LS	1				
AUCTION SHED SUBTOTAL =								
DEMOLITION								
2	201	TREE REMOVAL INCLUDING STUMPS, CLEARING AND GRUBBING	LS	1				
3	254	ASPHALT MILLING	CY	133				
4	SPECIAL	DEMOLITION, PER PLAN	LS	1				
5	SPECIAL	EXISTING 6' FENCE MESH, BARBEDWIRE, AND OBSTACLE WIRE REMOVED, STORED, AND REINSTALLED WITH NEW HARDWARE FOR ATTACHING MATERAIL, PER PLAN	LS	1				
ROADWAY SUBTOTAL =								
EROSION CONTROL								
6	832	EROSION CONTROL, PER PLAN	LS	1				
EROSION CONTROL SUBTOTAL =								
EARTHWORK								
7	203	EXCAVATION INCLUDING EMBANKMENT (PER PLAN) INCLUDING UTILITY TRENCH SPOILS, IMPORT AND HAULOFF	LS	1				
8	204	SUBGRADE COMPACTION	SY	7,022				
9	204	PROOF ROLLING	LS	1				
10	651	STRIP AND STOCKPILE TOPSOIL	LS	1				
11	651	TOPSOIL STRIPPED AND HULED OFF SITE	LS	1				
12	652	PLACING STOCKPILED TOPSOIL (4")	LS	1				
EARTHWORK SUBTOTAL =								
LANDSCAPING								
13	659	SEEDING AND MULCHING	LS	1				
LANDSCAPING SUBTOTAL =								
DRAINAGE								

14	611	6" PVC STORM SEWER, PER PLAN, INCLUDING FITTINGS	FT	248				
15	611	12" CONDUIT, TYPE C (HDPE), AS PER PLAN	FT	72				
16	611	15" CONDUIT, TYPE B (HDPE), AS PER PLAN	FT	307				
17	611	18" CONDUIT, TYPE B (HDPE), AS PER PLAN	FT	157				
18	611	CATCH BASIN, AS PER PLAN,	EACH	5				
19	611	STORM CLEANOUT, PER PLAN	EACH	3				
20	SPECIAL	4" FINGER DRAINS, PER PLAN	FT	140				
21	SPECIAL	CONNECTION TO EXISTING SEWER / CATCH BASIN	EACH	3				

DRAINAGE SUBTOTAL =

PAVEMENT

22	407	TACK COAT 0.1 GAL / SY (RESURFACED)	GAL	380				
23	422	SINGLE CHIP SEAL, TYPE B (RESURFACED)	SY	3,796				
24	448	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG 64-22 (RESURFACED)	CY	132				
25	407	TACK COAT 0.1 GAL / SY (SD PAVEMENT)	GAL	676				
26	448	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG 64-22 (SD PAVEMENT)	CY	235				
27	441	1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), PG 64-22 (SD PAVEMENT)	CY	329				
28	301	3" ASPHALT CONCRETE BASE, PG64-22 (SD PAVEMENT)	CY	564				
29	304	6" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (SD PAVEMENT)	CY	1,127				
30	452	7" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1 (CONCRETE APRON)	SY	200				
31	304	8" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (CONCRETE APRON)	CY	44				
32	608	4" CONCRETE PAVEMENT, PER PLAN (CONCRETE WALK)	CY	7				
33	304	4" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (CONCRETE WALK)	CY	7				
34	SPECIAL	6" #57 STONE, PER PLAN (FENCE GRAVEL)	CY	192				
35	SPECIAL	WOVEN GETOTEXTILE FABRIC (FENCE GRAVEL)	SF	10,366				
36	SPECIAL	CONCRETE CURBED WALK, PER PLAN	SF	50				
37	SPECIAL	ADA ACCESSIBLE RAMP, PER PLAN	EACH	1				

PAVEMENT SUBTOTAL =

SITE AMENITIES

38	SPECIAL	HANDICAP PARKING SIGN IN BOLLARD, PER PLAN	EACH	2				
39	SPECIAL	DETERRENT BOLLARD, PER PLAN	EACH	17				
40	SPECIAL	ADA PARKING SYMBOL, PER PLAN	EACH	2				
41	642	PAVEMENT STRIPING, PER PLAN, INCLUDING LOT LINES AND TRANSVERSE STRIPING	LS	1				
42	SPECIAL	6' TALL CHAINLINK FENCE WITH THREE STRAND BARBED WIRE, PER PLAN	FT	1010				
43	SPECIAL	8' TALL CHAINLINK FENCE WITH THREE STRAND BARBED WIRE AND OBSTACLE WIRE BETWEEN THE FENCES, PER PLAN	FT	858				

44	SPECIAL	26' WIDE CHAINLINK SWING GATE, PER PLAN	EACH	1				
45	SPECIAL	4' WIDE CHAINLINK MAN GATE, PER PLAN	EACH	1				
SITE AMENITIES SUBTOTAL =								
SANITARY								
46	611	6" PVC SANITARY SEWER, PER PLAN, INCLUDING FITTINGS	LF	69				
47	611	SANITARY CLEANOUT, PER PLAN	EACH	1				
48	611	CONNECTION TO EXISTING SEWER	EACH	1				
SANITARY SUBTOTAL =								
INCIDENTALS								
49	614	MAINTAINING TRAFFIC	LS	1				
50	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	LS	1				
51	624	MOBILIZATION	LS	1				
52	SPECIAL	PRE-CONSTRUCTION VIDEO TAPE	LS	1				
53	SPECIAL	ALLOWANCE (OWNER DIRECTED ALLOWANCE)	LS	1	-	-	\$ 50,000.00	\$ 50,000.00
INCIDENTALS SUBTOTAL =								
BASE BID GRAND TOTAL =								

UNIT PRICES USED FOR ALLOWANCES								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
1	SPECIAL	SUBGRADE STABILIZATION, PER PLAN	SY	1				
2	SPECIAL	FULL DEPTH ASPHALT PAVEMENT REPLACEMENT, PER PLAN	SF	1				

**Base Bid Prices are for Informational Purposes Only.
Total Unit Prices will govern.**

BIDDER'S SHEET
2022 Service Center Upgrade and Reconfiguration Project GP 1331

We (I), the above signed hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instruction, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

ALTERNATE BID #1 - SOUTH IMPOUND LOT PARKING ADDITION								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
EROSION CONTROL								
1	832	EROSION CONTROL PER PLAN	LS	1				
							EROSION CONTROL SUBTOTAL =	
EARTHWORK								
2	203	EXCAVATION INCLUDING EMBANKMENT (PER PLAN) INCLUDING UTILITY TRENCH SPOILS, IMPORT AND HAULOFF	LS	1				
3	204	SUBGRADE COMPACTION	SY	1,945				
4	204	PROOF ROLLING	LS	1				
5	651	TOPSOIL STRIPPED AND HULED OFF SITE	LS	1				
6	652	(CREDIT) - PLACING STOCKPILED TOPSOIL (4")	LS	1				
							EARTHWORK SUBTOTAL =	
LANDSCAPING								
7	659	(CREDIT) - SEEDING AND MULCHING	LS	1				
							LANDSCAPING SUBTOTAL =	
DRAINAGE								
8	611	4" FINGER DRAINS, PER PLAN	FT	20				
							DRAINAGE SUBTOTAL =	
PAVEMENT								
9	407	TACK COAT 0.1 GAL / SY (SD PAVEMENT)	GAL	195				
10	448	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG 64-22 (SD PAVEMENT)	CY	68				
11	441	1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), PG 64-22 (SD PAVEMENT)	CY	95				
12	301	3" ASPHALT CONCRETE BASE, PG64-22 (SD PAVEMENT)	CY	162				
13	304	6" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (SD PAVEMENT)	CY	324				
							PAVEMENT SUBTOTAL =	
SITE AMENITIES								
14	642	PAVEMENT STRIPING, PER PLAN, INCLUDING LOT LINES	LS	1				
							SITE AMENITIES SUBTOTAL =	
							ALTERNATE #1 GRAND TOTAL =	

Base Bid Prices are for Informational Purposes Only.
Total Unit Prices will govern.

BIDDER'S SHEET
2022 Service Center Upgrade and Reconfiguration Project GP 1331

We (I), the above signed hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instruction, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

ALTERNATE BID #2 - PROPOSED BUILDING PARKING SPACES								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
DEMOLITION								
1	SPECIAL	DEMOLITION PER PLAN	LS	1				
ROADWAY SUBTOTAL =								
EARTHWORK								
2	203	EXCAVATION INCLUDING EMBANKMENT (PER PLAN) INCLUDING UTILITY TRENCH SPOILS, IMPORT AND HAULOFF	LS	1				
3	204	SUBGRADE COMPACTION	SY	414				
4	204	PROOF ROLLING	LS	1				
5	651	TOPSOIL STRIPPED AND HULED OFF SITE	LS	1				
6	652	(CREDIT) - PLACING STOCKPILED TOPSOIL (4")	LS	1				
EARTHWORK SUBTOTAL =								
LANDSCAPING								
7	659	(CREDIT) - SEEDING AND MULCHING	LS	1				
LANDSCAPING SUBTOTAL =								
DRAINAGE								
8	611	4" FINGER DRAINS, PER PLAN	FT	40				
DRAINAGE SUBTOTAL =								
PAVEMENT								
9	407	TACK COAT 0.1 GAL / SY (SD PAVEMENT)	GAL	42				
10	448	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG 64-22 (SD PAVEMENT)	CY	15				
11	441	1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), PG 64-22 (SD PAVEMENT)	CY	20				
12	301	3" ASPHALT CONCRETE BASE, PG64-22 (SD PAVEMENT)	CY	35				
13	304	6" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (SD PAVEMENT)	CY	69				
PAVEMENT SUBTOTAL =								
SITE AMENITIES								
14	SPECIAL	CONCRETE WHEELSTOP, PER PLAN	EACH	6				
15	SPECIAL	PAVEMENT STRIPING, PER PLAN, INCLUDING LOT LINES AND TRANSVERSE STRIPING	LS	1				

16	SPECIAL	6' TALL CHAINLINK FENCE WITH THREE STRAND BARBED WIRE, PER PLAN	FT	141				
17	SPECIAL	(CREDIT) - 6' TALL CHAINLINK FENCE WITH THREE STRAND BARBED WIRE, PER PLAN	FT	30				
SITE AMENITIES SUBTOTAL =								
ALTERNATE #2 GRAND TOTAL =								

**Base Bid Prices are for Informational Purposes Only.
Total Unit Prices will govern.**

BIDDER'S SHEET
2022 Service Center Upgrade and Reconfiguration Project GP 1331

We (I), the above signed hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instruction, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

ALTERNATE BID #3 - PARKING LOT ALONG 30TH STREET								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
ELECTRICAL EV CHARGERS								
1	SPECIAL	NEW SERVICE FOR (2) EV STALLS	LS	1				
							ELECTRICAL SUBTOTAL =	
DEMOLITION								
2	SPECIAL	DEMOLITION PER PLAN	LS	1				
							ROADWAY SUBTOTAL =	
EROSION CONTROL								
3	832	EROSION CONTROL PER PLAN	LS	1				
							EROSION CONTROL SUBTOTAL =	
EARTHWORK								
4	203	EXCAVATION INCLUDING EMBANKMENT (PER PLAN) INCLUDING UTILITY TRENCH SPOILS, IMPORT AND HAULOFF	LS	1				
5	204	SUBGRADE COMPACTION	SY	1,447				
6	204	PROOF ROLLING	LS	1				
7	651	STRIP AND STOCKPILE TOPSOIL	LS	1				
8	651	TOPSOIL STRIPPED AND HULED OFF SITE	LS	1				
9	652	PLACING STOCKPILED TOPSOIL (4")	LS	1				
10	652	(CREDIT) - PLACING STOCKPILED TOPSOIL (4")	LS	1				
							EARTHWORK SUBTOTAL =	
LANDSCAPING								
11	659	SEEDING AND MULCHING	LS	1				
12	659	(CREDIT) - SEEDING AND MULCHING	LS	1				
							LANDSCAPING SUBTOTAL =	
DRAINAGE								
13	611	4" FINGER DRAINS, PER PLAN	FT	30				
14	611	12" CONDUIT, TYPE C (HDPE), AS PER PLAN	FT	38				
15	611	CATCH BASIN, AS PER PLAN,	EACH	1				
16	SPECIAL	CONNECTION TO EXISTING SEWER	EACH	1				
							DRAINAGE SUBTOTAL =	
PAVEMENT								
17	407	TACK COAT 0.1 GAL / SY (SD PAVEMENT)	GAL	144				
18	448	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG 64-22 (SD PAVEMENT)	CY	50				
19	441	1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), PG 64-22 (SD PAVEMENT)	CY	70				
20	301	3" ASPHALT CONCRETE BASE, PG64-22 (SD PAVEMENT)	CY	120				
21	304	6" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (SD PAVEMENT)	CY	240				

22	452	4" CONCRETE PAVEMENT, PER PLAN (CONCRETE WALK)	CY	2				
23	304	4" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (CONCRETE WALK)	CY	2				
24	SPECIAL	CONCRETE CURB, PER PLAN	FT	153				
25	SPECIAL	CONCRETE CURB TAPER, PER PLAN	EACH	2				
PAVEMENT SUBTOTAL =								
SITE AMENITIES								
26	SPECIAL	HANDICAP PARKING SIGN IN BOLLARD, PER PLAN	EACH	3				
27	SPECIAL	DETERRENT BOLLARD, PER PLAN	EACH	4				
28	SPECIAL	ADA PARKING SYMBOL, PER PLAN	EACH	3				
29	SPECIAL	PAVEMENT STRIPING, PER PLAN, INCLUDING LOT LINES AND TRANSVERSE STRIPING	LS	1				
SITE AMENITIES SUBTOTAL =								
ALTERNATE #3 GRAND TOTAL =								

**Base Bid Prices are for Informational Purposes Only.
Total Unit Prices will govern.**

BIDDER'S SHEET
2022 Service Center Upgrade and Reconfiguration Project GP 1331

We (I), the above signed hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instruction, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

ALTERNATE BID #4 - RIGHT OF WAY CONCRETE SIDEWALK ALONG 30TH STREET								
REF NO.	ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT MATERIAL PRICE	UNIT LABOR PRICE	TOTAL UNIT PRICE	TOTAL ITEM PRICE
DEMOLITION								
1	201	CLEARING AND GRUBBING	LS	1				
2	SPECIAL	DEMOLITION, PER PLAN	LS	1				
ROADWAY SUBTOTAL =								
EROSION CONTROL								
3	832	EROSION CONTROL PER PLAN	LS	1				
EROSION CONTROL SUBTOTAL =								
EARTHWORK								
4	203	EXCAVATION INCLUDING EMBANKMENT (PER PLAN) INCLUDING UTILITY TRENCH SPOILS, IMPORT AND HAULOFF	LS	1				
5	204	SUBGRADE COMPACTION	SY	385				
6	204	PROOF ROLLING	LS	1				
7	651	STRIP AND STOCKPILE TOPSOIL	LS	1				
8	651	TOPSOIL STRIPPED AND HULED OFF SITE	LS	1				
9	652	PLACING STOCKPILED TOPSOIL (4")	LS	1				
EARTHWORK SUBTOTAL =								
LANDSCAPING								
10	659	SEEDING AND MULCHING	LS	1				
LANDSCAPING SUBTOTAL =								
PAVEMENT								
11	608	4" CONCRETE PAVEMENT, PER PLAN (CITY WALK)	CY	21				
12	304	4" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (CITY WALK)	CY	21				
13	452	7" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1 (CITY DRIVE APRON)	SY	198				
14	304	4" CRUSHED AGGREGATE BASE (NO RECYCLED MATERIAL) (CITY DRIVE APRON)	CY	22				
PAVEMENT SUBTOTAL =								
SITE AMENITIES								
15	SPECIAL	36' WIDE CHAINLINK SWING GATE, PER PLAN	EACH	1				

SITE AMENITIES SUBTOTAL =

INCIDENTALS

16	614	MAINTAINING TRAFFIC	LS	1				
17	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	LS	1				
18	624	MOBILIZATION	LS	1				

INCIDENTALS SUBTOTAL =

ALTERNATE #4 GRAND TOTAL =

**Base Bid Prices are for Informational Purposes Only.
Total Unit Prices will govern.**