BID SET

Kingsville Regional Sewer Improvements

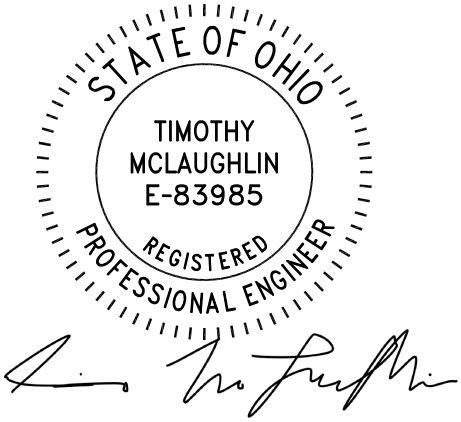
Ashtabula County Board of Commissioners

WPCLF Funded Project

USEPA Community Grants Program Funding

Ohio Department of Development
Special Projects Grant

November 2026



232478

verdantas
8150 Sterling Ct. | Mentor | OH | 44060 |
440.951.9000 | www.verdantas.com

ASHTABULA COUNTY OFFICIALS

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Kathryn L. Whittington, Vice President

J.P. Ducro, IV

Lisa Hawkins, Clerk of the Board

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April R. Grabman, County Prosecutor

Ray Nevison, Director, Department of Environmental Services

Timothy T. Martin, P.E., County Engineer

ADVERTISEMENT FOR BIDS/PUBLIC NOTICE TO BIDDERS

Sealed bids will be received at the office of the Ashtabula County Board of Commissioners, c/o Lisa Hawkins, Clerk, 2nd Floor Old Courthouse, 25 West Jefferson Street, Jefferson, Ohio 44047 until 2:00 p.m. on December 14, 2026 and will be opened and read immediately thereafter for the

KINGSVILLE REGIONAL SEWER IMPROVEMENTS

WPCLF FUNDED PROJECT

USEPA COMMUNITY GRANTS PROGRAM FUNDING

OHIO DEPARTMENT OF DEVELOPMENT SPECIAL PROJECTS GRANT

OPINION OF PROBABLE CONSTRUCTION COST: $4,100,000.00

COMPLETION DATE: 540 DAYS FROM NOTICE TO PROCEED

The bid specifications, drawings, plan holders list, addenda, and other bid information (**but not the bid forms**) may be viewed and/or downloaded for free via the internet at https://bids.verdantas.com . The bidder shall be responsible to check for Addenda and obtain same from the web site.

Bids must be in accordance with drawings and specifications and on forms available from Verdantas, LLC at a non-refundable cost of One Hundred Fifty 00/100 Dollars ($150.00) for hard copies and Forty-Five 00/100 Dollars ($45.00) for electronic files. Documents may be ordered by registering and paying online at https://bids.verdantas.com. Please contact planroom@verdantas.com or call (440) 530-2351 if you encounter any problems viewing, registering or paying for the documents.

There will be a Non-Mandatory Pre-Bid Conference on December 1, 2026 at 10:00 a.m. at the office of the Ashtabula County Department of Environmental Services , 36 W. Walnut St. Jefferson, OH 44047.

This project will be funded by the Water Pollution Control Loan Fund Program as administered by the Ohio Environmental Protection Agency and the Ohio Water Development Authority. The Contractor shall note that there are Disadvantaged Business Enterprise participation goals for this project.

This procurement is subject to the EPA policy on encouraging the participation of small business in rural areas (SBRAs).

Build America, Buy America Act (BABA) requirements apply to the entire project.

The Legal Notice may be accessed at www.ashtabulacounty.us/bids by clicking on the appropriate link titled: “Kingsville Regional Sewer Improvements” on the bottom of the screen and on the County’s Facebook page.

The County reserves the right to reject any or all bids, waive informalities and to disregard all non-conforming, nonresponsive or conditional bids, or to increase or decrease or omit any item or items.

BY ORDER OF ASHTABULA COUNTY COMMISSIONERS
Casey Kozlowski, Kathryn Whittington J. P. Ducro IV.

Lisa Hawkins, Clerk of the Board

Publish: Gazette Newspaper & *Ashtabula County Website*
November 12, 2026

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SECTION 1
BID DOCUMENTS

INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.1 Sealed bids shall be received by the Owner at the location specified and until the time and date specified in the Advertisement for Bids/Public Notice to Bidders.

1.2 Each bid shall contain the full name and address of each person or company interested in said bid. If no other person be so interested, the Bidder shall distinctly so state the fact.

1.3 Bid forms must be completed in ink or by typewriter. Any corrections to the bid forms prior to submission must be initialed by the person signing the bid. Failure to submit any bid form(s) or other required document(s) may be cause for rejection of the bidder's bid at the sole discretion of the Owner.

1.4 Bids by Corporations must be executed in the corporate name by the President, Vice President, or other officer accompanied by evidence of authority to sign and the corporate seal must be affixed and attested by the Secretary on the Corporate Resolution form.

1.5 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature.

1.6 All names must be typed or printed below the signature.

1.7 The bid shall contain an acknowledgment of receipt of all Addenda.

1.8 If a Bidder wishes to withdraw their bid prior to the opening of bids, they shall state their purpose in writing to the Owner before the time fixed for the opening, and when reached it shall be handed to them unread.

1.9 After the opening of bids, no Bidder may withdraw their bid for a period of 60 days.

PART 2 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

2.1 Before submitting a bid, each Bidder must

A. Examine the Contract Documents thoroughly.

B. Visit the site to familiarize themselves with local conditions that may in any manner affect cost, progress, or performance of the work.

C. Familiarize themselves with Federal, State, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress, or performance of the work.

D. Study and carefully correlate Bidder's observations with the Contract Documents.

2.2 Reference is made to the Specific Project Requirements for the identification of any reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the work which have been relied upon by the Engineer in preparing the drawings and specifications. Owner will make copies of such reports available to any Bidder requesting them if not made available with the bid documents. These reports are not guaranteed as to accuracy or completeness; nor are they part of the Contract Documents. Before submitting their bid each Bidder will, at their own expense, make such additional investigations and tests as the Bidder may deem necessary to determine their bid for performance of the work in accordance with the time, price and other terms and conditions of the Contract Documents.

2.3 Upon request, the Owner will provide each Bidder access to the site to conduct such reasonable investigations and tests as each Bidder deems necessary for submission for their bid.

2.4 The lands upon which the work is to be performed, rights-of-way for access thereto, and other lands designated for use by Bidder in performing the work are identified on the Drawings.

2.5 The submission of a bid will constitute an incontrovertible representation by the Bidder that they have complied with every requirement of this section and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work.

PART 3 ESTIMATED QUANTITIES

3.1 In Unit Price Contracts, the quantities of the work itemized in the bid are approximate only and the bidders are hereby notified that the estimated quantities made by the Engineer are merely for the guidance of the Owner in comparing on a uniform basis all bids received for the work.

3.2 The contract quantities, where itemized, are based on plan horizontal and vertical dimensions unless otherwise specified. It is the Contractor's responsibility to verify and determine actual quantities of materials such as pipe, pavement, subgrade, etc. in their ordering materials.

3.3 Payments, except for lump sum contracts and except for lump sum items in unit price contracts, will be made to the Contractor only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications.

3.4 The successful Bidder will be required to furnish the Owner with a complete breakdown of the lump sum bid items, to the satisfaction of the Engineer/Architect, before signing the Contract documents.

PART 4 CONTRACTOR'S QUALIFICATION

4.1 Bidder shall provide detailed information relating to similar projects completed within the past 5 years which demonstrates the bidder's capability, responsibility, experience, skill, and financial standing to undertake this type of project and shall include a list of all projects currently under construction including status and contact person.

4.2 Bidder shall own, have rental or lease agreements for, or otherwise have readily available any and all equipment and tools necessary for proper execution of the work. The Owner reserves the right to request lists of equipment or tools available for the project including sources.

4.3 Bidder shall provide pertinent information to the Owner relative to any pending suits or outstanding liens. If no information is provided by the Bidder, the Owner shall assume that any such suits or liens do not exist.

4.4 The Owner may require similar information on any or all subcontractors proposed by the Bidder.

4.5 Bids of corporations not chartered in the state in which the work will take place must be accompanied by proper certification that the corporation is authorized to do business in that state.

PART 5 SUBCONTRACTORS

5.1 The Bidder shall state on the appropriate bid form the names of all Subcontractors, Sub Consultants and other professional service providers proposed and the items of work they are to be assigned. All work not assigned to a Subcontractor shall be assumed by the Owner to be performed by the Bidder.

5.2 The Owner reserves the right to approve all subcontractors proposed by the Bidder. If the Owner, after due investigation, rejects the use of a proposed subcontractor, the apparent successful Bidder may either submit an acceptable substitution without increase in bid price or decline substitution and withdraw their bid without sacrificing their bid security. Any listed subcontractor to whom the Owner does not make written objection prior to award of contract, shall be deemed acceptable to the Owner.

5.3 Requests for changes of Subcontractor by the Bidder after the award shall be subject to the Owner's approval and shall not change the contract bid prices.

5.4 No contractor shall be required to employ any Subcontractor, person or organization against whom they have reasonable objection.

PART 6 BID REVIEW BY OWNER

6.1 The Owner reserves the right to reject any and all bids, to waive as an informality any and all irregularities, and to disregard all nonconforming, nonresponsive or conditional bids.

6.2 All extensions and totals of unit prices and quantities submitted as part of the bid shall be considered informal until verified by the Owner. All bids must be made on the forms contained herein and the bid prices must be written therein, in figures only. Unit prices shall be separately written for "Unit Price Labor," "Unit Price Material," and "Total Unit Price" for each item listed. Should an error in addition and/or multiplication be determined while checking the Contractor's math and verifying their total bid, the "Unit Price Labor" and the "Unit Price Material" figures shall govern in determining the correct "Total Unit Price" and the correct "Item Total."

6.3 Each bidder must bid on all Items, Alternates, Deductions, and Additions contained in the Bidding Forms. All bids not in conformity with this notice may be considered non-responsive and may be rejected.

6.4 More than one bid for the same work from an individual or entity under the same of different names will not be considered. Reasonable grounds for believing that any bidder has an interest in more than one bid for the work may be cause for disqualification of that bidder and the rejection of all bids in which the bidder has an interest. A subcontractor or supplier is not a bidder, and may submit prices to multiple bidders.

6.5 In evaluating bids, the Owner may consider:

A. The qualifications and experience of the Bidder, proposed subcontractors, and principal material suppliers as outlined in the plans and specifications.

B. Financial ability and soundness of the Bidder and proposed subcontractors.

C. Completeness of all bid forms and bid requirements.

D. Alternates and unit prices requested in the Bid Forms.

E. Unit prices or schedules of values that are or appear to be unbalanced.

F. Previous contractual experience with the Owner.

G. Whether or not the bid package complies with the prescribed requirements.

H. The proposed completion date, if applicable.

I. Any other matter allowed by law or local ordinance or resolution.

6.6 Owner may conduct further investigations as they deem necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of the Bidder, proposed Subcontractors, and other persons and organizations to do the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

6.7 Owner reserves the right to reject the bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

6.8 The Contract award shall be based on the lowest and best bid or lowest responsive and responsible bid (as applicable for the public contracting agency receiving bids) for the base bid and selected alternate items (if any) for this project.

PART 7 BID SECURITY

7.1 Each bid must be accompanied by a certified or cashier's check in the amount of 10% of the amount bid, an irrevocable letter of credit in the amount of 10% of the amount bid or an original bond in the amount of 100% of the amount bid per O.R.C. Sections 153.54 and 153.571. The certified or cashier's check, or irrevocable letter of credit shall be from a financial institution authorized to transact business in the State of Ohio and acceptable to the Owner. The bond shall be underwritten by a Surety Company authorized to transact business in the State of Ohio having an Ohio agent and listed on the most current Department of the Treasury Circular 570, "Surety Companies Acceptable on Federal Bonds." The bond shall be a "Bid Guarantee and Contract Bond" ("rollover bond") per O.R.C. Sections 153.54 and 153.571 submitted for the full amount of the bid **including all alternates**, if any.

If bid security is made by bond, the Bidder and their Surety shall sign the Supplemental Bond Acknowledgement form and submit with their bid.

7.2 The certified or cashier's check, irrevocable letter of credit, or bond shall be made payable to the Owner and shall serve as a guarantee that in the event the bid is accepted and a contract is awarded to the successful Bidder, the contract will be executed by the bidder including any certifications, certificates or additional bonds required by the contract.

7.3 Failure on the part of the successful Bidder to execute the contract documents will cause the certified or cashier's check, irrevocable letter of credit, or bond to be forfeited to the Owner as damages.

A. If the Owner awards the contract without rebidding, the Bidder (and the Surety on their bond if a bond was submitted) shall be liable to the Owner for a penal sum not to exceed the difference between the low bid and the next lowest bidder or 10% of the amount of the bid, whichever is less.

B. If the Owner does not award the Contract to the next lowest Bidder, but resubmits the project for bidding; the Bidder (and the Surety on their bond if a bond was submitted) shall be liable to the Owner for a penal sum not to exceed the costs in connection with the resubmission of bids or 10% of the amount of the bid, whichever is less.

7.4 Checks or letters of credit for bid security of all bidders will be returned in the manner and timeframe stipulated in the O.R.C. Section 153.54 Bid guaranty to be filed with bid.

PART 8 CONTRACT BOND

8.1 As security for faithful performance and payment of all obligations under the Contract, the Owner shall require and the successful Bidder shall furnish either:

A. *If submitted as Bid Security at time of bid:* "Bid Guarantee and Contract Bond" (AKA "rollover bond") per O.R.C. Sections 153.54 and 153.571.

B. *If a cashier's check or irrevocable letter of credit is submitted as Bid Security at time of bid:* Contract Bond per O.R.C. Sections 153.54 and 153.57, in the amount of 100% of the Contract Price. The Contractor and their Surety shall sign the Supplemental Bond Acknowledgement form and submit with the Contract forms

8.2 The bond shall be underwritten by a Surety Company authorized to transact business in the State of Ohio having an Ohio agent and listed on the most current Department of the Treasury Circular 570, "Surety Companies Acceptable on Federal Bonds."

8.3 The contract bond shall cover correction of the work for the period stated in the specifications and the correction period shall start upon Final Acceptance of the entire project and final payment by the Owner.

8.4 Nothing in the performance of the Engineer's service to the Owner in connection with this project shall in any way imply any undertaking for the benefit of the successful Bidder, its subcontractor(s), or the surety of any of them.

PART 9 AWARD AND EXECUTION OF CONTRACT

9.1 After the Owner's legislative body awards the project, the successful bidder will receive the unsigned contract documents. Within 10 days after their receipt, the successful Bidder shall sign and deliver to the Owner said contract documents including any certifications, certificates, or additional bonds required by the contract.

9.2 The Owner shall execute the Contract within 60 days after the day of the bid opening. When necessary and by mutual consent between the Owner and the Successful Bidder, this 60-day period may be extended.

9.3 The date of the Owner's signature on the Contract Agreement shall be the effective contract date.

9.4 The Owner shall execute and deliver to the successful Bidder one set of fully executed contract documents.

PART 10 INSURANCE

10.1 Verification of limits for public liability, property damage, automobile, Worker's Compensation, or any other insurance required by the provisions of this Contract must be submitted to the Owner prior to execution of the Contract.

10.2 All insurance shall be endorsed so that it cannot be cancelled for non-payment of premium for 10 days or cancelled or non-renewed for any other reason in less than 30

days after a written notice of such proposed action by the insurer is given to the Owner. The cancellation clause on the Certificate(s) of Insurance shall read as specified in the Supplementary Conditions and failure to submit an insurance certificate and/or policy endorsement verifying same shall be reason for the Owner to consider the Contractor non-responsive in complying with the requirements for contract execution and may be cause for forfeiture of the Bid Security to Owner.

10.3 The Insurer's affording coverage shall be authorized to transact business in the State of Ohio and be listed on the most current Ohio Department of Insurance list of Ohio Licensed Companies.

10.4 The Contractor's Liability Insurance policy(s) shall be endorsed such that limits are on a Per Project basis.

10.5 The Contractor shall also provide an Owner's and Contractor's Protective Policy.

PART 11 NON-COLLUSION AFFIDAVIT

11.1 Collusion between bidders will be cause for rejection of affected bids and may be cause for rejection of all bids. Multiple bids submitted by one bidder under the same name or different names, whether as an individual, firm, partnership, corporation, profit or non-profit, affiliate, or association will be cause for rejection of bids. A subcontractor is not a bidder, and may submit prices to multiple bidders.

11.2 All bidders shall submit an affidavit that their bid is genuine and not collusive or sham; that such bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person, to put in a sham bid, or that such other bidder or person shall refrain from bidding; that such bidder has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Owner or any person or persons interested in the proposed contract; that such bidder is the only party (or parties) who has an interest with the bidder in the profits of any contract which may result from the herein contained proposal; that no individual affiliated with the Owner, including but not limited to the head of any department, any employee, or any other official or officer of the Owner, is or will be directly or indirectly interested in this bid, and/or the profits from this bid if successful; that no individual affiliated with the Owner, including but not limited to the head of any department, any employee, or any other official or officer of the Owner, has or will receive anything of value as a result of the submission of this bid or its award; that no individual affiliated with the Owner, including but not limited to the head of any department, any employee, or any other official or officer of the Owner, has been solicited to provide assistance and/or provided assistance to the bidder which might give the bidder a competitive advantage or circumvent the competitive bidding process; and that all statements contained in said proposal are true; and further, that such bidder has not, directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

11.3 Each bid must be accompanied by a completed Noncollusion Affidavit provided within the contract documents.

11.4 Where there is reason to believe collusion or combination among bidders exists, the Owner reserves the right to reject the bid of those concerned.

PART 12 DELINQUENT PERSONAL PROPERTY STATEMENT

12.1 Included with the contract documents is a Delinquent Personal Property Statement to be filled out by the successful Bidder.

12.2 The statement shall be sent to both the County Auditor and the County Treasurer. A signed copy shall remain in the contract documents as well.

PART 13 ORIGINAL DOCUMENTS

13.1 All bid forms, contract forms, bonds and any other bid documents or contract documents requiring signatures shall be submitted with original signatures. No photo copies or faxed copies of signed documents shall be accepted.

PART 14 ADDENDA

14.1 The bidder shall be responsible to obtain Addenda from the web at https://bids.verdantas.com .

END OF SECTION 08/01/25

PRICES TO INCLUDE

PART 1 - GENERAL

Any work shown on the plans or required in the specifications but not paid for separately as a bid item shall be included in the cost of other bid items. The amount bid for each Bid Item shall include the following:

1.1 All labor, materials, tools, equipment and transportation necessary for the proper execution of the work in accordance with Contract Documents.

1.2 All assistance required by the Engineer to verify compliance with the Contract Documents, including measuring for final pay quantities.

1.3 Completion and execution of all work shown, specified, or implied regardless of specific mention of such work in this section herein. Costs for all work items not specifically mentioned herein shall be included in the related items bid.

1.4 Project coordination and scheduling.

1.5 Detailed breakdown of lump sum bid items as requested by the Engineer.

1.6 All provisions necessary to protect workmen, the general public and property along the work in accordance with the Contract Documents and OSHA requirements.

1.7 Protection and/or replacement of existing property corner monuments.

1.8 Record drawings of all installed items detailed in the plans or that are performed over the during the course of the contract.

1.9 Reimbursement to Owner for costs for re-inspection or re-testing of any work not installed in compliance with the Contract Documents.

1.10 Material testing.

1.11 Removal and replacement of any mailboxes, street signs, above ground structures, fencing or landscaping elements, that are affected, damaged, or require temporary relocation due to the proposed improvements.

1.12 Temporary access drives or laydown areas necessary to complete the work

1.13 Mobilization of all equipment, work persons, tools, materials, and any items necessary to complete all work.

1.14 All erosion control measures needed commensurate with the contractor's means and methods.

1.15 Construction staking of all improvements.

1.16 The unit price shall include saw cutting, removal and disposal if the proposal item includes removal.

1.17 The unit price for asphalt concrete replacement shall include the cost to seal any cracks which may develop in the asphalt pavement during the Correction Period. The sealing shall be done just prior to the end of the Correction Period unless, due to the season and inclement weather, a time extension is granted and the Correction Period is extended.

1.18 All concrete utilized on this project: 1) All aggregate shall meet the requirements of ODOT 703.02, Loss, sodium sulfate soundness test, 12% maximum; 2) If #57 or #67 size coarse

aggregate is used, it shall be tested in accordance with ASTM C 666, Procedure B, and meet the requirements of ODOT 703.13. Copies of actual test reports and manufacturers certifications are required and shall be representative of the aggregate source proposed for use and shall be no more than 6 months old to time of submittal; 3) Class C concrete - Options 1, 2, and 3 will not be allowed.; 4) All surfaces shall be sealed with an approved cure and seal, not standard ODOT curing compound.

1.19 Reference to ODOT 401.20 "Asphalt Binder Price Adjustment" is to be deleted and will not apply.

PART 2 - ITEMS

All work proposed by this contract shall be quantified and paid for in accordance with the pertinent O.D.O.T. specification except as specifically altered by other provisions of this contract.

2.1 (SPC) PRECONSTRUCTION VIDEOTAPE DOCUMENTATION

Basis of Payment

The lump sum price shall include all costs associated with hiring a professional videographing firm to document in detail the existing conditions of the entire work area and any potential disturbed areas and submitting a high quality DVD or USB flash drive with audio commentary and video log. Video shall be reviewed submitted for review and approved by the Owner prior to approval of payment for the lump sum amount.

2.2 (SPC) BONDS AND INSURANCES, AS PER PLAN

Basis of Payment

A "Bonds and Insurances" item (including "Owner/Contractor Protective Policy," "All Risk Builder's Risk Insurance," and/or "Installation Floater Insurance", and/or endorsements to fully comply with all contract requirements) has been included in the bid proposal.

2.3 (201) CLEARING AND GRUBBING, AS PER PLAN

Basis of Payment

This pay item is for the entire work area along any of the proposed sewer line work and pump stations. The lump sum price shall include all labor, equipment, tools, and materials including but not limited to removal and disposal of all vegetation, and removal and stockpiling of topsoil within the work limits, and/or disposal of topsoil as may be necessary, and in accordance with plan details and specifications, if any. This shall also include the removal of any trees 18" in diameter that are marked on the plans for removal or necessary for removal (if not specified for removal in plans) by the Contractor to complete the work as specified. Payment shall be made progressively throughout the contract period in proportion to the percentage of work complete or as otherwise approved by the Engineer.

2.4 (253) TYPE "A" PAVEMENT REPLACEMENT (CONCRETE), DRIVEWAY, APRON OR PARKING LOT, AS PER PLAN

2.5 (253) TYPE "C" PAVEMENT REPLACEMENT (ASPHALT), DRIVEWAY, APRON OR PARKING LOT, AS PER PLAN

2.6 (253) TYPE "C" PAVEMENT REPLACEMENT (ASPHALT), ROADWAY, AS PER PLAN

2.7 (253) TYPE "F" PAVEMENT REPLACEMENT (GRAVEL), DRIVEWAY, APRON OR PARKING LOT, AS PER PLAN

Method of Measurement

The method of measurement shall be as per ODOT 253 or 255 as applicable with the exception that lengths and widths be used for calculation of each individual repair area shall not exceed the maximum pay lengths and widths indicated on the drawings.

Basis of Payment

The basis of payment shall be as per ODOT 253 or 255 as applicable with the following additions:

The unit price shall also include furnishing, installation, maintenance, removal, and disposal of temporary road materials or temporary pavement courses; preparation for permanent pavement courses; and any additional expenses for cold weather protection.

2.8 (604) MANHOLE REHABILITATION CLEANING AND LINING, 48 INCH, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of vertical feet rehabilitated as measured from the lowest sewer to the top of the manhole casting. Average inner diameter is approximately 48-inches. No additional payment shall be made for any diameter or net area that exceeds a 48-inch diameter.

Basis of Payment

The unit price paid shall include sewage flow control; cleaning, removal and disposal of all calcifications, preparation for per manufacturer requirements, plugging and filling holes necessary to apply lining, lining of manhole, and the furnishing of labor, materials, tools and appurtenances necessary to complete the work as specified or as shown. The liner thickness shall be per the approved manufacturer's recommendations. Any additional rehabilitation such as replacement of bricks, manhole patching, or resetting of castings, shall be included within this item.

2.9 (608) 4 INCH CONCRETE WALK, INCLUDING REMOVAL, AS PER PLAN

The work, method of construction and materials for concrete walk, concrete curb ramps and concrete pavement for drives shall conform to ODOT Items 608, 452, 304, 203 and 202, except as modified herein or as shown on the contract drawings.

1. There will be no separate measurement or payment for removal and disposal of existing walk or concrete drives or subbase, crushed limestone base, and subgrade compaction. These items of work shall be included in the furnishing and installation of new walks or curb ramps or concrete pavement for drives.

2. Wire mesh reinforcing shall be furnished and installed if included in an existing apron. The cost of furnishing and installing the wire mesh reinforcing shall be included in the cost of this item of work.

3. The unit price shall include Fiber Reinforcement as indicated.

4. There will be no additional compensation for providing a thickened edge and/or integral curb, as detailed.

5. ODOT Item 499 Concrete, Class QCMS mix shall be used in drives and drive aprons.

6. ODOT Item 499 Concrete, Class QC1 shall be used for walks and curb ramps.

7. Each and every sidewalk, drive slab and joint shall be edge tooled after texturing surface to match existing.

8. ODOT 304 Aggregate Base, utilizing crushed limestone, shall be provided with these items.

9. The unit price for curb ramps shall include all labor and materials necessary to construct ramps compliant with the Americans with Disabilities Act (ADA) regulations.

Method of Measurement

The quantity to be paid of concrete walk, concrete curb ramps, and concrete for drives to the thickness and class of concrete specified shall be the actual square dimension, square feet or square yards as indicated in the Proposal of finished surface complete in place.

Basis of Payment

The unit price stipulated per square foot or square yards (as indicated in the Proposal) for concrete walk, concrete curb ramp and concrete pavement for drives or aprons of the thickness and class of concrete specified shall be full compensation for furnishing all materials, grading, forming, finishing of the walk, curb ramp and pavement including removal and disposal of existing grass, sod, topsoil, bushes, trees, walk or pavement and curbs, necessary pavement saw cutting, clearing and grubbing, excavation and/or backfill to required line and grade, subgrade compaction as required, furnishing and installing subbase or base material, integral curbing, adjustment of water/gas service valves, concrete, curing compound, and expansion joint material; wire and/or mesh reinforcing as required; furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown.

2.10 6 INCH SANITARY SEWER LATERAL (SHORT), AS PER PLAN
2.11 6 INCH SANITARY SEWER LATERAL (LONG), AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of each lateral connection from the main to the test tee installed per the plans and specifications. Any increase in installed length due to change in length of pipe or location of structures not directed by the Engineer shall not be measured for payment. Short laterals are considered any lateral that shall be installed without the need for trenchless methods on

the west side of the sewer alignment. Long laterals are considered any lateral installed east of the sewer alignment that shall be installed by jack and bore methods beneath the pavement.

Basis of Payment

The unit price shall be irrespective of the depth of pipe and if not called out as a separate pay item shall include the furnishing and laying of pipe; field location, exploratory excavation, and verification of existing utilities prior to laying conduit; earth and/or rock excavation; sheeting; shoring; disposal of undesirable and excess material; all pumping required for adequate handling of flow bypassing, underground water and/or surface water; over-excavation; foundation; bedding; compacted backfill material; carrier and casing pipe; setup and installation of boring pits; removal and disposal of excess material boring operations; Owner's costs related to re-inspection or re-testing of failed or re-compacted backfill material; specials; bends; tees; fittings; plugs; stoppers; cleanouts; bulkheads; jointing material; protection of existing trees or vegetation to be saved; protection and/or replacement of all existing utilities; connection to existing conduit or structures; leakage testing; internal videotaping; Owner's costs related to re-inspection or re-testing of pipe failing leakage testing or internal videotaping; removal and replacement of utility poles, posts, signs, mailboxes, paper boxes, fences, landscape timbers, guardrails, sign wiring, fixtures, or other appurtenances; surface grading; temporary pavement; and the furnishing of all labor, materials, tools and appurtenances necessary to complete the work as specified or as shown.

No payment shall be made for any sanitary sewer until the section has satisfactorily passed an infiltration and exfiltration test.

2.12 6 INCH SANITARY SEWER TEST TEE/CLEAN-OUT AND RISER, AS PER PLAN
2.13 8" SANITARY SEWER, AERIAL, WITH SUPPORT PIERS AND BRACKETS, AS PER PLAN
2.14 8" SANITARY SEWER, AS PER PLAN

The work, method of construction and materials for sewer construction shall be in accordance with ODOT Item 611 with the modifications shown on the improvement plans and detailed in the specifications.

Method of Measurement

The quantity of sewer to be paid for shall be determined for gravity sewers by the linear feet difference in horizontal stationing from center of the downstream manhole to the center of upstream manhole, the tie-in to the existing sewer main, or the end of pipe for stub connections.

Basis of Payment

The unit price stipulated per lineal foot for sewer pipe of the various sizes and types specified shall be irrespective of class of pipe and depth and if not called out as a separate pay item, shall be full compensation for maintenance of traffic for the duration of the project; earth and/or rock excavation for the pipe and foundation for same; removal of all materials at the surface of excavation or encountered subsurface that are necessary for placing the pipe; the complete removal of the existing sanitary and storm sewers, manholes and catch basins except materials listed separately where present; furnishing and placing granular or concrete bedding and special backfill as required, testing of compaction, constructing and subsequently removing all necessary boring and receiving pits, cofferdams, cribs, sheeting and shoring; furnishing, installing and operating necessary pumps, pipes

and appurtenances necessary for flow bypassing and/or trench dewatering; sealing or banding all pipe joints where required; furnishing and installing of the pipe jointing materials and all necessary plugs, bulkheads, bends, fittings, specials and branches of a type at least equal to the conduit of which it becomes part; furnishing and installing concrete encasements, boring and steel casing pipe where required; protection, verification and/or replacement of all existing utilities, i.e., gas mains, gas connections water mains (including hydrants and their connections to the main), water connections, water wells, septic tanks, sanitary sewers, sanitary connections, storm sewers, storm connections, curb drains, catch basins, culverts, electric or telephone underground cables and/or underground connections if damaged by the Contractor; protection of existing trees or vegetation; joining of the pipe to existing and proposed manholes, catch basins, structures, and other appurtenances as required whether temporary or permanent; deflection and leakage testing or internal videotaping; disposal of all surplus and unsuitable materials; furnishing and installing temporary stone trench topping of pavement and driveways; removal and replacement of poles, posts, signs, mailboxes, paper boxes, fences, landscape timbers, guardrails, sign wiring, fixtures and other appurtenances; removal and replacement of any damaged curbing, sidewalk, driveways, parking lots and roadways as directed by the Engineer; and the furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown.

2.15 4 INCH CONDUIT, HORIZONTAL DIRECTIONAL DRILLING WITHOUT CASING, AS PER PLAN
2.16 6 INCH CONDUIT, HORIZONTAL DIRECTIONAL DRILLING WITHOUT CASING, AS PER PLAN
2.17 6 INCH CONDUIT IN BORED-IN-PLACE STEEL CASING, AS PER PLAN
2.18 8 INCH CONDUIT IN BORED-IN-PLACE STEEL CASING, AS PER PLAN
2.19 CATCH BASIN, AS PER PLAN
2.20 TYPE "A" SANITARY MANHOLE, AS PER PLAN

Method of Measurement

The number of each type manhole or junction chamber to be paid for shall be the actual number furnished and built in place in accordance with the contract drawings and with these specifications.

Basis of Payment

The unit price bid for sanitary structures shall be irrespective of the depth of the manhole structures, and shall include the furnishing and construction in place of the manholes and junction chambers complete with excavation; foundation; backfill; frame and cover; steps; concrete; steel reinforcement; lining material; bricks; mortar; plastering; precast manhole sections; transition; flexible joints; granular backfill under proposed or existing pavements, walks, drives, existing drainage structures, and disposal of all undesirable material; testing and inspections; and the furnishing of all labor, materials, tools and appliances necessary to complete the work as specified or as shown. The unit price shall also include all sewer stubs and plugs or connection of existing sewers to the structure as indicated on the contract drawings or directed by the Engineer. Adjustments in final casting elevations of plus or minus one (1) foot shall be included in the price for each structure.

2.21 SANITARY MANHOLE OUTSIDE DROP CONNECTION, AS PER PLAN

The number of each (EA) drop structure and associated work necessary to complete the improvement as detailed on the plans.

Basis of Payment

The unit price shall be irrespective of the depth/length of the structures, and shall include all materials, labor, equipment, tools, and appurtenances necessary to complete work as detailed on the plans including but not limited to any bypassing or plugging of flow, coring of existing manhole, removal and disposal of any excess materials necessary to complete the work, reconstruction of invert to allow a smooth and laminar transition of flow from bottom of proposed drop, and all necessary cleaning, preparatory work, installation, and verification or operation for the drop structure in accordance with the manufacturer's and project specifications.

2.22 MAINTAINING TRAFFIC, AS PER PLAN

The work, method of construction and materials for maintaining traffic shall be in accordance with ODOT Item 614 and the Ohio Manual of Uniform Traffic Control Devices (OMUTCD).

Basis of Payment

The lump sum price shall include all costs for labor, materials, tools and appurtenances necessary to complete the work as specified. Payment shall be made progressively throughout the contract period in proportion to the percentage of work complete or as otherwise approved by the Engineer.

2.23 LAWN RESTORATION INCL. LINEAL GRADING & TOPSOIL, AS PER PLAN

The work, method of construction and materials for lawn restoration shall be in accordance with Section 329200.19 with the following modifications:

1. There will be no separated measurement or payment for furnishing and placing the required 4-inch topsoil bed.

2. Cost to prepare the subgrade to receive the 4-inch topsoil bed including any necessary excavation or embankment to bring the subgrade to the lines indicated on the plans and parallel to the proposed finished grade shall be included in this bid item.

3. The cost to furnish and place sphagnum peat moss at the rate specified and mix into the topsoil shall be included in this bid item.

4. Restoration within the contract pay limits will be paid as directed by the Engineer on a one-time basis. Subsequent repairs of previously repaired seeded areas, repair of areas outside the contract pay limits and repairs to areas not planted within the designated spring or fall sowing season shall be at the Contractor's expense.
5. Cost to inventory and restore existing treelawn landscape i.e., decorative stone, mulch, trees, brick pavers or any other special features damaged by the Contractor shall be included in this bid item.

2.24 (680) PUMP STATION NO. 1
2.25 (680) PUMP STATION NO. 2

Basis of Payment

The lump sum bid price shall include all work associated with each Pump Station not specifically included under other items. This shall include, but not be limited to, laydown and mobilization, excavation and trenching, dewatering setup and operations, utility support, foundations, the pump station wet well and valve vault structures, seals, steps, hatches, interior piping including all fittings and fixtures, vent piping, drain piping, couplers, guide rail, pumps, motors, valves, supports, generator, control panels, pressure gauge, bedding and backfill, fencing, pavement, site restoration and landscaping, SCADA coordination and integration, electrical service connection, utility services, and the furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown.

NOTE: Allowances for coordination and fees associated required for setup of utility services necessary for the operation of each pump station are included as separate pay items for the Contractor.

2.26 (680) FORCE MAIN CONNECTION TO EXISTING SAN FORCE MAIN

Method of Measurement

The quantity to be paid shall be the number installed per the plans and specifications.

Basis of Payment

The unit price stipulated per each connection to existing pipes, manholes or structures shall be irrespective of the depth, class and size of pipe and shall include furnishing and connecting, the pipe, pipe adapters and/or couplings, field coring or cutting existing manholes, fittings, bedding, backfilling, jointing material, bulkheads, concrete collars, rechanneling of the existing manhole invert as needed, removal and disposal of existing pipes and debris, pumping required for adequate handling of flow bypassing, and the furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown

2.27 (680) 3 INCH FORCE MAIN, AS PER PLAN
2.28 (680) 4 INCH FORCE MAIN, AS PER PLAN
2.29 (680) 6 INCH FORCE MAIN, AS PER PLAN

The work, method of construction and materials for sewer construction shall be in accordance with ODOT Item 611 with the modifications shown on the improvement plans and detailed in the specifications.

Method of Measurement

The quantity of sewer to be paid for shall be determined for pressure (force main) sewers by the linear feet difference in horizontal stationing from center of the downstream discharge manhole to the exterior edge of the valve vault for which the force main discharges from.

Basis of Payment

The unit price stipulated per lineal foot for pressure pipe of the various sizes and types specified shall be irrespective of class of pipe and depth and if not called out as a separate pay item, shall be

full compensation for maintenance of traffic for the duration of the project; earth and/or rock excavation for the pipe and foundation for same; removal of all materials at the surface of excavation or encountered subsurface that are necessary for placing the pipe; the complete removal of the existing sanitary and storm sewers, manholes and catch basins except materials listed separately where present; furnishing and placing granular or concrete bedding and special backfill as required, testing of compaction, constructing and subsequently removing all necessary boring and receiving pits, cofferdams, cribs, sheeting and shoring; furnishing, installing and operating necessary pumps, pipes and appurtenances necessary for flow bypassing and/or trench dewatering; sealing or banding all pipe joints where required; furnishing and installing of the pipe jointing materials and all necessary plugs, bulkheads, bends, fittings, specials and branches of a type at least equal to the conduit of which it becomes part; furnishing and installing concrete encasements, boring and steel casing pipe where required; protection, verification and/or replacement of all existing utilities, i.e., gas mains, gas connections water mains (including hydrants and their connections to the main), water connections, water wells, septic tanks, sanitary sewers, sanitary connections, storm sewers, storm connections, curb drains, catch basins, culverts, electric or telephone underground cables and/or underground connections if damaged by the Contractor; protection of existing trees or vegetation; joining of the pipe to existing and proposed manholes, catch basins, structures, and other appurtenances as required whether temporary or permanent; deflection and leakage testing or internal videotaping; disposal of all surplus and unsuitable materials; furnishing and installing temporary stone trench topping of pavement and driveways; removal and replacement of poles, posts, signs, mailboxes, paper boxes, fences, landscape timbers, guardrails, sign wiring, fixtures and other appurtenances; removal and replacement of any damaged curbing, sidewalk, driveways, parking lots and roadways as directed by the Engineer; and the furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown.

2.30 (680) AIR RELEASE VALVE AND VAULT WITH CLEANOUTS, AS PER PLAN

Method of Measurement

The number of each chamber with valves, piping, and all equipment and piping to be paid for shall be the actual number furnished and built in place in accordance with the contract drawings and with these specifications.

Basis of Payment

The unit price bid for valve vaults shall be irrespective of the depth of the structures, and shall include the furnishing and construction in place of the vaults complete with excavation; foundation; backfill; frame and cover; steps; concrete; steel reinforcement; lining material; bricks; mortar; plastering; precast manhole sections; transition; flexible joints; granular backfill under proposed or existing pavements, walks, drives, existing drainage structures, and disposal of all undesirable material; testing and inspections; piping, valves, cleanouts, and supports; couplers; and the furnishing of all labor, materials, tools and appliances necessary to complete the work as specified or as shown. Adjustments in final casting elevations of plus or minus one (1) foot shall be included in the price for each structure when the structure is in pavement. When out of pavement, the structure shall be constructed be three (3) inches above final grade.

2.31 (SPC) TEMPORARY SEDIMENT AND EROSION CONTROL, AS PER PLAN

Basis of Payment

The lump sum price shall include any and all labor, equipment, and materials including but not limited to silt fence, check dams, inlet protection, silt ponds, and temporary seeding to provide sediment and erosion control commensurate with the Contractor's means, methods, work schedule, and in accordance with plan details and specifications, if any. Payment shall be made progressively throughout the contract period in proportion to the percentage of work complete or as otherwise approved by the Engineer.

2.32 (SPC) UTILITY SUPPORT AND COORDINATION

Basis of Payment

An allowance has been included in the bid proposal to be utilized as directed on the Plans or by the Engineer for direct costs charged by utility company(s) associated with the support of existing poles and lines within the work zone of the proposed improvements. Payment shall be made for only work which has the prior approval of the Engineer.

No payment for this item will be made to the Contractor for utility work required when resulting from the Contractor’s construction methods or rework due to their negligence or construction methods.

2.33 (SPC) UTILITY COMPANY COORDINATION ALLOWANCE

Basis of Payment

An allowance has been included in the bid proposal to be utilized as directed by the Engineer for direct costs charged by utility company(s) associated with the providing new service or other work which can be performed only/exclusively by the utility company. Payment shall be made for only work which has the prior approval of the engineer.

The contractor shall be allowed a 5% mark-up on the invoice amount for overhead and profit.

Invoices for all work completed by the utility company(s) or others hall be submitted as evidence of the work completed on the project.

No payment for this item will be made to the Contractor for utility work required when resulting from the Contractor’s construction methods or rework due to his negligence or construction methods.

Any portion of the allowance not utilized shall be credited to the Owner.

TITLE 18, U.S.C. , SECTION 874

KICKBACKS FROM PUBLIC WORKS EMPLOYEES

Whoever, by force, intimidation, or threat of procuring dismissal from employment, or by any other manner whatsoever induces any person employed in the construction, prosecution, completion or repair of any public building, public work, or building or work financed in whole or in part by loans or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

The contractor agrees to comply with federal clean air and water standards during the performance of this contract and specifically agrees to do the following:

a. The term "facility" means (a) any building, plant, installation, structure, mine, vessel or other floating craft, location or site of operations (b) owned, leased or supervised (c) by the contractor and subcontractor (d) for the construction, supply and service contracts entered into by the contractor;

b. That any facility to be utilized in the accomplishment of this contract becomes listed on the EPA list, this contract may be canceled, terminated or suspended in whole or in part;

c. That in the event a facility utilized in the accomplishment of this contract becomes listed on the EPA list, this contract may be canceled, terminated or suspended in whole or in part;

d. That it will comply with all the requirements of Section 114 of the Air Act and Section 308 of the Water Act relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308, respectively, and all regulations and guidelines issued thereunder;

e. That it will promptly notify the government of the receipt of any notice from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that any facility utilized or to be utilized in the accomplishment of this contract is under consideration for listing on the EPA List of Violating Facilities;

f. That it will include the provisions of paragraphs "a" through "g" in every subcontract or purchase order entered into for the purpose of accomplishing this contract, unless otherwise exempted pursuant to the EPA regulations implementing the Air or Water Act (40 CFR, Part 15.5), so that such provisions will be binding upon each subcontractor or vendor;

g. That in the event that the contractor or the subcontractors for the construction, supply and service contracts entered into for the purpose of accomplishing this contract were exempted from complying with the above requirements under the provisions of 40 CFR, Part 15.5(a), the exemption shall be nullified should the facility give rise to a criminal conviction (See 40 CFR, part 15.20) during the accomplishment of this contract. Furthermore, with the nullification of the exemption, the above requirements shall be effective. The contractor shall notify the government, as soon as the contractor's or the subcontractors' facility is listed for having given rise to a criminal conviction noted in 40 CFR, Part 15.20.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

April 18, 2022

M-22-11

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Shalanda D. Young
Director

SUBJECT: Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act ("IIJA"), Pub. L. No. 117-58, which includes the Build America, Buy America Act ("the Act"). Pub. L. No. 117-58, §§ 70901-52. The Act strengthens Made in America Laws[1] and will bolster America's industrial base, protect national security, and support high-paying jobs. The Act requires that no later than May 14, 2022—180 days after the enactment of the IIJA—the head of each covered Federal agency[2] shall ensure that "none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States."[3]

The Act affirms, consistent with Executive Order 14005, *Ensuring the Future Is Made in All of America by All of America's Workers* ("the Executive Order"), this Administration's priority to "use terms and conditions of Federal financial assistance awards to maximize the use of goods, products, and materials produced in, and services offered in, the United States."[4]

The Act provides statutory authorities for the Made in America Office ("MIAO") in the Office of Management and Budget ("OMB") to maximize and enforce compliance with Made in

[1] "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to Federal financial assistance awards or Federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States. Made in America Laws include laws requiring domestic preference for maritime transport, including the Merchant Marine Act of 1920 (Pub. L. No. 66-261), also known as the Jones Act. Exec. Order No. 14,005, 86 Fed. Reg. 7475, § 2(b) (Jan. 28, 2021), *available at* https://www.federalregister.gov/documents/2021/01/28/2021-02038/ensuring-the-future-is-made-in-all-of-america-by-all-of-americas-workers. Made in America Laws also include laws that give preference to Indian-owned and -controlled businesses, such as the Buy Indian Act (25 U.S.C. 47), that produce items in the United States.

[2] For the purposes of this guidance, the terms "Federal agency" and "agency" mean any authority of the United States that is an "agency" (as defined in section 3502 of title 44, United States Code), other than an independent regulatory agency (as defined in that section). IIJA, § 70912(3).

[3] IIJA, § 70914(a).

[4] Exec. Order No. 14,005 (see footnote 1).

America Laws.[5] MIAO aims to increase reliance on domestic supply chains and reduce the need for waivers through a strategic process aimed at: achieving consistency across agencies; gathering data to support decision-making to make U.S. supply chains more resilient; bringing increased transparency to waivers in order to send clear demand signals to domestic producers; and concentrating efforts on changes that will have the greatest impact.[6]

This memorandum provides implementation guidance to Federal agencies on the application of: (1) a "Buy America" preference[7] to Federal financial assistance programs for infrastructure; and (2) a transparent process to waive such a preference, when necessary. A Federal financial assistance program for infrastructure is any program under which an award may be issued for an infrastructure project, regardless of whether infrastructure is the primary purpose of the award. The term "project" means any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States.[8]

Agencies should determine how this guidance is best applied to their infrastructure programs and processes, and consult with OMB, as needed, on establishing criteria, processes, and procedures for applying a Buy America preference and issuing waivers. OMB may update or provide additional guidance, as appropriate, to further assist agencies in the implementation of a Buy America preference.

I. Application of a Buy America Preference

By May 14, 2022, agencies must ensure that all applicable programs comply with section 70914 of the Act, including by the incorporation of a Buy America preference in the terms and conditions of each award with an infrastructure project.[9] The Act requires the following Buy America preference:

(1) All iron and steel used in the project are produced in the United States. This means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) All manufactured products used in the project are produced in the United States. This means the manufactured product was manufactured in the United States, and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation.

[5] IIJA, § 70923(a) & (b)(1).
[6] OMB Memorandum M-21-26, Increasing Opportunities for Domestic Sourcing and Reducing the Need for Waivers from Made in America Laws available at: https://www.whitehouse.gov/wp-content/uploads/2020/11/M-21-06.pdf
[7] For the purposes of this guidance, a "Buy America" preference is a domestic content procurement preference as defined in IIJA, § 70912(2).
[8] IIJA, § 70912 (5) & (7).
[9] See Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials.

(3) All construction materials are manufactured in the United States. This means that all manufacturing processes for the construction material occurred in the United States.[10, 11]

II. Applicability to Federal Financial Assistance Programs

This guidance applies to all Federal financial assistance as defined in section 200.1 of title 2, Code of Federal Regulations[12]—whether or not funded through IIJA—where funds are appropriated or otherwise made available and used for a project for infrastructure. Federal financial assistance means assistance that non-Federal entities receive or administer in the form of grants, cooperative agreements, non-cash contributions or donations of property, direct assistance, loans, loan guarantees, and other types of financial assistance. The term "non-Federal entity" includes States, local governments, territories, Indian tribes, Institutions of Higher Education (IHE), and nonprofit organizations.[13]

For purposes of this guidance, for-profit organizations are not considered non-Federal entities. However, this guidance does not alter independent statutory authorities that agencies may have to include domestic content requirements in awards of Federal financial assistance issued to for-profit organizations.

Federal agencies are encouraged to consult with OMB if they are uncertain about the applicability of this guidance to any particular infrastructure program.

Before applying a Buy America preference to a covered program that will affect Tribal communities, Federal agencies should follow the consultation policies established through Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, and consistent with policies set forth in the Presidential Memorandum of January 26, 2021, on Tribal Consultation and Strengthening Nation-Nation Relationships. Federal agencies should commence consultation promptly.

This guidance does not apply to "expenditures for assistance authorized under section 402, 403, 404, 406, 408, or 502 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170a, 5170b, 16 5170c, 5172, 5174, or 5192) relating to a major disaster or emergency declared by the President under section 401 or 501, respectively, of such Act (42 U.S.C. 5170, 5191) or pre and post disaster or emergency response expenditures."[14] "[P]re and post disaster or emergency response expenditures" consist of expenditures for financial assistance that are (1) authorized by statutes other than the Stafford Act, 42 U.S.C. §§ 5121 et seq., and (2) made in anticipation of or response to an event or events that qualify as an "emergency" or "major disaster" within the meaning of the Stafford Act, *id.* § 5122(1), (2). Awards made to support the construction or improvement of infrastructure to mitigate the damage that may be caused by a non-imminent future emergency or disaster, such as awards

[10] IIJA, § 70912 (2) & (6)(B)(ii).
[11] See Section VIII. of this guidance for more information on construction materials.
[12] IIJA § 70912(4)(A)
[13] *See* 2 C.F.R. § 200.1.
[14] IIJA § 70912(4)(B)

made under FEMA's Flood Mitigation Assistance program,[15] do not qualify as "pre and post disaster or emergency response expenditures."

Subawards should conform to the terms and conditions of the Federal award from which they flow.[16]

The IIJA's definition of "infrastructure" encompasses public infrastructure projects. Thus, the term "infrastructure" includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property.[17] Agencies should treat structures, facilities, and equipment that generate, transport, and distribute energy - including electric vehicle (EV) charging - as infrastructure.

When determining if a program has infrastructure expenditures, Federal agencies should interpret the term "infrastructure" broadly and consider the definition provided above as illustrative and not exhaustive. When determining if a particular construction project of a type not listed in the definition above constitutes "infrastructure," agencies should consider whether the project will serve a public function, including whether the project is publicly owned and operated, privately operated on behalf of the public, or is a place of public accommodation, as opposed to a project that is privately owned and not open to the public. Projects with the former qualities have greater indicia of infrastructure, while projects with the latter quality have fewer. Projects consisting solely of the purchase, construction, or improvement of a private home for personal use, for example, would not constitute an infrastructure project. Federal agencies are strongly encouraged to consult with OMB when making such determinations.

Agencies should consult with MIAO regarding their readiness to apply the requirements of the Act to covered programs. Agencies with questions regarding the application of a Buy America preference to agency-specific programs, including questions about the possible use of waivers during adjustment periods as agencies work to implement the Act, are advised to reach out to MIAO for technical assistance and advice.

III. Consistency with International Agreements

Pursuant to section 70914(e) of the Act, this guidance must be applied in a manner consistent with the obligations of the United States under international agreements.

IV. Avoid Unnecessary Disruption

The Act makes clear that its preferences apply to a Federal financial assistance program for infrastructure only to the extent that a domestic content procurement preference as described

[15] *See* 42 U.S.C. § 4104c.
[16] 2 CFR 200.101 (b) (2)
[17] IIJA, § 70912(5).

in section 70914 of the Act does not already apply to iron, steel, manufactured products, and construction materials.[18] Agencies should consider whether existing domestic content requirements meet the standards in the Act, as described in this memorandum. Agencies must make necessary changes to come into compliance with the Act's requirements, while preserving policies and provisions that already meet or exceed the standards required by the Act. For example, a program in which the standards for iron and steel already meet the standards in the Act may nevertheless be required to adopt new standards for manufactured products and construction materials. Maintaining current policies where appropriate avoids unnecessary disruption to programs, or elements of programs, that already meet or exceed Build America, Buy America requirements.

V. Effective Date for Awards

Agencies must ensure that, starting on May 14, 2022, all Federal financial assistance programs for infrastructure comply with the requirements of section 70914 of the Act. Therefore, new awards made on or after May 14, 2022, must take appropriate steps to ensure financial assistance awards comply with these requirements, which may include appropriate terms and conditions[19] incorporating a Buy America preference. Renewal awards and amendments obligating additional funds to existing awards that are executed on or after May 14, 2022, must also include a Buy America preference. This means that agencies must include a Buy America preference in awards issued on or after May 14, 2022, even if Notices of Funding Opportunities for those awards did not include a Buy America preference. In these cases, agencies may consider whether public interest waivers may be needed to avoid undue increases in the time and cost of a project. Similarly, public interest waivers may be needed for awards and amendments made on or after May 14, 2022, where budgets for purchase of covered materials have already been agreed upon (including if materials have been ordered and construction has begun). Consistent with the guidance provided below, agencies should issue waivers judiciously and clearly communicate to recipients the limitations and conditions of any such waivers.

VI. Articles, Materials, and Supplies for Infrastructure

A Buy America preference, as defined in section I of this guidance, only applies to the iron and steel, manufactured products, and construction materials used for the infrastructure project under an award. If an agency has determined that no funds from a particular award under a covered program will be used for infrastructure, a Buy America preference does not apply to that award. Similarly, for a covered program, a Buy America preference does not apply to non-infrastructure spending under an award that also includes a covered project. A Buy America preference applies to *an entire infrastructure project*, even if it is funded by both Federal and non-Federal funds under one or more awards.

A Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply

[18] IIJA, § 70917(a) &(b).
[19] See Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials for exemplary language.

to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of or permanently affixed to the structure.

For the purposes of this guidance, an article, material, or supply should only be classified into *one* of the following categories: (1) iron or steel; (2) a manufactured product; or (3) a construction material. For ease of administration, an article, material, or supply should not be considered to fall into multiple categories. Agencies should apply the iron and steel test to items that are predominantly iron or steel, unless another standard applies under law or regulation.

Any waivers from these requirements must be in writing and meet the requirements of section 70914(b).

VII. Issuing Buy America Waivers

Pursuant to Section 70914(c) of the Act, the head of a Federal agency may waive the application of a Buy America preference under an infrastructure program in any case in which the head of the Federal agency finds that—

(1) applying the domestic content procurement preference would be inconsistent with the public interest (a "public interest waiver");
(2) types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a "nonavailability waiver"); or
(3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (an "unreasonable cost waiver").

Federal agencies are responsible for processing and approving all waivers, including waivers requested by recipients and on behalf of subrecipients. To the greatest extent practicable, waivers should be targeted to specific products and projects.[20]

Before issuing a waiver, the head of the Federal agency must make publicly available on the agency's website a detailed written explanation for the proposed determination to issue the waiver and provide at least 15 days for public comment on the proposed waiver.[21] General applicability waivers are subject to a minimum 30-day public comment period.[22] By April 29, 2022, agencies should provide the website address where they will be posting proposed waivers for public comment to MBX.OMB.MadeInAmerica@omb.eop.gov. Pursuant to sections 70914(c) and 70937 of the Act, the waiver must be cross-posted to a centralized waiver transparency website managed by GSA, BuyAmerican.gov,[23] no later than November 15, 2022.

[20] See Section VII of this guidance for information on waiver principles and criteria.
[21] Executive Order, § 4(b)(i)(2); IIJA, § 70914(c); IIJA, § 70937 (note that "Buy American" as used in this section also refers to Buy America preferences, per IIJA, § 70932(1)).
[22] IIJA § 70914(d)(2)(A)(ii). See Section VII of this guidance for information on general applicability waivers.
[23] BuyAmerican.gov redirects to MadeInAmerica.gov.

To minimize duplication and promote efficiency, MIAO and GSA will coordinate with agencies on the expansion of the existing website's functionality to display waivers for Federal financial assistance and provide further instructions to agencies as necessary.

Federal agencies are responsible for performing due diligence and approving or rejecting waivers consistent with the Act, this guidance, and any other applicable Buy America laws. Federal agencies should notify MIAO in advance of posting an award- or project-level proposed waiver for public comment. However, Federal agencies must consult with MIAO for proposed waivers with broader applicability (such as a general applicability waiver) before posting them for public comment. The purpose of the consultation is to identify any opportunities to structure the waiver in order to maximize the use of goods, products, and materials produced in the United States to the greatest extent possible consistent with law. Federal agencies should send proposed waivers for review to MBX.OMB.MIAwaivers@omb.eop.gov.

Federal agencies must submit to MIAO a proposed waiver for review after the public comment period has concluded. MIAO will review the proposed waiver to determine if it is consistent with applicable law and policy,[24] and will notify the Federal agency of its determination.

All waiver requests must include a detailed justification for the use of goods, products, or materials mined, produced, or manufactured outside the United States[25] and a certification that there was a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with potential suppliers.[26] In addition, at a minimum and to the greatest extent practicable, each proposed waiver submitted to MIAO should include the following information, as applicable:

- Waiver type (nonavailability, unreasonable cost, or public interest)
- Recipient name and Unique Entity Identifier (UEI)
- Federal awarding agency organizational information (e.g., Common Government-wide Accounting Classification (CGAC) Agency Code)
- Financial assistance listing name and number
- Federal financial assistance program name
- Federal Award Identification Number (FAIN) (if available)
- Federal financial assistance funding amount
- Total cost of infrastructure expenditures, including all Federal and non-Federal funds (to the extent known)
- Infrastructure project description and location (to the extent known)
- List of iron or steel item(s), manufactured products, and construction material(s) proposed to be excepted from Buy America requirements, including name, cost, country(ies) of origin (if known), and relevant PSC and NAICS code for each.
- A certification that the Federal official or assistance recipient made a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with the prime contractor.

[24] Executive Order, § 4(c).
[25] IIJA, § 70937(c)(2)(A).
[26] IIJA, § 70937(c)(2)(D).

- A statement of waiver justification, including a description of efforts made (e.g., market research, industry outreach), by the Federal awarding agency and, and in the case of a project or award specific waiver, by the recipient, in an attempt to avoid the need for a waiver. Such a justification may cite, if applicable, the absence of any Buy America-compliant bids received in response to a solicitation.
- Anticipated impact if no waiver is issued.
- Any relevant comments received through the public comment period.

The purpose of the information is to ensure that the agency has adequate information to perform due diligence, that MIAO has sufficient information to determine whether the proposed waiver is consistent with law and policy, and that sufficient information is available for public review. Information provided for public review should help interested manufacturers gauge the demand for products for which agencies are considering waiving a Buy America preference.

To avoid a need for duplicative waiver requests from entities that receive funding for one infrastructure project through multiple Federal agencies, the Federal agency contributing the greatest amount of Federal funds for the project should be considered the "Cognizant Agency for Made in America" and should take responsibility for coordinating with the other Federal awarding agencies. Such coordination will provide uniform waiver criteria and adjudication processes, minimize duplicative efforts among Federal agencies, and reduce burdens on recipients. The Cognizant Agency for Made in America shall be responsible for consulting with the other Federal awarding agencies, publicizing the proposed joint waiver, and submitting the proposed joint waiver for review to MIAO.

a. Exceptions for Unforeseen and Exigent Circumstances

In limited situations where there is an urgent need in an unforeseen and exigent circumstance, agencies have the authority to waive the application of Buy America preferences without submitting the waiver for public comment and MIAO determination.[27] As an exception to the public transparency requirements of the Act, agencies should exercise that authority only when necessary. Further, to ensure MIAO can fulfill its role as a central and transparent source of Made in America waivers, an agency that issues a waiver without first seeking public comment and MIAO approval must, within 30 days of the waiver's issuance, submit a report to MIAO explaining its reliance upon the "unforeseen and exigent circumstance" exception.[28] MIAO will provide further instructions to agencies on how to submit those reports. Although public posting and MIAO review may be waived in exigent circumstances, agencies remain responsible for performing due diligence appropriate to the circumstances, consistent with the principles and criteria in paragraphs VII(b) and (c) below.

[27] IIJA, § 70937(b)(2).
[28] This reporting process was established pursuant to Executive Order 14,005, § 4(d) and OMB Guidance on Improving the Transparency of Made in America Waivers available at: https://www.whitehouse.gov/wp-content/uploads/2021/10/Guidance-Memo-Improving-the-Transparency-of-Made-in-America-Waivers.pdf.

b. Waiver Principles and Criteria

To ensure they are scrupulously monitoring, enforcing, and complying with applicable Buy America Laws and minimizing the use of waivers,[29] agencies must apply standard criteria to determine whether to grant a waiver in a given circumstance. Agencies with existing criteria must review it for consistency with this guidance and update it as appropriate. All other agencies must establish criteria.

Agencies may reject or grant waivers in whole or in part. To the greatest extent practicable, waivers should be issued at the project level and be product-specific. Overly broad waivers undermine market signals designed to boost domestic supply chains, particularly for key articles, materials and supplies in critical supply chains (i.e., critical supply chains identified in Executive Order 14017, *America's Supply Chains*). When necessary, agencies may consider issuing a waiver that has applicability beyond a single project; however, agencies should always issue, construe, and apply waivers to ensure the maximum utilization of goods, products, and materials produced in the United States, consistent with applicable law. Federal agencies may consult with MIAO when establishing or modifying criteria for granting waivers. They may also work within the Made in America Council, a practice that will help to foster consistency across agencies to the greatest extent practical and appropriate, given agency and program missions.

Federal agencies should use the following principles before issuing a waiver of any type:

- **Time-limited**: In certain limited circumstances, a Federal agency may determine that a waiver should be constrained principally by a length of time, rather than by the specific projects to which it applies. Waivers of this type may be appropriate, for example, when an item that is "nonavailable" is widely used in projects funded by a particular program's awards. When issuing such a waiver, the agency should identify a short, definite time frame (e.g., no more than one to two years) designed to ensure that, as domestic supply becomes available, domestic producers will have prompt access to the market created by the program.
- **Targeted**: Waivers that are not limited to particular projects should apply only to the item(s), product(s), or material(s) or category(ies) of item(s), product(s), or material(s) necessary. Waivers that are overly broad will tend to undermine domestic preference policies. Broader waivers will receive greater scrutiny from MIAO.
- **Conditional**: Federal agencies are encouraged to issue waivers with specific conditions that support the policies of the Act and the Executive Order.

These principles and criteria should be viewed as minimum requirements for the use of waivers by Federal agencies.[30]

<u>Nonavailability Waivers</u>

Before granting a nonavailability waiver, agencies should consider whether the recipient has performed thorough market research, which may be accomplished with assistance from the agency, and adequately considered, where appropriate, qualifying alternate items, products, or

[29] IIJA § 70933(2).
[30] See Section IV. of this guidance for agencies that have existing regulations or guidance.

materials. Waivers should describe the market research activities and methods to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources. Agencies are encouraged to engage with the Made in America Council to develop resource lists for common items, goods, or materials.

Unreasonable Cost Waivers

An unreasonable cost waiver is available if the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent. Before granting an unreasonable-cost waiver, to the extent permitted by law, agencies should ensure the recipient has provided adequate documentation that no domestic alternatives are available within this cost parameter. Agencies may assist recipients in gathering documentation.

For requests citing unreasonable cost as the statutory basis of the waiver, the waiver justification must include, as applicable, a comparison of the cost of the domestic product to the cost of the foreign product or a comparison of the overall cost of the project with domestic products to the overall cost of the project with foreign-origin products, pursuant to the requirements of the applicable Made in America law.[31] Publicly available cost comparison data may be provided in lieu of proprietary pricing information.[32] Unreasonable-cost waivers should be no broader than necessary.

Public Interest Waivers

A waiver in the public interest may be appropriate where an agency determines that other important policy goals cannot be achieved consistent with the Buy America requirements established by the Act and the proposed waiver would not meet the requirements for a nonavailability or unreasonable cost waiver. Such waivers shall be used judiciously and construed to ensure the maximum utilization of goods, products, and materials produced in the United States.[33] To the extent permitted by law, determination of public interest waivers shall be made by the head of the agency with the authority over the Federal financial assistance award.[34]

Public interest waivers may have a variety of bases. As with other waivers, they should be project-specific whenever possible, as what is in the public interest may vary depending upon the circumstances of the project, recipient, and specific items, products, or materials in question.

Federal agencies may wish to consider issuing a limited number of general applicability public interest waivers in the interest of efficiency and to ease burdens for recipients. The agency remains responsible for determining whether such a waiver is appropriate to apply to any

[31] IIJA, § 70937(c)(2)(B).
[32] IIJA, § 70937(c)(2)(B).
[33] IIJA, § 70935(a).
[34] IIJA, § 70935(b).

given project; the Made in America Office will not review each application of such a waiver. The following are examples of types of public interest waivers an agency may consider issuing.[35]

- **De Minimis**: Ease of administration is important to reduce burden for recipients and agencies. Federal agencies may consider whether a general applicability public interest waiver should apply to infrastructure project purchases below a de minimis threshold. An agency may consider whether a public interest waiver should apply when necessary to ensure that recipients and Federal agencies make efficient use of limited resources, especially if the cost of processing the individualized waiver(s) would risk exceeding the value of the items waived. Agencies may consider adopting an agency-wide public interest waiver that sets a de minimis threshold, for example, of 5 percent of project costs up to a maximum of $1,000,000.
- **Small Grants**: Agencies may wish to consider whether it is in the public interest to waive application of a Buy America preference to awards below the Simplified Acquisition Threshold. This type of waiver may be particularly relevant in the initial years after enactment of IIJA, and may be phased out over time as agencies develop efficient waiver review capabilities.
- **Minor Components**: Agencies may wish to consider whether it is in the public interest to allow minor deviations for miscellaneous minor components within iron and steel products. A minor components waiver in the public interest may allow non-domestically produced miscellaneous minor components comprising no more than 5 percent of the total material cost of an otherwise domestically produced iron and steel product to be used. It would not be in the public interest to use a minor components waiver to exempt a whole product from the iron and steel requirements, or to allow the primary iron or steel components of the product to be produced other than domestically.
- **Adjustment Period**: Agencies should consider whether brief, time limited waivers to allow recipients and agencies to transition to new rules and processes may be in the public interest.
- **International Trade Obligations**: If a recipient is a State that has assumed procurement obligations pursuant to the Government Procurement Agreement or any other trade agreement, a waiver of a Made in America condition to ensure compliance with such obligations may be in the public interest.
- **Other Considerations**: A waiver may be in the public interest in one circumstance, but not in another, and considerations will depend upon the nature and amount of resources available to the recipient, the value of the items, goods, or materials in question, the potential domestic job impacts, and other policy considerations, including sustainability, equity, accessibility, performance standards, and the domestic content (if any) of and conditions under which the non-qualifying good was produced.

All proposed waivers citing the public interest as the statutory basis must include a detailed written statement, which shall address all appropriate factors, such as potential

[35] The list is not exhaustive and no agency is required to issue the types of waivers noted as examples. As with other general applicability waivers, generally applicable public interest waivers must be reviewed at least every five years and more often as appropriate.

obligations under international agreements, justifying why the requested waiver is in the public interest.[36]

Before granting a waiver in the public interest, to the extent permitted by law, agencies shall assess whether a significant portion of any cost advantage of a foreign-sourced product is the result of the use of dumped steel, iron, or manufactured products or the use of injuriously subsidized steel, iron, or manufactured products.[37] Agencies may consult with the International Trade Administration (ITA) in making this assessment if the granting agency deems such consultation to be helpful. The agency shall integrate any findings from the assessment into its waiver determination as appropriate.[38] MIAO will work with ITA and agencies to develop standard processes to expedite this required assessment, such as by ensuring agencies know how to easily access lists of dumped or injuriously subsidized products.

c. General Applicability Waivers

The term "general applicability waiver" refers to a waiver that applies generally across multiple awards. A general applicability waiver can be "product-specific" (e.g., applies only to a product or category of products) or "non-product specific" (e.g., applies to all "manufactured products").

General applicability waivers should be issued only when necessary to advance an agency's missions and goals, consistent with IIJA, the Executive Order, and this guidance. For example, an agency might issue a general waiver for a product for which there are well-established domestic sourcing challenges. General applicability waivers will require appropriate justification from the Federal agency.

Federal agencies with one or more existing general applicability waivers, including public interest waivers, must review such waivers within five years of the date on which the waiver was issued. Agencies issuing new general applicability waivers must review such waivers at least every five years from the date of issuance. Agencies are encouraged to review general applicability waivers more frequently, when appropriate. In conducting a review of any general applicability waiver, the head of a Federal agency shall—

(A) publish in the *Federal Register* a notice that—
    (i) describes the justification for a general applicability waiver; and
    (ii) requests public comments for a period of not less than 30 days on the continued need for a general applicability waiver; and

(B) publish in the *Federal Register* a determination on whether to continue or discontinue the general applicability waiver, considering the comments received in response to the notice published under paragraph (A).[39]

[36] IIJA, § 70937(c)(2)(C).
[37] Executive Order, § 5.
[38] Executive Order, § 5.
[39] IIJA, § 70914(d)(1) & (2).

For a period of five years beginning on the date of enactment of the Act, paragraphs (A) and (B) above shall not apply to any product-specific general applicability waiver that was issued more than 180 days before November 15, 2021.[40]

By no later than November 15, 2022, agencies with existing, non-product specific general applicability waivers that were issued more than five years before November 15, 2021 should promptly commence review of each such waiver by publishing a *Federal Register* notice as required in section 70914(d)(2)(A) of the IIJA. Should the review justify retaining the waiver, agencies should consider narrowing the waiver in a manner that would support supply chain resilience and boost incentives to manufacture key products domestically, as appropriate.

To ensure prompt commencement of projects funded by IIJA, MIAO plans to work with agencies to expedite consideration of general applicability waivers for products or categories of products for which domestic sourcing challenges have been well documented. Agencies should align such waivers with complementary policies, such as work to boost supply chain resiliency and domestic employment. General applicability waivers should include appropriate expiration dates designed to ensure that, once available, Buy America qualifying products receive appropriate consideration.

VIII. Preliminary Guidance for Construction Materials

For construction materials, the Act requires that, not later than 180 days after November 15, 2021, OMB must issue standards that define the term "all manufacturing processes" in the case of construction materials. These standards must require that each manufacturing process required for the manufacture of the construction material and the inputs of the construction material occurs in the United States. They must also reflect efforts to maximize the direct and indirect jobs benefited or created in the production of the construction material.[41]

Although the deadline to issue such guidance has not yet passed, OMB is providing preliminary and non-binding guidance to assist agencies in determining which materials are construction materials so that agencies can begin applying Buy America requirements to those materials. This preliminary guidance addresses the requirements as set forth in section 70915(b) of the IIJA while providing sufficient time for OMB to receive additional stakeholder input.

The IIJA finds that "construction materials" includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives[42]—that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);

[40] IIJA, § 70914(d)(3).
[41] IIJA, § 70915(b).
[42] IIJA, § 70917(c)(1).

- lumber; or
- drywall.[43]

To provide clarity to item, product, and material manufacturers and processers, we note that items that consist of two or more of the listed materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. For example, a plastic framed sliding window should be treated as a manufactured product while plate glass should be treated as a construction material.

Pending OMB's issuance of final standards on construction materials, and absent any existing applicable standard in law or regulation that meets or exceeds these preliminary standards, agencies should consider "all manufacturing processes" for construction materials to include at least the final manufacturing process and the immediately preceding manufacturing stage for the construction material. OMB is seeking additional stakeholder input before issuing further guidance identifying initial manufacturing processes for construction materials that should be considered as part of "all manufacturing processes."

Agencies should consult with MIAO, as needed, to ensure that any waiver issued for construction materials is explicitly targeted and time-limited, in order to send a clear market signal that additional standards for "all manufacturing processes" in the case of construction materials will be forthcoming.

[43] See IIJA, § 70911(5).

Appendix I: Example of Award Term - Required Use of American Iron, Steel, Manufactured Products, and Construction Materials

Where applicable, the Federal agency must include appropriate terms and conditions in all awards, in accordance with applicable legal requirements and its established procedures, in order to effectuate the requirements of the Act and this guidance. The following is sample language.

To achieve the greatest possible consistency across agencies and programs, agencies should send their proposed terms and conditions to MIAO for review prior to incorporating them into applicable awards. Agencies should begin including appropriate language in NOFOs published *before* May 14, 2022 to provide applicants fair notice of the Buy America conditions that will apply to funds obligated on or after that date.

** ** **

Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

(1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

(3) all construction materials[44] are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

[44] Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

Waivers

When necessary, recipients may apply for, and the agency may grant, a waiver from these requirements. The agency should notify the recipient for information on the process for requesting a waiver from these requirements.

(a) When the Federal agency has made a determination that one of the following exceptions applies, the awarding official may waive the application of the domestic content procurement preference in any case in which the agency determines that:

(1) applying the domestic content procurement preference would be inconsistent with the public interest;

(2) the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or

(3) the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent.

A request to waive the application of the domestic content procurement preference must be in writing. The agency will provide instructions on the format, contents, and supporting materials required for any waiver request. Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office.

There may be instances where an award qualifies, in whole or in part, for an existing waiver described at [link to awarding agency web site with information on currently applicable general applicability waivers].

Definitions[45]

"Construction materials" includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives[46]—that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

[45] Federal agencies may choose to provide definitions on a public-facing website and reference that website in the terms and conditions, rather than including all definitions in the terms and conditions itself. If an agency chooses to do provide definitions on a public-facing website, it is not considered a deviation from the terms and conditions provided and does not need to be reviewed by OMB.
[46] IIJA, § 70917(c)(1).

“Domestic content procurement preference’’ means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

“Infrastructure” includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

‘‘Project’’ means the construction, alteration, maintenance, or repair of infrastructure in the United States.

BID FORMS

The bid forms are not available online. The bid forms are available only by purchasing a set of plans and specifications at the location indicated in the Advertisement for Bids/Public Notice to Bidders.

SECTION 2
CONTRACT FORMS

NOTICE OF AWARD

TO: «ContractName» DATE: _____
«ContractAddr»
«ContractCity», «ContractState» «ContractZip»

PROJECT: «TitleCaps»

You are notified that your Bid which was opened on «Bidopening» has been accepted for items in the amount of «ContractDollars» at the unit bid prices as reflected in the bid tabulation contained herein for the ***(fill in awarded parts, i.e. for Base Bid and Alternate C, …….. or delete)***.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Bonds, Certificates of Insurance, and other documents within 10 calendar days from the date of receipt of this Notice.

Failure to comply with these conditions within the time specified will entitle Owner to consider your Bid in default, to annul this Notice and to declare your Bid Security forfeited.

The Owner will return to you one (1) fully signed set of the contract documents.

ACKNOWLEDGMENT OF AWARD

ASHTABULA COUNTY BOARD OF COMMISSIONERS

_____
Lisa Hawkins, County Clerk of the Commissioners

ACKNOWLEDGMENT

«ContractCAPName»

_____
«ContractFirst» «ContractLast», «ContractTitle»

CONTRACT

FOR «TitleCaps»

THIS CONTRACT, made and entered into at «OwnerCity», «OwnerState», this _____ day of _____, 20____, by and between the «OwnerMuni» ("OWNER"), «OwnerState» and «ContractName» ("CONTRACTOR").

WITNESSETH: That the said CONTRACTOR has agreed and by this presents does agree with the OWNER for the consideration hereinafter mentioned and contained, and under penalty expressed in a bond given with these presents, and herein contained or hereunto annexed, to furnish at its own cost and expense, all the necessary tools, equipment, materials, labor, and tests in an expeditious, substantial and workmanlike manner, the equipment and appurtenances herein contemplated, commencing work within 20 days from the date of the Notice to Proceed and executing the work within the time and in the manner specified and in conformity with the requirements set forth in this Contract.

The following form essential parts of the Contract (may vary with project).

1. Advertisement for Bids/Public Notice to Bidders
2. Instruction to Bidders
3. Bid Forms and Proposal
4. Contract Forms and Exhibits
5. Contract Bond – ORC 153.571 or ORC 153.57
6. Contract Provisions
7. General Conditions
8. Supplementary Conditions
9. Specifications
10. Specific Project Requirements
11. Prevailing Wage Rate Schedule
12. Contract Drawings; if any.
13. Addenda; if any.

The CONTRACTOR agrees and understands that the work on this contract shall be subject to the acceptance of the OWNER based upon and in accordance with the contract specifications and contract plans and drawings on file in the office of the OWNER.

The CONTRACTOR agrees that each individual employed by the CONTRACTOR or any Subcontractor and engaged in work on the project under this contract shall be paid by prevailing wage established by the Department of Industrial Relations of the State of Ohio or the U.S. Department of Labor (Davis-Bacon Act) as detailed in the section titled "Wage Rates." This shall occur regardless of any contractual relationship which may be said to exist between the Contractor or any Subcontractor and such individual. ***(if a School District, delete this paragraph)***

The CONTRACTOR shall proceed with the said work in a prompt and diligent manner and shall do the several parts thereof. Further the CONTRACTOR shall complete the whole of said work in accordance with the specifications and contract drawings to the satisfaction of the OWNER on or before the time stated, and in default of completion within the time as fixed, the CONTRACTOR shall pay to the OWNER as liquidated damages, an amount equal to «Liquidated», for each and every day (Sundays and legal holidays excepted) the completion of the work may be delayed beyond the date fixed in the manner and as stipulated.

It is hereby mutually agreed that the OWNER is to pay and the CONTRACTOR is to receive, as full compensation for furnishing all materials and labor in building, constructing and testing and in all respect completing the herein described work and appurtenances in the manner and under the conditions herein specified, the prices stipulated in the proposal herein contained or hereto annexed and the total contract sum is «ContractDollars».

This Contract shall be in full force and effect from the date of execution by the OWNER and CONTRACTOR.

IN WITNESS WHEREOF: The OWNER and CONTRACTOR hereunto affixed their signature the day and year first mentioned above.

«ContractCAPName»

_____

«ContractFirst» «ContractLast», «ContractTitle»

«OwnerCaps»

_____

«OwnerCEOFirst» «OwnerCEOLast», «OwnerCEOTitle»

I hereby certify that funds in the amount of «ContractAmtwords» Dollars («ContractDollars») necessary for the foregoing Contract have been appropriated and are in the Treasury, or are in the process of collection, or are available through grants and/or loans from other funding sources.

_____

«OwnerFiscalFirst» «OwnerFiscalLast», «OwnerFiscalTitle»

APPROVED AS TO FORM:

_____

«OwnerLegalName», «OwnerLegalTitle»

THE CONTRACTOR SHALL FURNISH THE FOLLOWING ITEMS WITHIN 10 DAYS OF NOTIFICATION OF AWARD:

A) CERTIFICATE OF INSURANCE FOR CONTRACTOR'S PUBLIC LIABILITY INSURANCE POLICY AND AUTOMOTIVE INSURANCE POLICY

Owner, Verdantas LLC, CT Consultants, Inc., the Ohio EPA Director and the Ohio Water Development Authority Named as Additional Insured

B) CERTIFICATE OF INSURANCE FOR OWNER'S AND CONTRACTOR'S PROTECTIVE POLICY

Owner Named as Insured (No Additional Insured)

C) CERTIFICATE OF WORKER'S COMPENSATION

D) CONTRACT BOND THAT COMPLIES WITH ORC 153.54 AND 153.57

* D above is not required if a bond complying with ORC 153.54 and 153.571 (rollover bond) was submitted at time of bid.

DELINQUENT PERSONAL PROPERTY STATEMENT

STATE OF _____)
) SS
COUNTY OF _____)

«ContractName», having been awarded a contract by the «OwnerMuni», «OwnerState», hereby affirms under oath, pursuant to Ohio Revised Code Section 5719.042, that at the time the bid was submitted, my company **was / was not (CIRCLE ONE)** charged with delinquent personal property taxes on the General Tax List of Personal Property for «OwnerCounty» County, Ohio.

If such charge for delinquent personal property tax exists on the General Tax List of Personal Property for «OwnerCounty» County, Ohio, the amount of such due and unpaid delinquent taxes, including due and unpaid penalties and interest shall be set forth below.

A copy of this statement shall be transmitted by the Taxing District's Fiscal Officer to the County Treasurer within thirty days of the date it is submitted. A copy of this statement shall also be incorporated into the Contract made between «OwnerMuni», «OwnerState», and «ContractName», and no payment shall be made with respect to any Contract unless such statement has been so incorporated as a part thereof.

Delinquent Personal Property Tax	$_____
Penalties	$_____
Interest	$_____

«ContractCAPName»

_____
«ContractFirst» «ContractLast», «ContractTitle»

Subscribed and sworn to before me this _____ day of _____ , 20 _____.

_____
Notary Public

My Commission Expires: _____

AFFIDAVIT

OF COMPLIANCE WITH OHIO REVISED CODE SECTION 3517.13

STATE OF _____)
) SS
COUNTY OF _____)

_____ being duly sworn deposes and states as follows:

1. I am duly authorized to make the statements contained herein on behalf of _____ ("the Contracting Party").

2. The Contracting Party is a/an (select one):

   ☐ Individual, partnership, or other unincorporated business association (including without limitation, a professional association organized under Ohio Revised Code Chapter 1787), estate, or trust

   ☐ Corporation organized and existing under the laws of the State of _____

   ☐ Labor organization

3. I hereby affirm that the Contracting Party and each of the individuals specified in R.C. 3517.13(I) (with respect to non-corporate entities and labor organizations) or R.C. 3517.13(J) (with respect to corporations) are in full compliance with the political contribution limitations set forth in R.C. 3517.13(I) and (J), as applicable.

4. I understand that a false representation on this certification will incur penalties pursuant to 3517.992(R).

Affiant further sayeth naught.

By: _____

Title: _____

SWORN TO BEFORE ME and subscribed in my presence this _____ day of

_____, 20_____.

_____
Notary Public

My commission expires: _____

APPROVED SUBCONTRACTORS

PROJECT: «TitleCaps»

PRIME CONTRACTOR: «ContractName»

1. Name: _____

   Address: _____

   City/State/Zip: _____

   Description of Work to be Performed: _____

   Phone: ( ) _____ Amount: $ _____ % of Contract: _____

   EIN# _____ Unique Entity ID# _____

2. Name: _____

   Address: _____

   City/State/Zip: _____

   Description of Work to be Performed: _____

   _____

   Phone: ( ) _____ Amount: $ _____ % of Contract: _____

   EIN# _____ Unique Entity ID# _____

3. Name: _____

   Address: _____

   City/State/Zip: _____

   Description of Work to be Performed: _____

   Phone: ( ) _____ Amount: $ _____ % of Contract: _____

   EIN# _____ Unique Entity ID# _____

4. Name: _____

   Address: _____

   City/State/Zip: _____

   Description of Work to be Performed: _____

   Phone: ( ) _____ Amount: $ _____ % of Contract: _____

   EIN# _____ Unique Entity ID# _____

«OwnerCaps»

_____

«OwnerCEOFirst» «OwnerCEOLast», «OwnerCEOTitle»

NOTICE TO PROCEED

Project: «Title»

Owner: «OwnerMuni»
«OwnerAddr»
«OwnerCity», «OwnerState» «OwnerZip»

To: «ContractName»
«ContractAddr»
«ContractCity», «ContractState» «ContractZip»

Date: _____

You are hereby notified to commence work in accordance with the Contract. All work shall be completed by «Completion_Date».

«OwnerCaps»

_____
«OwnerCEOFirst» «OwnerCEOLast», «OwnerCEOTitle»

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person** ▶ **Date** ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

CONTACT PHONE # _____

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting,* later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,

2. You do not certify your TIN when required (see the instructions for Part II for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code,* later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships,* earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code,* later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester,* later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.SSA.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/Businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. Go to *www.irs.gov/Forms* to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to *www.irs.gov/OrderForms* to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code,* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor[2]
5. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee[1] The actual owner[1]
6. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity[4]
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships,* earlier.

***Note:** The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov.* You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at *spam@uce.gov* or report them at *www.ftc.gov/complaint.* You can contact the FTC at *www.ftc.gov/idtheft* or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see *www.IdentityTheft.gov* and Pub. 5027.

Visit *www.irs.gov/IdentityTheft* to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

THE OWNER OR THEIR AUTHORIZED REPRESENTATIVE SHALL INSERT THE FOLLOWING CONTRACT DOCUMENTATION IN THE EXECUTED CONTRACT:

A) FINDINGS FOR RECOVERY – ORC 9.24
(http://ffr.ohioauditor.gov/)

B1) CHECK FOR DEBARRED CONTRACTORS IN THE STATE OF OHIO
(https://www.sos.state.oh.us/records/debarred-contractors/)

B2) CHECK FEDERAL SAM (System for Award Management) for FEDERAL FUNDING (including sub-contractors), (if applicable)
(https://www.sam.gov/SAM/)

C) NOTIFICATION OF SURETY AND AGENT OF CONSTRUCTION CONTRACT AWARD – ORC 9.32 (if applicable)

D) NOTIFICATION TO UTILITY COMPANIES OF COMMENCEMENT OF CONTRACT EXECUTION – ORC 153.64 (if applicable)

SECTION 3
GENERAL CONDITIONS

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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and

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CONSTRUCTION SPECIFICATIONS INSTITUTE

EJCDC C-700 Standard General Conditions of the Construction Contract
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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

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12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

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27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

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40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

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addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

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1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

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2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

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the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

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1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

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3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

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Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

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3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

   b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

   a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

   b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

   c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

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professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data;

b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price

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or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

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Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

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B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

   a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

   b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

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1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

    a. Such insurance shall remain in effect for two years after final payment.

    b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

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1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

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insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

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against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

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ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

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6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) it has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

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2. *Substitute Items:*

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

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4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

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other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

   1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

   2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

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6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

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court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

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shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

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D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

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1. *Shop Drawings:*

    a. Submit number of copies specified in the General Requirements.

    b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

    a. Submit number of Samples specified in the Specifications.

    b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

    a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

    b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

    c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

    d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

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Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

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1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

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Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

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ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

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7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

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8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits

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and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

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B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

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10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

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opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

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Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

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f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

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D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

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D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

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c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

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control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

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C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

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resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and

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equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the

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Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

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b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

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d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

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pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

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14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

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1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

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1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

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F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

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ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

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17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 4
SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 ed.) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented herein or in the Specific Project Requirements remain in full force and effect.

SC-1.01 The terms used in these Supplementary Conditions which are defined in the General Conditions have the meaning assigned to them in the General Conditions.

SC-2.02 Delete paragraph 2.02(A) in its entirety and insert the following in its place:

Owner shall furnish one (1) printed/hard copy of the drawings and Project Manual which shall be an executed contract set and one set in electronic format (.pdf), if requested.

SC-2.03(A) In the last sentence of 2.03A, change "sixtieth day" to "ninetieth day."

SC-4.02(A) Change "Supplementary Conditions" to read "Specific Project Requirements."

SC-4.06(G) Delete paragraph 4.06(G) in its entirety.

SC-5.03(A)(1) The required Certificate of Insurance shall be in a form satisfactory to the Owner (most current version of ACORD 25 or approved equal). If the Contractor fails to procure and maintain any specified and/or required insurance, the Owner shall have the right to procure and maintain the said insurance for and in the name of the Contractor and the Contractor shall pay the cost thereof and shall furnish all necessary information to make effective and maintain such insurance.

SC-5.04(B)(1) Change "Supplementary Conditions" to read "Specific Project Requirements."

SC-5.04(B)(2) The limits of liability for the insurance required by paragraph 5.04(A) of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

All of the limits below may be satisfied with an Umbrella/Excess Liability as needed to increase the Primary Policy to required limits.

5.04(A)(1) and (2) Workers' Compensation, etc., under paragraphs 5.04(A)(1) and 5.04(A)(2) of the General Conditions:

(a)	State	Statutory
(b)	Applicable Federal (e.g., Longshoreman's):	Statutory
(c)	Employer's Liability:	$1,000,000

5.04(A)(3), (4) and (5). Contractor's Liability Insurance under paragraphs 5.04(A)(3) through 5.04(A)(5) of the General Conditions which shall also include completed operations and product liability coverage.

(a) Bodily Injury and Property Damage, Combined Single Limit (CSL) (Except Products and Completed Operations) Property Damage liability insurance will provide Explosion, Collapse, and Underground coverage where applicable.

Each Occurrence	$2,000,000
General Aggregate	$4,000,000

(b) Products and Completed Operations Aggregate $1,000,000

Products and Completed Operations to be maintained for two (2) years after final payment and Contractor shall continue to provide evidence of such coverage to the Owner on an annual basis during the aforementioned period.

(c) Personal and Advertising Injury (Per Person/Organization and per occurrence). $1,000,000

(d) Fire Damage $100,000

(e) If the General Liability Policy includes a General Aggregate, such policy shall be endorsed to have the General Aggregate Per Project Aggregate Limit.

5.04(A)(6) Automobile Liability - (Owned, Non-Owned, Hired)
Contractor may provide split limits or combined single limit.

(a) Split Limits:

Bodily Injury,	Each Person:	$2,000,000
	Each Occurrence	$2,000,000
Property Damage,	Each Occurrence	$1,000,000

or

(b) Combined Single Limit

Bodily Injury and Property Damage,	Each Occurrence	$2,000,000

SC-5.04(B)(3) Add the following to the end of the paragraph: “to the extent available in the insurance industry with industry standard exclusions and as allowed under the laws and regulations in the State of Ohio;”

SC-5.04(B)(4) Add the following:

Written notice of cancellation for non-payment of premium shall be at least 10 days.

Add the following section:

SC-5.04(C) Unless otherwise stated in Specific Project Requirements, the Contractor shall purchase and provide an "Owner's and Contractor's Protective Policy" with an immediate Effective Date and the **Owner listed as the Insured (No additional insureds)** for the following limits:

Each Occurrence	$1,000,000
General Aggregate	$2,000,000

Add the following section:

SC-5.04(D) Unless otherwise stated in Specific Project Requirements the Contractor shall purchase and maintain during the Contract Time "All Risk Builders' Risk Insurance," and/or "Installation Floater Insurance," and/or "Boiler and Machinery Insurance," and any and all insurance requirements of section GC-5.06 of the General Conditions as applicable for the type of work to be performed upon the Project to the full insurable value thereof for the benefit of the Owner, the Contractor, Subcontractors and Suppliers as their interest may appear. This insurance shall cover the work until final acceptance and final payment by the Owner. This provision shall in no way release the Contractor or Contractor's Surety from obligations under the Contract Documents to fully complete the Project. The original policy(s) shall be filed with the Owner or his designated representative.

SC-5.05 *Owner’s Liability Insurance*

See SC-5.04(C) above.

SC-5.06 *Property Insurance*

Unless otherwise stated in Specific Project Requirements, the Contractor, not the Owner, shall purchase and maintain during the Contract Time all property insurance required in section GC-5.06 of the General Conditions and as outlined in SC-5.04(D) above.

Add the following section:

SC-6.02(C) The Contractor shall be responsible for the Owner and/or Engineer's additional inspection and administrative costs for work performed beyond regular working hours as defined in this Section.

SC-6.07(B) Delete paragraph 6.07(B) in its entirety.

SC-6.09 (D) Add the following:
D. The contractor agrees to the requirements of RC 153.59, RC 153.591, and RC 153.60.

Add the following section:

SC-6.10(B) Add the following:

Should the Owner be exempt from Ohio State Sales and Use Taxes on materials and equipment to be incorporated in the Project, the Contractor may obtain a waiver and said taxes shall not be included in the Contract Price.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the work
2. Owner's exemption to Contractor does not apply to construction tools, machinery, equipment, or other property by or leased by Contractor, or to supplies or materials not incorporated into the work.

The Contractor shall withhold and/or pay all consumer, use, property, employment, income and other taxes in accordance with the laws and regulations of the United States, State of Ohio, Owner and other applicable agencies which are applicable during the performance of the work.

SC-6.17 *Shop Drawings and Samples*

Add the following new paragraphs immediately after paragraph 6.17(E):

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three (3) submittals. Engineer will record Engineer's time for reviewing subsequent materials of shop drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time unless the need for such substitution is beyond the control of the Contractor.

SC-7.02 Delete Section 7.02 of the General Conditions in its entirety and insert the following:

SC-7.02(A) The General Construction Contractor shall be referred to and defined as the Construction Coordinator.

SC-7.02(B) Duties of the Construction Coordinator include the following:

1. Scheduling and coordinating the work of the Prime Contractors including submission and periodic updating of project schedule.

2. Establishing and administrating the site safety program and procedures for the project.

3. See that permits are applied for and obtained on a timely basis. Advise the Engineer of any problems related to permit approval.

4. Monitoring compliance with Laws and Regulations.

5. Maintain project site for dust, sedimentation, debris, waste, and general site cleanliness.

6. Coordinate location and use of temporary construction facilities including but not limited to sanitary, water, power, telephone, and parking.

7. Coordinate Owner interface for utility tie-ins/shut downs.

8. Monitor shop drawing submittal and coordination of submittal information between Prime Contractors.

SC-10.01 (A) Add the following:
The Owner may request from the Contractor and the Contractor shall provide within ten days of the request, a quote for all ordered changes in the work or work the Owner may be considering to be ordered. The quote shall be a line item, detailed, itemized breakdown of the work.

SC-11.01(A) For purposes of "Cost of the Work" delete Section 11.01(A), (B), and (C) of the General Conditions in their entirety and insert ODOT 109.05, in its place.

SC-13.07(A) In the First sentence of Section 13.07(A) remove "Substantial Completion" and insert "Final Acceptance of the entire project and final payment by the Owner."

SC-13.07(C) Remove 13.07(C) and replace with the following:

All materials and equipment shall be warranted by the respective material supplier or equipment manufacturer until the end of the Contractor's "correction period" (or longer if specified elsewhere in the contract) regardless of date of initial installation or operation of the material or equipment. The cost of such extended warranties as needed from material suppliers or equipment manufacturers to provide warranty coverage until the end of the "correction period" or other period as specified in the contract shall be the responsibility of the prime contractor and shall be assumed to have been included in his bid.

SC-14.02(A) (3) Delete Section 14.02(A) (3) of the General Conditions in its entirety and insert the following:

Until the job is Substantially Complete, the Contractor will be paid 96% of the estimated value of labor and 100% of the estimated value of material installed and completed in acceptable form. Upon the Owner's agreement that the project is Substantially Complete, the 4% Retainage on labor may be reduced to the value needed to assure completion of the remaining punch list work subject to the recommendation of the Engineer and the approval by the Owner.

Add the following section:

SC-14.02(A) (4)

Payment for stored materials at invoice prices or at the unit price bid for materials, or the lesser value of the two, will be made for accepted nonperishable equipment and materials which are to be incorporated into the work, when accepted, delivered, properly stored, and protected upon the site and verified to the Engineer by a copy of the invoice. For materials and equipment meeting the foregoing conditions, the Owner will pay, when properly included in an approved estimate, 92% of the invoice value of the same. Subsequent to the inclusion of a payment for delivered materials in a progress payment, Contractor shall submit no later than the next payment submission, a partial waiver of lien from each and every supplier for whom delivered materials were paid. If no such waiver is submitted prior to or along with the next payment, the amount of delivered materials paid commensurate with that particular item will be deducted from future payments. No payment for delivered materials shall be made for any items that are scheduled to be incorporated in the work within 30 days of submission of the pay estimate. Delivered materials will not be paid in any given month for a total amount less than $5,000.00. Payment for delivered materials for such items as pipe backfill and roadway subbase will not be routinely considered.

SC-16.01 Delete Article 16 in its entirety and replace with the following:

10/17

ARTICLE 16 - DISPUTE RESOLUTION AGREEMENT - MEDIATION/ARBITRATION

OWNER and CONTRACTOR hereby agree that Article 16 of the General Conditions to the Agreement between OWNER and CONTRACTOR is amended to include the following agreement of the parties:

16.01 All claims, disputes, and other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.09) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.02 No demand for arbitration of any claim, dispute, or other matter that is required to be referred to Engineer initially for decision in accordance with paragraph 9.09 will be made until the earlier of (a) the date on which ENGINEER has rendered a written decision or (b) the thirty-first day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.08 and the failure to demand arbitration within said thirty days' period will result in Engineer's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.08 will be made later than ten days after the part making such demand has delivered written notice of intention to appeal as provided in paragraph 10.05.

16.03 Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.02 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.04 Except as provided in paragraph 16.05 below, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joiner or in any other manner any other person or entity (including ENGINEER, ENGINEER's Consultant, and the officers, directors, agents, employees, or consultants of any of them) who is not a party to this contract unless:

(A) the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration, and

(B) such other person or entity is substantially involved in a question or law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

(C) the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific references to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.05 Notwithstanding paragraph 16.04 if a claim, dispute or other matter in question between OWNER and CONTRACTOR involves the Work of a Subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR herein under. CONTRACTOR shall include in all subcontracts required by paragraph 6.06(G) a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work and such Subcontractor. Nothing in this paragraph 16.05 nor in the provision of such subcontract consenting to joinder shall create any claim, right or cause of action in favor of Subcontractor and against OWNER, ENGINEER, or ENGINEER's Consultants that does not otherwise exist.

16.06 The award rendered by the arbitration will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.

16.07 OWNER and CONTRACTOR agree that they shall first submit any and all unsettled claim, counterclaims, disputes and other matters in questions between them arising out of or relating to the Contract Documents or the breach thereof ("disputes"), to mediation by the American Arbitration Association under the Construction Industry Mediation Rules of the American Arbitration Association prior to either of them initiating against the other a demand for arbitration pursuant to paragraphs 16.01 through 16.06, unless delay in initiating arbitration would irrevocably prejudice one of the parties. The respective thirty and ten-day time limits within which to file a demand for arbitration as provided in paragraphs 16.02 and 16.03 above shall be suspended with respect to a dispute submitted to mediation within those same applicable time limits and shall remain suspended until ten days after the termination of the mediation. The mediator of any dispute submitted to mediation under this Agreement shall not serve as arbitrator of such dispute unless otherwise agreed.

END OF SECTION

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SECTION 5
SPECIFICATIONS

SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Project description.
3. Work sequence.
4. Work restrictions.
5. Permits.
6. Specification conventions.
7. Drawing Schedule

B. Related Requirements:

1. Section 012513 – Product Substitution Procedures
2. Section 013216 - Construction Progress Schedule

1.2 PROJECT INFORMATION

A. Name: Kingsville Regional Sewer Improvements

1. The project is located in Kingsville Township, Ashtabula County, Ohio along the OH-193 corridor and OH-84 (S Ridge Road) corridor. The southern terminus of the project is located on the property of 5370 OH-193 and north and eastern terminus of the project is located approximately 225 feet east of the Green Road and OH-84 southern intersection.

B. Owner: Ashtabula County Department of Environmental Services

1. Owner's Representative:
Ray Nevison - Director
RJNevison@ashtabulacounty.us

C. Engineer: Verdantas

1. Engineer's Representative:
Tim McLaughlin, P.E – Project Manager
tmclaughlin@ctconsultants.com

1.3 PROJECT DESCRIPTION

A. The Project consists of sanitary sewer improvements with the following main elements:

1. Gravity Sewer No. 01: The installation of 8” sanitary sewer from MH KIRC001 to the noted southern inlet at Pump station No. 01. This shall include 48” I.D. precast concrete manholes at the depths noted in the plans, and 245 LF of 8” insulated ductile iron aerial sewer with a utility support bridge as detailed in the plans.
2. Gravity Sewer No. 02: The installation of 8” sanitary sewer from MH KIRC009 to the noted northern inlet at Pump station No. 01, 8” sanitary sewer from KIRC011 to the noted southern inlet at Pump station No. 02, and 8” sanitary sewer from KIRC016 to the noted northern inlet at Pump station No. 02. This shall include 48” I.D. precast concrete manholes at the depths noted in the Plans.
3. Gravity Sewer No. 03: The installation of 8” sanitary sewer from MH KIRC0012 to the noted southern inlet at Pump station No. 02. This shall include two (2) 48” I.D. precast concrete manholes at the depths noted in the Plans.
4. Pump Station No. 01: T The installation of a duplex submersible pump station including all precast concrete structures (wet well and valve vault), pumps, piping, fittings, valves, appurtenances, inlet connection, electrical and mechanical work, telemetry and SCADA integration, site improvements, fencing, generator and all other noted improvements detailed within the Plans for this pump station.
5. Force Main No. 01: The installation of 4” sanitary sewer force main starting from the valve vault at Pump Station No. 01 to MH KIRC012. The section beneath I-90 shall be horizontally directionally drilled and no setups shall be permitted within the Areas located within Ohio Department of Transportation (ODOT) Limited Right-of-Way (R/W). If the Contractor require access to the ODOT right-of-way, they shall coordinate directly with ODOT and submit workplan modification to the Engineer for Approval prior to performing work within this area.
6. Pump Station No. 02: The installation of a duplex submersible pump station including all precast concrete structures (wet well and valve vault), pumps, piping, fittings, valves, appurtenances, inlet connection, electrical and mechanical work, telemetry and SCADA integration, site improvements, fencing, generator and all other noted improvements detailed within the Plans for this pump station.
7. Force Main No. 02: The installation of 6” sanitary sewer force main starting from the valve vault at Pump Station No. 02 to the proposed manhole to be constructed at the existing sewer on OH-84. The Contractor shall install the force main by the methods noted in the plans unless otherwise approved by the Engineer to install by alternative means. This force main shall include the installation and interconnection of a single 2” low pressure service connection as noted in the Plans at the intersection S. Ridge Rd and Lake St.
8. Connection to Existing Main: A new precast concrete manhole shall be installed at the downstream end of Force Main No. 02 to connect the force main to the existing 8” sanitary sewer that crosses OH-84 approximately 225’ east of the intersection of OH-84 and Green Road. New connection into the manhole shall be a drop if invert of force main connection is 24” or more above the proposed invert of the new manhole.

9. Laterals: Lateral connections shall be installed within the right-of-way or easement limits noted in the plans for each lateral noted in the Plans. Laterals on the east side of the proposed mainline sewer (Short) shall be installed by standard open-cut methods. Laterals on the west side of the proposed mainline sewer (Long) that cross roadways shall be installed by trenchless means and shall not disturb any pavement within the ODOT right-of-way.

B. All improvements are to be paid for through pay items broken down by unit prices. Method of measurement and basis of payment for all items is described in bid document "Prices to Include".

1.4 WORK SEQUENCE

A. Construct Work in order to accommodate Owner's occupancy requirements during construction period. Coordinate construction schedule and operations with Engineer:

B. Sequencing of Construction Plan: Contractor shall provide a detailed construction progress schedule in accordance with section 013216 – Construction Progress Schedule.

C. All work on private property shall be coordinated with the individual property owners and be within the bounds and conditions of designated permanent easement or temporary construction limits. Any disturbance or use of areas on private property that are not explicitly designated as permanent easements of temporary construction limits shall require written authorization from the property owner before such use and will require approval by the Owner if such modification alters any element of the Engineer's design intent.

1.5 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 (AHJ).

B. On-Site Work Hours: Limit Work to between 7:00 a.m. to 7:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and AHJ.

C. On-Site Work Day Restrictions: Do not perform Work resulting in utility shutdowns on Site during Work blackout days indicated by Owner.

D. Night, Sunday, and Holiday Work: No work will be permitted at night, Sunday or legal holidays except as noted on the plans or in the case of emergency and then only upon written authorization of the Engineer. Where no emergency exists, but the Contractor feels it advantageous to work at night, Sunday or legal holidays, the Contractor shall notify the Engineer at least two (2) days in advance, requesting written permission. Any

work performed during the absence of the Engineer will be done at the Contractor's risk and responsibility and may be subject to rejection upon later inspection.

E. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions, and only after arranging for temporary utility services according to requirements indicated:
   1. Notify Owner or Engineer not less than 48 hours in advance of proposed utility interruptions.
   2. Obtain Owner of the subject utility's written permission before proceeding with utility interruptions.
   3. The Contractor shall coordinate any necessary utility relocations and/or supporting of utility poles with the subject utility owners as necessary or as noted on the plans. Allowances are included in the bid for noted coordination and subsequent work necessary to install the improvements and protect the surrounding utilities. This does not include supporting of utility crossings that are noted or not noted in the Plans and any utility supports of crossings shall be included in the unit price of the linear foot sewer pay items.

F. Noise, Vibration, Dust, and Odors: Coordinate with Owner operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy.
   1. Notify Owner or Engineer not less than 48 hours in advance of proposed utility interruptions.

1.6 PERMITS

A. All Contractors and subcontractors shall be registered with the Building Department having jurisdiction. Contact the Building Department for additional registration information.

B. Contractors and subcontractors are required under Ohio Revised Code (O.R.C.) Section 149.53, to notify Ohio's State Historic Preservation Office (SHPO), and to cooperate with that office in archaeological and historic surveys and mitigation efforts if such discoveries are uncovered within the project area.

   Contact: Ohio's State Historic Preservation Office
   Diana Welling, Resource Protection & Review Department Manager
   Phone: 1-614-298-2000
   Email: dwelling@ohiohistory.org

C. Should archaeological discoveries or other activities delay progress of the work, an adjustment in contract time will be made.

1.7 SPECIFICATION CONVENTIONS

A. In general, these Specifications describe the work to be performed by the various trades, other than work specifically excluded. It shall be the responsibility of the Contractor

and Subcontractors to perform all work incidental to their trade, whether or not specific mention is made of each item, unless such incidentals are included under another Item.

B. It is advised that the Contractor and all Subcontractors familiarize themselves with the contents of the complete Specifications, particularly for the trades preceding, following, related or adjacent to their work.

C. 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.

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.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.8 DRAWING SCHEDULE

A. The work to be done under this Contract is shown on the following Drawings:

Title	Sheet No.
Cover Sheet	1
Index & Symbology	2-4
General Notes	5-6
Maintenance of Traffic Detail	7
Plan & Profile	7-35
Improvement Schedule	36
Construction Details	37-49

Structural Details and Notes	40-44
Pump Station Details	45-48
Erosion Control Details	49

END OF SECTION 011000

SECTION 011419 – USE OF SITE

PART 1 - GENERAL

1.1 GENERAL

A. The Contractor will be allowed the use of as much of the site (noted easement and non-limited right of way areas) designated for the improvements as is necessary for their operation.

1.2 USE OF STREETS

A. During the progress of the work, the Contractor shall make ample provisions for both vehicle and pedestrian traffic on any public street and shall indemnify and save harmless the Owner from any expense whatsoever due to their operations over said streets. The Contractor shall also provide free access to all the fire hydrants, water, and gas valves located along the line of their work. Gutters and waterways must be kept open or other provisions made for the removal of storm water. Street intersections may be blocked only one-half at a time, and the Contractor shall lay and maintain temporary driveways, bridges and crossings, such as in the opinion of the Engineer are necessary to reasonably accommodate the public.

B. In the event of the Contractor's failure to comply with these provisions, the Owner may cause the same to be done, and may deduct the cost of such work from any monies due the Contractor under this Agreement, but the performance of such work by the Owner at its instance shall serve in no way to release the Contractor from their general or particular liability for the safety of the public or the work.

C. The Contractor shall repair at no cost to the Owner, all existing roads, parking areas, grassed areas that are damaged due to the execution of their work. The Contractor shall remove daily all mud, soil and debris that may be tracked onto existing streets, drives, or walks by their equipment or that of subcontractors or suppliers.

1.3 CLOSING STREETS TO TRAFFIC

A. The Contractor may with the approval of the Engineer, close streets, or parts of streets, to vehicular traffic. The streets are to remain closed as long as the construction work or the condition of the finished work requires or as determined by the Engineer. The Engineer shall be the judge of how many streets or parts of streets it is necessary for the Contractor to close at any time and may refuse to permit the closing of additional streets to traffic until the majority of the work on the closed streets is completed and they are opened to traffic.

1.4 RIGHTS-OF-WAY

A. Whenever it is required to perform work within the limits of public or private property or in rights-of-way, such work shall be done in conformity with all agreements between the Owner and the owners of such. Care shall be taken to avoid injury to the premises

entered, which premises shall be left in a neat and orderly condition by the removal of rubbish and the grading of surplus materials, and the restoration of said public or private property to the same general conditions as pertained at the time of entry for work to be performed under this contract.

B. The Contractor shall not (except after consent from the proper parties) enter or occupy with personnel, tools or equipment, any land outside the rights-of-way or property of the Owner.

C. When the Contractor performs construction within 10 ft. of a right-of-way or easement line, he shall place tall stakes properly identified at points of change in width or direction of the right-of-way or easement line and at points along the line so that at least two stakes can be seen distinctly from any point on the line.

1.5 EASEMENTS

A. Where the work is to be constructed upon easements, such easements will be secured by the Owner without cost to the Contractor. The Contractor shall not enter upon or occupy any private property outside of the limits of the easements furnished.

B. Care shall be taken to avoid injury to the premises entered, which premises shall be left in a neat and orderly condition by the removal of rubbish and the grading of surplus materials, and the restoration of said public or private property to the same general conditions as pertained at the time of entry for work to be performed under this contract.

1.6 PROTECTING EXISTING BUILDINGS, STRUCTURES AND ROADWAYS

A. The Contractor shall, at their own expense, shore up and protect any buildings, roadways, utilities or other public or private structures which may be encountered or endangered in the prosecution of the work, and that may not be otherwise provided for, and he shall repair and make good any damages caused to any such property by reason of their operations. All existing fences removed due to the prosecution of the work shall be replaced by the Contractor. No extra payment will be made for said work or material, but the cost of this work must be included in the price stipulated for the work to be done under this contract.

1.7 SITE FACILITIES

A. The Contractor shall furnish and place sufficient quantities of portable toilet facilities at locations convenient for use by the Contractor's personnel, Subcontractors, the Engineer, and the Owner.

1.8 RESTORATION

A. The contractor shall restore all areas per the plans and specifications and if not specified, at least to the condition existing prior to the start of work.

1.9 MAINTAINING EXISTING LOCAL SERVICE

A. The Contractor shall coordinate and facilitate the maintenance of mail/package delivery and trash pickup for all locations possibly disrupted or damaged by the proposed improvements. Any damage to a permanent mailbox shall be repaired or replaced to match the existing style at the Contractor's cost.

B. The Contractor shall coordinate with the local authorities to maintain school bus access along the public roadways during the entire duration of work.

END OF SECTION 011419

SECTION 012513 – PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 MATERIALS AND EQUIPMENT

A. In the specifications and on the Engineer's drawings, are specified and shown certain pieces of equipment and materials deemed most suitable for the service anticipated. This is not done to eliminate other equipment and materials equally as good and efficient. The Contractor shall prepare their bid on the particular materials and equipment specified. Following the award of the contract, should the Contractor desire to use other equipment and materials, they shall submit to the Owner a written request for such change and state the advantage to the Owner and the savings or additional cost involved by the proposed substitution. The determination as to whether or not such change will be permitted rests with the Owner and the Engineer.

B. Each major item of equipment shall be inspected by a manufacturer's representative during installation and upon completion of the work. The Contractor shall supply the Engineer with a certificate of such inspection.

END OF SECTION 012513

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 PRECONSTRUCTION MEETING

A. Prior to the Contractor beginning any work on the project, the Owner will schedule and hold a preconstruction meeting to discuss all aspects of the contract work.

B. The Contractor shall be present and be prepared to comment in detail on all aspects of their work.

C. The Contractor shall bring to the preconstruction meeting a proposed construction progress schedule, erosion control plan, work plan for trenchless sewer construction setups, quality control program, concrete mix designs, asphalt mix designs (JMF), etc. Approval of each by the Engineer is required prior to the start of any work.

D. Included in the construction progress schedule shall be an implementation sequence of the proposed erosion control devices, maintenance of traffic, and any temporary facilities necessary to install the improvements as required by the contract.

1.2 PROGRESS MEETINGS

A. Monthly progress meetings will be held at a location to be determined by the Owner on a regularly scheduled day mutually convenient to the Owner, Contractor, and Engineer.

B. The Contractor shall provide an updated construction progress schedule and be prepared to comment in detail on all aspects of their work.

END OF SECTION 013119

SECTION 013216 – CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 PROGRESS SCHEDULE

A. Immediately after signing the Contract, the General Construction Contractor shall prepare a graphic progress schedule, indicating the work to be executed during each month and the rate of expected progress to secure completion on the agreed-upon completion date. The progress schedule shall be approved by the Engineer and Owner prior to starting work on the site. Copies of such graphic progress charts, upon which has been indicated the actual progress, shall be furnished to the Engineer with each requisition for payment.

B. Should the rate of progress fall materially behind the scheduled rate of progress, and unless the delay is authorized by the Engineer, each offending Contractor shall furnish additional labor, work overtime, or take other necessary means required for completion of the work on the scheduled date. No additional compensation beyond the set Contract price shall be paid for action taken or overtime expense incurred in maintaining scheduled progress.

END OF SECTION 013216

SECTION 013223 – SURVEY AND LAYOUT DATA

PART 1 - GENERAL

1.1 STAKING

A. The Contractor shall hire a surveyor licensed in the state the work is to be installed to provide all reference points not already established and staking. The Contractor shall protect and preserve the established staking and reference points as long as required for installation of the work and field verifications by any party. The Contractor's surveyor shall replace and accurately relocate all staking and reference points so lost, destroyed or moved.

1.2 LAYOUT OF WORK

A. The Contractor shall lay out their work and be responsible for correct locations, elevations and dimensions of all work executed by him under this Contract. The Contractor must exercise proper precautions to verify the figures shown on the Drawings before laying out the work and will be held responsible for any error resulting from his failure to exercise such precaution. The Contractor shall insure the new construction aligns with any existing work.

END OF SECTION 013223

SECTION 013233 – PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 PROGRESS PHOTOGRAPHS

A. The General Construction Contractor shall have two (2) color photographs made of the project every week as it is in progress. The photographs shall be of such views and taken at such times as the Engineer directs.

B. All photographed work shall be done by a qualified, established, commercial photographer. Two (2) glossy prints of each photograph shall be furnished to the Engineer and two (2) to the Owner. Prints shall be approximately 7-1/2 in. X 10 in. in size. Prints shall be inserted in transparent sheet protectors provided with punching for a 3-ring binder. Suitable binders shall be provided by the Contractor.

C. Each photograph shall have a permanent negative title block in the lower right-hand corner or on the back, approximately 2-1/4 in. wide x 1-3/4 in. high, and stating therein in neat lettering:

1. Owner's Name
2. Contract Description
3. Contractor's Name
4. Description of View
5. Photo No._____, Date_____
6. Consulting Engineer

D. The arrangement of and the information in the title block shall be subject to the Engineer's approval. The cost for all photographs shall be paid for by the General Construction Contractor.

END OF SECTION 013233

SECTION 013236 – VIDEO MONITORING AND DOCUMENTATION

PART 1 - GENERAL

1.1 SCOPE

A. Provide all labor, materials, equipment, and services, and perform all operations necessary to furnish to the Owner a complete color audio-video record on a USB Flash Drive of the surface features within the proposed construction zone of influence. This record shall include, but not be limited to, all audio-video USB Flash Drives, storage cases, video logs, and indexes. The purpose of this coverage shall be to accurately document the pre-construction condition of these surface features.

1.2 QUALIFICATIONS

A. The color audio-video documentation shall be done by a responsible commercial firm known to be skilled and regularly engaged in the business of pre-construction color audio-video documentation. The firm shall furnish such information as the Owner deems necessary to determine the ability of that firm to perform the work in accordance with the Contract specifications.

1.3 PRODUCTS

A. The color audio-video recording delivered to the Owner shall be on a high-quality USB Flash Drive.

END OF SECTION 013236

SECTION 013319 - FIELD TEST REPORTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes, but is not limited to, services performed by an independent testing laboratory. Laboratory services covered under this section are for testing materials used for field constructed elements of the work. Performance testing of manufactured items and shop fabricated materials shall be covered under their respective specification section.

B. All testing performed under this item shall be for the protection and benefit of the Owner and shall not be construed by the Contractor as a comprehensive quality control program intended to protect the Contractor, their subcontractors, or their suppliers. The testing frequency and types of testing shall be at the discretion of the Owner.

C. Inspections, tests, and related actions specified in this section and elsewhere in the contract documents are not intended to limit the Contractor's own quality control procedures and testing, which facilitate overall compliance with requirements of the contract documents. Requirements for the Contractor to provide quality control services as required by the Engineer, the Owner, governing authorities, or other authorized entities are not limited by the provisions of this Section.

D. The Contractor is required to cooperate with the independent testing laboratories performing required inspections, test, and similar services and the Engineer or their representative.

E. Materials and installed work may require testing or retesting at any time during progress of work. Retesting of rejected materials or installed work shall be done at Contractor's expense.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Supplementary Conditions and Division 1 Specifications sections, apply to work of this section.

B. The Contract Documents may include testing requirements furnished under other Sections. Work elements which may include other testing requirements are:

1. Sanitary sewer systems

2. Concrete

1.3 SELECTION AND PAYMENT

A. The Contractor will employ an independent testing laboratory to perform specified testing. Payment shall be incidental to the related work bid item. The laboratory shall be mutually agreed upon by the Owner, Engineer, and Contractor.

B. Employment of testing laboratory in no way relieves the Contractor of the obligation to perform work in accordance with requirements of the contract documents.

C. The testing laboratory and their personnel shall be under the direction of the Engineer's on-site representative, regardless of who employs their services.

1.4 REFERENCES

A. AASHTO T-19, Standard Method of Test for Unit Weight and Voids in Aggregate.

B. AASHTO T-37, Standard Method of Test for Sieve Analysis of mineral Filler for Road and Paving Materials.

C. AASHTO T-230, Standard Method of Test for Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures.

D. ASTM C-29, Standard Method of Test for Unit Weight and Voids in Aggregate.

E. ASTM C-31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.

F. ASTM C-33, Standard Specification for Concrete Aggregates.

G. ASTM C-39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

H. ASTM C-40, Test Method for Organic Impurities in Fine Aggregates for Concrete.

I. ASTM C-42, Standard Test Methods for Obtaining and Testing Drilled Cored and Sawed Beams of Concrete.

J. ASTM C-88, Standard Test Method for Soundness of Aggregate by use of Sodium Sulfate or Magnesium Sulfate.

K. ASTM C-94, Standard Specification for Ready-Mixed Concrete.

L. ASTM C-117, Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.

M. ASTM C-136, Standard Method for Sieve Analysis of Fine and Course Aggregate.

N. ASTM C-142, Test Method for Clay Lumps and Friable Particles in Aggregate.

O. ASTM C-143, Standard Test Method for Slump of Hydraulic Cement Concrete.

P. ASTM C-172, Standard Practice for Sampling Freshly Mixed Concrete.

Q. ASTM C-173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

R. ASTM C-231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

S. ASTM C-535, Standard Test Method for Resistance to Degradation of Large-Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine.

T. ASTM C-1064, Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete.

U. ASTM D-698, Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb. (2.49-kg) Rammer and 12-inc. (305-mm) Drop.

V. ASTM D-2487, Standard Test Method for Classification of Soils for engineer purposes.

W. ASTM D-2940, Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

X. ASTM D-4253, Standard Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

Y. ASTM D-4254, Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

Z. ASTM D-4832, Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

AA. ODOT Supplement 1021, Method of Test for Determination of the Percent of Fractured Pieces in Gravel.

AB. ODOT Supplement 1029, Method of Test for Determining the Percentage of Deleterious Materials in Course Aggregate.

AC. ODOT Supplement 1036, Method of Test for Determination of Percent Air Voids in Compacted Dense Bituminous Paving Mixtures.

AD. ODOT Supplement 1044, Mix Design Method for Bituminous Aggregate Base.

AE. Uni-Bell PVC Pipe Association UNI-B-6-98 for Low Pressure Air Testing of Installed Sewer Pipe.

AF. ASTM – C969 – Standard practice for infiltration and exfiltration acceptance of installed concrete sewer pipe.

1.5 SUBMITTALS

A. Prior to the start of work, submit testing laboratory name, address, and telephone number, and names of full-time specialist and responsible officer.

B. Submit copy of the testing laboratory's evaluation report issued by one of the evaluation authorities identified in Article 1.6 of this Section with memorandum of remedies of any deficiencies reported by the inspection.

C. Submit the chain of custody and other QA/QC procedures for each test to be utilized by the laboratory.

D. Submit a sample test report for review by the Engineer to demonstrate conformance with Article 3.2 herein.

1.6 QUALITY ASSURANCE

A. Except as otherwise indicated, the testing laboratory engaged shall be prequalified by the Ohio Department of Transportation for the types of services specified herein.

B. The field personnel utilized to perform all field-testing and preparation shall be certified for those tests being performed.

1.7 RESPONSIBILITIES

A. Testing Laboratory Responsibilities:
   1. Provide qualified personnel at the site. Cooperate with the Engineer and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with the specified standards.
   3. Ascertain compliance of materials and mixes with requirements of the contract documents.
   4. Immediately notify the Engineer and Contractor of observed irregularities or nonconformance of work or products.
   5. Perform additional tests required by the Engineer.
   6. Testing personnel are to report to the Engineer or their representative upon arrival on site for instructions and requirements. Prior to leaving the site, furnish the Engineer or their representative all test results whether in a formal or informal format.
   7. Attend preconstruction meetings and progress meetings.

B. Contractor Responsibilities:
   1. Provide access to materials proposed to be used which require testing.
   2. Cooperate with laboratory personnel and provide access to the work and to manufacturers' facilities.

   3. Provide incidental labor and facilities:
      a. To provide access to work to be tested.
      b. To obtain and handle samples at the site or at the source of products to be tested.
      c. To facilitate tests.
      d. To provide storage and curing of test samples as required by the testing laboratory.

C. Notify the Engineer and laboratory 24 hours prior to expected time for operations requiring testing services for scheduling purposes. Materials will not be permitted to be placed without the proper testing being performed in conformance with this Section.

1.8 LIMITS OF LABORATORY AUTHORITY

A. The laboratory may not release, revoke, alter, or enlarge the requirements of the contract documents.

B. The laboratory may not approve or accept any portion of the work.

C. The laboratory may not assume any duties of the Contractor.

D. The laboratory has no authority to stop the work.

1.9 SCHEDULE OF TESTS

Testing anticipated on this project shall include, but is not limited to:

A. Earthwork
   1. Special backfill material sieve analysis per ASTM C-136, one test per source.
   2. On-site trench backfill analysis per ASTM D-2487, as directed by Engineer.
   3. Pipe bedding and cover sieve analysis per ASTM C-136, one test per source.
   4. Drainage fill sieve analysis per ASTM C-136, one test per source.
   5. Soil compaction per ASTM D-698.
      a. Embankment testing shall be at least one (1) test/5,000 S.F. of each lift;
      b. Trench backfill testing shall be at least one (1) test/50 L.F. of each lift;
      c. Subgrade and/or subbase testing shall be at least one (1) test/200 L.F. of pavement or 5,000 S.F. of slabs subject to greater frequency due to soil conditions or Engineer's direction.
   6. Backfill compaction per ASTM D-4253 and D-4254, one test per 50 L.F. of each lift.
   7. Low Strength Mortar testing per ASTM D-4832.

B. Concrete
   1. Concrete aggregate deleterious substances per ASTM C-40, ASTM C-117, and ASTM C-142, one test per source.
   2. Concrete aggregate abrasion per ASTM C-535, one test per source.
   3. Sodium sulfate soundness of coarse aggregate per ASTM C-88, one test per source.
   4. Sampling Fresh Concrete: ASTM C-172, except modified for slump to comply with ASTM C 94.
      a. When cylinders and/or beam samples are made, the slumps and air test shall be made using concrete from the same batch.
      b. Slump: ASTM C-143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

c. Air Content: ASTM C-173, volumetric method of lightweight concrete; ASTM C-231 pressure method for normal weight concrete; at least one for each pour of each type of air-entrained concrete, and each time a set of compression test specimens is made.

d. Concrete Temperature: ASTM C-1064, test hourly when air temperature is 40º F (4º C) and below, and when 80º F (27º C) and above; and each time a set of compression test specimens is made.

e. Compression Test Specimen: ASTM C-31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

f. Compressive Strength Tests: ASTM C-39; one set for each day's pour exceeding 5 cubic yards plus additional sets for each 50 cubic yards over and above the first 25 cubic yards of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days.

   i. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

   ii. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

g. Two (2) tests beams shall be made for each 250 square yards of concrete pavement and/or slabs on grade placed.

   i. For traffic to be allowed on pavement or slab, the modulus of rupture shall be a minimum of 600 psi for Class C concrete or 400 psi for ODOT Class MS or FS.

h. When cylinders and/or beam samples are made, the slumps and air test shall be made using concrete from the same batch.

5. Nondestructive Testing: Penetration resistance, sonoscope, or other nondestructive devices may be permitted but shall not be used as the sole basis for acceptance or rejection.

6. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of

concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

a. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

C. Pavement

1. Aggregate base sieve analysis per ASTM D-2940, one test per source.
2. Sodium sulfate soundness of aggregate base per ASTM C-88, one test per source.
3. Percent of fractured pieces for aggregate base per ODOT Supplement 1021, one test per source.

E. Sewers

1. Deflection Testing
   a. All thermoplastic gravity sanitary sewer pipe shall be tested for allowable deflection.
   b. Deflection tests shall be performed before final acceptance and no sooner than thirty (30) days after installation of final backfill
   c. Maximum allowable pipe deflection shall be five (5) percent of the average inside diameter for the size and class of pipe specified.
   d. Acceptance testing shall be performed with a non-adjustable “go, no-go” mandrel with a minimum of eight (8) contact points. Adjustable mandrels for acceptance testing shall be used only with permission of the Engineer.
   e. The mandrel size shall be ninety-five (95) percent of the average inside diameter for the size and class of pipe specified.
   f. If the "go, no-go" mandrel will not pass through a section of pipe a deflectometer or adjustable mandrel may be used to determine the extent and/or severity of the non-acceptable area. A “go, no-go” mandrel shall be re-run through the pipe section for final acceptance testing at no additional cost to the Owner.
   g. The Contractor or subcontractor performing the test shall be experienced and qualified to perform deflection testing with the equipment and procedures utilized. The contractor shall provide all labor, materials, tools and equipment necessary to clean and test all sections of sewer pipe, locate deficient areas, repair, deficient areas, and retest all repaired areas.
   h. All sewer runs shall be cleaned prior to testing.
   i. The acceptance test shall be performed without mechanical pulling devices.

j. All pipe failing the deflection test shall be exposed, repaired or replaced and retested at no additional cost to the Owner.

2. Leakage Testing
   a. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
   b. The Contractor shall perform sufficient tests to determine that the installation of all pipe materials have been as specified and that test results are in accordance with those required for approval of the installation.
   c. The Contractor shall furnish all pressure gauges, suitable pump or pumps, pipes, test heads, and any other apparatus and materials used for these tests. These tests are to be considered as part of the work, and no additional compensation shall be made.
   d. The tests shall be conducted under the direction of the Engineer or an appointed agent. Any testing done without direction and supervision as specified shall not be considered as a proper means of approval.
   e. The Contractor may obtain water for testing as may be required by observing the rules and regulations enforced in the municipality in which the work is being done.
   f. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

3. Infiltration and Exfiltration Testing
   a. All sewers shall be tested using an exfiltration test or, where specifically allowed in writing by the Engineer, an infiltration test.
   b. All sewers shall be tested. No visible leakage in the sewers or manholes shall be permitted.
   c. Bulkheads shall be used to isolate the test sections as required to perform the work. All service laterals, stubs and fittings shall be plugged or capped at the connection to the test section.
   d. Each manhole run shall be tested separately.

4. Exfiltration Testing
   a. The test shall be performed first with a minimum head of water of three (3) feet above the top of the high end of the sewer or two (2) feet above the high end of the highest lateral in the section or sections to be tested, or three (3) feet above the existing groundwater elevation, whichever is higher.

b. The exfiltration test shall be conducted between two manholes by sealing the downstream end of the test section and all inlet sewers at the upstream manhole with pipe stoppers.

c. The average internal pressure in the system shall not exceed 11.6 feet of water or 5 psi and the maximum internal pipe pressure at the lowest end shall not exceed 23 feet of water or 10 psi.

d. Water shall be added to the pipe section at a steady rate from the upstream manhole to allow air to escape from the sewer until the water is at the specified level above the crown of the pipe. The water may stand in the pipe and manhole up to seventy-two (72) hours prior to measurement of leakage to allow for absorption by the pipe and bleeding of air. After absorption into the pipe and manhole has stabilized, the water in the upstream manhole shall be brought to test level.

e. The leakage rate shall be determined by measurement of the drop in water elevation measured in the upstream manhole and the loss of water calculated. The test period shall be a minimum of sixty (60) minutes duration. Use the following table to determine loss of water as measured in the manhole:

		Volume of Leakage	
Water Level Change in Test Manhole		4 Ft. Dia. MH	5 Ft. Dia. MH
(Inches)	(Feet)	(Gals.)	(Gals.)
1/8	0.01	0.98	1.53
1/4	0.02	1.96	3.06
3/8	0.03	2.94	4.59
1/2	0.04	3.92	6.12
5/8	0.05	4.90	7.65
3/4	0.06	5.87	9.18
7/8	0.07	6.85	10.71
1	0.08	7.83	12.24
1-1/8	0.09	8.81	13.77
1-1/4	0.10	9.79	15.30
1-3/8	0.11	10.77	16.83
1-1/2	0.12	11.75	18.36
1-5/8	0.13	12.72	19.89
1-3/4	0.14	13.71	21.42
1-7/8	0.16	14.69	22.90
2	0.17	15.67	24.48

5. Infiltration Testing
    a. An infiltration test shall be conducted for all sections of sewer, only when the ground water level is two (2) feet or more above the elevation of the inside crown of pipe at the upstream limit of the section being tested.
    b. The use of well point pumps or other dewatering devices shall have been discontinued for 24 hours prior to testing to permit the groundwater table to return to a static condition.
    c. The leakage rate shall be measured by a weir, by determination of the time required to fill a container of known volume, or other measuring device approved by the Engineer in the lower end of the sewer section to be tested.
    d. The incoming sewer or sewers in the upper end of the test section shall be securely sealed.
6. Allowable Leakage
    a. The maximum allowable leakage for either infiltration or exfiltration shall be 50 gallons per inch of internal pipe diameter per mile per day.
    b. If actual leakage measured exceeds the limits specified, the Contractor must locate and repair or remove and replace the defective pipe sections to the satisfaction of the Engineer and retest the section accordingly at no additional cost to the Owner.
    c. All sanitary manholes shall be tested separately by using an exfiltration test (or infiltration test where groundwater conditions permit) to two (2) feet above the highest joint with no measurable leakage for a one hour test.
7. Low Pressure Air Testing
    a. PVC sanitary sewers 54-inch diameter and less may be air tested as specified. If the groundwater level is two (2) feet or more above the top of the pipe at the upstream end or if the air pressure required for the test is greater than 5 psig, the air test method should not be used for RCP sanitary sewers.
    b. Each manhole run shall be tested separately, unless otherwise approved by the Engineer, as the construction progresses. Backfill shall be brought to final grade before testing. Testing shall be done prior to surface restoration, and preferably with not more than four (4) manhole runs constructed ahead of testing.
    c. Test equipment consists of valves and pressure gages to control airflow and to monitor pressure within the test section.
    d. The sewer shall be flushed and cleaned prior to testing to clean out any debris. The pipe surface should be wet for more consistent results.

e. The section of pipe to be tested shall be plugged at each end and the ends of laterals, stubs and fittings to be included in the test section shall be plugged and securely braced to prevent air leakage, and possible blowouts.

f. Equipment used shall meet the following minimum requirements and be approved by the Engineer:

   i. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

   ii. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.

   iii. All air used shall pass through a single control panel.

   iv. Three (3) individual hoses shall be used for the following connections:

      a). From control panel to pneumatic plugs for inflation.

      b). From control panel to sealed line for introducing the low pressure air.

      c). From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

g. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be used for the test. The sealed pipe shall be pressurized to 9 psig. The plugs must hold against this pressure without having to be braced. No persons shall be allowed in the alignment of the pipe during plug testing.

h. After a manhole to manhole run of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole. Low pressure air shall be slowly introduced into this sealed line until the internal air pressure reaches approximately 4 psig greater than the average groundwater back pressure, but not greater than 9 psig for PVC pipe or 5 psig for RCP.

i. In areas where groundwater is known to exist, the Contractor must determine the average groundwater back pressure. The Contractor shall install a 1/2-inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall on top of one of the sanitary sewer lines entering the manhole. See Figure No. 1. This shall be done at the time the sanitary sewer line is installed or install an 8-inch diameter stand pipe outside of the manhole backfilled with a column of clean stone of 2-inch minimum diameter to subgrade. Immediately prior to the performance of the low pressure air test, the ground water back pressure shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as

to clear it, and then connecting a clear plastic tube to the nipple. The plastic tube shall be vertical and a measurement of the height, in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. This height, divided by 2.307, will equal the average groundwater back pressure.

j. At least two (2) minutes shall be allowed for the air to stabilize when the specified internal air pressure has been obtained. When the pressure has stabilized and is at or above 3.5 psig, the air hose from the control panel to the air supply shall be disconnected. The portion of the line being tested shall be termed "acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than the average groundwater back pressure calculated) shall not be less than the time in the tables in Reference Table 1.

k. If a one (1) psi drop in pressure does not occur within the test time, the line has passed. If the pressure drop is more than one (1) psi during the test time, the line is presumed to have failed the test. If the line fails the test, segmented testing may establish the location of any leaks.

l. The Contractor must repair the leak or remove and replace the defective pipe section and re-test the section to the satisfaction of the Engineer at no additional cost to the Owner.

m. The pneumatic plugs must be installed in such a way as to prevent blowouts. Inasmuch as a force of 250 pounds is exerted on an 8-inch plug by an internal pipe pressure of 5 psi, it should be realized that sudden expulsion of a poorly installed plug or a plug, which is partially deflated before the pipe pressure is released, can be dangerous.

n. The Contractor should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test.

o. Pressurizing equipment shall include a regulator or relief valve set at no higher than 9 psig for PVC pipe or 5 psig for RCP pipe to avoid over-pressurizing and damaging an otherwise acceptable line.

p. No one shall be allowed in the trench or manholes during testing.

q. Plugs shall not be removed until all pressure has been released.

r. All sanitary manholes shall be tested separately by using an exfiltration test (or infiltration test where groundwater conditions permit) to two (2) feet above the highest joint with no measurable leakage for a one hour test.

s. The air test data sheet marked Exhibit “A” at the end of this section shall be filled out for each section of piping tested in this manner.

t. Testing concrete pipe sewer lines by the low pressure air test method will be per ASTM C924-02 and C1103.

8. Hydrostatic Testing – Pressure Pipe, For Watermain and Force Main
   a. The pipe to be tested must be sufficiently backfilled to prevent movement while under test pressure.
   b. Joint restraint at fittings should be permanent and constructed to withstand test pressure. If concrete thrust blocks are used, sufficient time must be allowed before testing to permit the concrete to cure. A cure time of seven (7) days is recommended when Type I Portland Cement is used; three (3) days is recommended when Type III high-early Portland Cement is used.
   c. Test ends should be restrained to withstand the appreciable thrusts that are developed under test pressure.
   d. Air pressure testing of installed pressure pipe is expressly prohibited.
   e. Any testing performed without the knowledge of the Engineer shall not be considered a test for the purpose of this specification.
   f. The hydrostatic testing sheet marked “Exhibit D” following this section shall be filled out for each section of piping tested in this manner.
   g. After the pipe has been installed and partially backfilled (if applicable) subject all newly installed pipe, or any valved sections of it in such lengths of the force main as determined by the responsible agency, unless otherwise specified, to a hydrostatic pressure test equal to 1-1/2 times the line working pressure (50% over the working pressure) but not less than 1.25 times the working pressure at the highest point along the test section; but, in no case, shall such force mains be tested at less than 150 pounds per square inch.. The duration of each test shall be at least 2 hours.
   h. Each section of pipeline shall be slowly filled with water and the specified test pressure, measured at the point of lowest elevation, shall be applied by means of a booster pump connected to the pipe in a manner satisfactory to the Engineer. The duration of the test shall be for a minimum of sixty (60) minutes.
   i. No pipe installation will be accepted unless the leakage rate for the section of pipe being tested does not exceed a rate as shown on hydrostatic test chart, during a 24-hour test duration.
   j. The Contractor shall furnish suitable means for determining the quantity of water lost by leakage during the test.

9. Manhole Vacuum Testing
   a. Temporarily plug all pipe entering the manhole. Each plug must be installed at a location beyond the manhole/pipe gasket (i.e. outside

the manhole wall) and shall be braced to prevent the plug or pipe from being drawn into the Manhole.

b. The test head shall be placed inside the rim of the cast iron frame at the top of the manhole and inflated, in accordance with the manufacturer's recommendations.

c. A vacuum of at least 10 inches of mercury (10" Hg) shall be drawn on the manhole. Shut the line on the vacuum line to the manhole and shut off the pump or disconnect the vacuum line from the pump.

d. The pressure gauge shall be liquid filled, having a 3.5" diameter face with a reading from zero to thirty inches of mercury.

e. The manhole shall be considered to pass the vacuum test if the vacuum reading does not drop more than 1" Hg (i.e. from 10" to 9" Hg) during the Table 1 minimum test time.

f. If a manhole fails the vacuum test, the manhole shall be repaired with non-shrinkable grout or other material or method approved by the engineer. The manhole surfaces shall be properly prepared prior to any repairs. Once the repair material has cured according to the manufacturer's recommendations, the vacuum test shall be repeated. This process shall continue until a satisfactory test is obtained.

g. All temporary plugs and braces shall be removed after each test.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 SEQUENCING AND SCHEDULING

A. The Contractor shall coordinate the sequence of work activities so as to accommodate required testing and shall allow sufficient time for testing of materials by the laboratory so as to cause no delay in the work or the work of any other Contractor. In addition, the Contractor shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests.

3.2 LABORATORY TEST RESULTS

A. The testing laboratory shall submit a certified written report of each inspection, test, or similar service concurrently to the Owner, Engineer, and Contractor.

B. Written reports of each inspection, test, or similar service shall include, but not be limited to, the following:

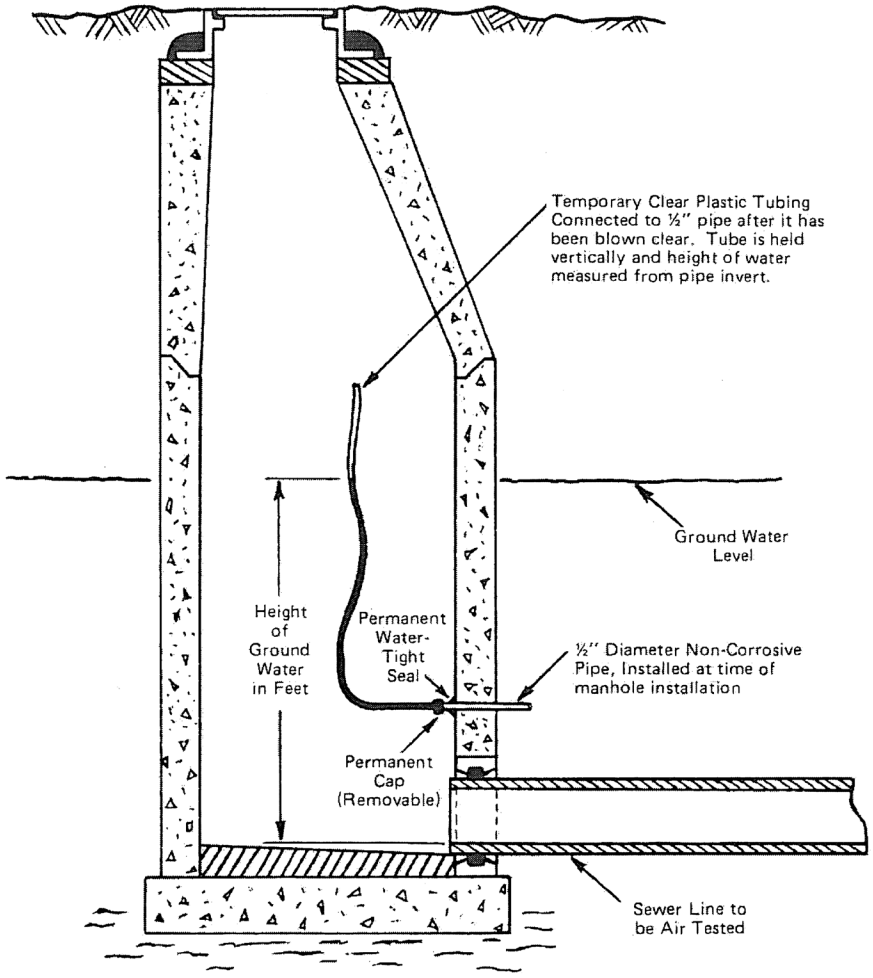
1. Name of testing laboratory

2. Project name and construction contract reference number
3. Dates and locations of samples and tests or inspections
4. Date of report
5. Names of individuals making the inspection or test
6. Designation of the work and test method
7. Test results
8. Notation of significant ambient conditions at the time of sample taking and testing

END OF SECTION 013319

FIGURE NO. 1

**MANHOLE CROSS-SECTIONAL VIEW
OF THE PROPER METHOD FOR
DETERMINING GROUND WATER HEIGHT**



AIR TEST DATA SHEET
PIPE TESTING FORM

NOTE: Pressurize pipe to 4.5 P.S.I.F. and let stabilize for 5 minutes. Pressure should then be backed off to 4.0 P.S.I.G. and test time started.

JOB NAME: **SANITARY ☐** **STORM ☐** **DATE:**
JOB LOCATION: **TEST COMPANY:**
JOB NO. **PROJECT REP:**
SPECIFIED PRESSURE DROP ( ) P.S.I.G. **BASE PRESSURE: 4.0 P.S.I.G.** **PIPE MATERIAL:**
(See Table 1 or Table II for Reference) **(Note: No test shall exceed 9.0 P.S.I.G.)**

PIPE SECTION UNDER TEST										
UPSTREAM MH/STATION	DN-STREAM MH/STATION	PIPE DIAMETER	PIPE LENGTH	GROUND WATER DEPTH	BASE P.S.I.G. PLUS GROUND WATER ADJ. (÷ 2.31=P.S.I.G.)	TEST TIME DURATION	TEST START TIME	TEST STOP TIME	TEST TIME ELAPSED	PASS FAIL P or F

***Identify any section(s) that failed:**

***Leak (was) (was not) located. Method used:**

REMARKS:

TABLE I

Minimum specified time required for a 1.0 P.S.I.G. Pressure Drop

1 Pipe Diameter (Inches)	**2** Minimum Time (Min:Sec)	**3** Length for Minimum Time (Ft.)	**4** Time for Longer Length (Sec)	Specification Time for Length (L) Shown (Min:Sec)							
				100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	350 Ft.	400 Ft.	450 Ft.
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10	72	28.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46
42	39:48	57	41.883 L	69:48	104:42	139:37	174:30	209:24	244:19	279:13	314:07
48	45:34	50	54.705 L	91:10	136:45	182:21	227:55	273:31	319:06	364:42	410:17
54	51:02	44	69.236 L	115:24	173:05	230:47	288:29	346:11	403:53	461:34	519:16
60	56:40	40	85.476 L	142:28	213:41	284:55	356:09	427:23	498:37	569:50	641:04

for size and length of pipe indicated for Q = 0.0015

NOTE: If there has been no leakage, (zero P.S.I.G. drop), after one hour of testing, the test shall be accepted and the test complete. (See Section 7.5)

TABLE II

Minimum specified time required for a 0.5 P.S.I.G. Pressure Drop
for size and length of pipe indicated for Q = 0.0015

1 Pipe Diameter (Inches)	**2** Minimum Time (Min:Sec)	**3** Length for Minimum Time (Ft.)	**4** Time for Longer Length (Sec)	Specification Time for Length (L) Shown (Min:Sec)							
				100 Ft.	100 Ft.	100 Ft.	100 Ft.	100 Ft.	100 Ft.	100 Ft.	100 Ft.
4	1:53	597	.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.760 L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187 L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	114	5.235 L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.837 L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54
30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
33	15:35	72	12.926 L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57
36	17:00	66	15.384 L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23
42	19:54	57	20.942 L	34:54	52:21	69:49	87:15	104:42	122:10	139:37	157:04
48	22:47	50	27.352 L	45:35	68:23	91:11	113:58	136:46	159:33	182:21	205:09
54	25:31	44	34.618 L	57:42	86:33	115:24	144:15	173:05	201:56	230:47	259:38
60	28:20	40	42.738 L	71:14	106:51	142:28	178:05	213:41	249:18	284:55	320:32

NOTE: If there has been no leakage, (zero P.S.I.G. drop), after one hour of testing, the test shall be accepted and the test complete. (See Section 7.5)

VERDANTAS
HYDROSTATIC LEAKAGE TEST

JOB. NO. _____ PROJECT: _____

CONTRACTOR: _____ CLIENT: _____

WATERLINE TESTED AT: _____ _____
(Street Name) (Station of Gauge)

FROM STATION _____ TO STATION _____ ON _____

WATERLINE SIZE _____ TYPE _____

TESTED _____ , _____ AT _____ FOR _____
TOTAL L.F. PIPE SIZE PSI DURATION

ALLOWABLE LEAKAGE _____ PER 1,000 L.F. OR _____ PER _____
GALS./HR. TOTAL GALS. TOTAL L.F.

1ST TEST _____, _____ AND _____
PASS / FAIL PRESSURE LOST GALLONS LOST

2nd TEST _____, _____ AND _____
PASS / FAIL PRESSURE LOST GALLONS LOST

APPROVED BY _____
(INSPECTOR)

COMMENTS: _____

_____

ALLOWABLE LEAKAGE PER 1,000 FEET OF WATERMAIN:

PIPE SIZE INCH DIAMETER	ALLOWABLE LEAKAGE GALS. / 1,000 FEET
6	1
8	1.3
10	1.6
12	1.9
16	2.5
20	3.2
24	3.8
30	4.8
36	5.7

NOTE: IN NO CASE SHALL THE TESTED SECTION EXCEED 2,000 FEET IN LENGTH.

verdantas

PROJECT: _____ **SHEET NO. 1 OF** _____

JOB NO. _____ **STREET:** _____

CONTRACTOR: _____ **PROJECT REP:** _____

MANHOLE VACUUM TEST

M.H. NO.	M.H. Diameter (in.)	M.H. Depth (ft.) (btm.m.h. cover to shelf)	Vacuum Required (in Hg)	Vacuum Attained (in Hg)	Vacuum Drop (in Hg)	Holding Time Required (sec.)	Pass/ Fail	Date Tested	Contractor Attest	Engineer Attest	Remarks

TABLE 1 – Minimum Test Times for Various Manhole Diameter

Depth	Diameter, in.								
(ft)	30	33	36	42	48	54	60	66	72
Time(s)									
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81

22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	64	78	87	97
26	36	39	46	55	64	75	85	94	105
	39	42	49	59	69	81	91	101	113
	42	45	53	63	74	87	98	108	121

Note: Allowable drop equals 1 in. Hg for time shown

PROJECT REP: _____

DATE: _____

SECTION 013323 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.1 GENERAL

A. The Contractor shall submit detailed drawings, acceptable catalog data, specifications and material certifications for all equipment and materials specified or required for the proper completion of the work.

B. The intent of these items is to demonstrate compliance with the design concept of the work and to provide the detailed information necessary for the fabrication, assembly and installation of the work specified. It is not intended that every detail of all parts of manufactured equipment be submitted, however sufficient detail will be required to ascertain compliance with the specifications and establish the quality of the equipment proposed.

Shop Drawings shall be sufficiently clear and complete to enable the Engineer/Architect and Owner to determine that items proposed to be furnished conform to the specifications and that items delivered to the site are actually those that have been reviewed.

C. It is emphasized that the Engineer/Architect's review of Contractor's submitted data is for general conformance to the contract drawings and specifications but subject to the detailed requirements of drawings and specifications. Although the Engineer/Architect may review submitted data in detail, such review is an effort to discover errors and omissions in Contractor's drawings. The Engineer/Architect's review shall in no way relieve the Contractor of his obligation to properly coordinate the work and to Engineer/Architect the details of the work in such manner that the purposes and intent of the contract will be achieved. Such review by the Engineer/Architect shall not be construed as placing on him or on the Owner any responsibility for the accuracy and for proper fit, functioning or performance of any phase of the work included in the contract.

D. Shop Drawings shall be submitted in proper sequence and with due regard to the time required for checking, transmittal and review so as to cause no delay in the work. The Contractor's failure to transmit appropriate submittals to the Engineer/Architect sufficiently in advance of the work shall not be grounds for time extension.

E. The Contractor shall submit Shop Drawings for all fabricated work and for all manufactured items required to be furnished in the Contract in accordance with the General Provisions and as specified herein. Shop Drawings shall be submitted in sufficient time to allow at least twenty-one (21) calendar days after receipt of the Shop Drawings from the Contractor for checking and processing by the Engineer/Architect.

F. It is the responsibility of each Prime Contractor to furnish to all other Prime Contractors and especially the General Construction Contractor reviewed Shop Drawings for guidance in interfacing the various trades, i.e., sleeves, inserts, anchor bolts, terminations, and space requirements.

G. No work shall be performed requiring Shop Drawings until same have been reviewed by Engineer/Architect.

H. Accepted and reviewed Shop Drawings shall not be construed as approval of changes from Contract plan and specification requirements.

I. The Engineer/Architect will review the first and second Shop Drawing item submittals at no cost to the Contractor. Review of the third submittal and any subsequent submittal will be at the Contractor's expense. Payment will be deducted from the Contract amount at a rate of 3.4 times direct labor cost plus expenses.

1.2 SUBMITTAL PROCEDURE

A. All required submissions shall be made to the Engineer/Architect by the Prime Contractor(s) only. Any data prepared by subcontractors and suppliers and all correspondence originating with subcontractors, suppliers, etc., shall be submitted through the Contractor.

B. Contractor shall review and approve all Shop Drawings prior to submission. Contractor's approval shall constitute a representation to Owner and Engineer/Architect that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that Contractor has reviewed or coordinated each Shop Drawing or sample with the requirements of the work and the Contract Documents.

C. Submittal Preparation: Mark each submittal with a permanent label or page for identification. Provide the following information on the label for proper processing and recording of action taken:
   1. Location
   2. Project Name
   3. Contract
   4. Name and Address of Engineer/Architect
   5. Name and Address of Contractor
   6. Name and Address of Subcontractor
   7. Name and Address of Supplier
   8. Name of Manufacturer
   9. Number and Title of appropriate Specification Section
   10. Drawing Number and Detail References, as appropriate.
   11. Submittal Sequence or Log Reference Number.
      a. Provide a space on the label for the Contractor's review and approval markings and a space for the Engineer/Architect's "Action Stamp".

D. Each Shop Drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor:

Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.

_____ _____

Signature Date

_____

Company

E. Shop Drawings shall be submitted in not less than six (6) copies to the Engineer/Architect at the address specified at the Preconstruction Conference. Single mylar or sepia reproducible copies of simple Shop Drawings may be submitted with prior approval of the Engineer/Architect.

F. At the time of each submission, Contractor shall in writing identify any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

G. Drawings shall be clean, legible and shall show necessary working dimensions, arrangement, material finish, erection data, and like information needed to define what is to be furnished and to establish its suitability for the intended use. Specifications may be required for equipment or materials to establish any characteristics of performance where such are pertinent. Suitable catalog data sheets showing all options and marked with complete model numbers may, in certain instances, be sufficient to define the articles which it is proposed to furnish.

H. SAMPLES: For products which require submittal of samples, furnish samples so as not to delay fabrication, allowing the Engineer reasonable time for the consideration of the samples submitted. Properly label samples, indicating the material or product represented, its place of origin, the names of the vendor and Contractor and the name of the project for which it is intended. Ship samples prepaid. Accompany samples with pertinent data required to judge the quality and acceptability of the sample, such as certified test records and, where required for proper evaluation, certified chemical analyses.

1.3 REVIEW PROCEDURE

A. Engineer/Architect will review with reasonable promptness all properly submitted Shop Drawings. Such review shall be only for conformance with the design concept of the Project and for compliance with the information given in the plans and specifications and shall not extend to means, methods, sequences, techniques or procedures of construction or to safety precautions or programs incident thereto.

B. The review of a separate item as such will not constitute the review of the assembly in which the item functions. The Contractor shall submit entire systems as a package.

C. All Shop Drawings submitted for review shall be stamped with the Engineer/Architect's action and associated comments.

D. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Engineer/Architect will review each submittal, mark to indicate action taken, and return accordingly. Compliance with specified characteristics is the Contractor's responsibility.

Action Stamp: The Engineer/Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. If Shop Drawings are found to be in general compliance, such review will be indicated by marking the first statement.
2. If only minor notes in reasonable number are needed, the Engineer/Architect will make same on all copies and mark the second statement. Shop Drawings so marked need not be resubmitted.
3. If the submitted Shop Drawings are incomplete or inadequate, the Engineer/Architect will mark the third statement, request such additional information as required, and explain the reasons for revision. The Contractor shall be responsible for revisions, and/or providing needed information, without undue delay, until such Shop Drawings are acceptable. Shop Drawings marked with No. 3 shall be completed resubmitted.
4. If the submitted Shop Drawings are not in compliance with the Contract Documents, the Engineer/Architect will mark the fourth statement. The Contractor will be responsible to submit a new offering conforming to specific products specified herein and/or as directed per review citations.

E. No submittal requiring a Change Order for either value or substitution or both, will be returned until the Change Order is approved or otherwise directed by the Owner.

APPLICATION FOR USE OF SUBSTITUTE ITEM

TO: _____

PROJECT: _____

SPECIFIED ITEM:

_____	_____	_____
Page	Paragraph	Description

A. The undersigned requests consideration of the following as a substitute item in accordance with Article 6.05 of the General Conditions.

_____

B. Change in Contract Price (indicate + or -) $ _____

C. Attached data includes product description, specifications, drawings, photographs, references, past problems and remedies, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified. For consideration of the attached data as SHOP DRAWINGS, submittal shall be in accordance with requirements of Section 013323.

D. Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed substitute does not affect dimensions shown on Drawings.

2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.

3. The proposed substitution will have no adverse effect on other contractors, the construction schedule, or specified warranty requirements. (If proposed substitution affects construction schedule, indicate below using + or -)

_____ CONSECUTIVE CALENDAR DAYS

4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item, and agrees to reimburse the OWNER for the charges of the ENGINEER for evaluating this proposed substitute item.

E. Signature: _____

Firm: _____

Address: _____

_____

Telephone: _____ Date: _____

Attachments: _____

_____

_____

_____

For use by ENGINEER:

_____Accepted as evidenced by affixed SHOP DRAWING REVIEW stamp.
_____Accepted as evidenced by included CHANGE ORDER.
_____Not accepted as submitted. See Remarks.
_____Acceptance requires completion of submittal as required for SHOP DRAWINGS.
_____Not accepted. Do not resubmit.

By: _____ Date: _____

Remarks: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPLICATION FOR USE OF "OR-EQUAL" ITEM

TO: _____

PROJECT: _____

SPECIFIED ITEM:

_____	_____	_____
Page	Paragraph	Description

A. The undersigned requests consideration of the following as an "or-equal" item in accordance with Article 6.05 of the General Conditions.

_____

B. Change in Contract Price (indicate + or -) $ _____

C. Attached data includes product description, specifications, drawings, photographs, references, past problems and remedies, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified. For consideration of the attached data as SHOP DRAWINGS, submittal shall be in accordance with requirements of Section 013323.

D. Signature:

_____

Firm:

_____

Address:

_____

_____

Telephone: _____ Date: _____

Attachments: _____

_____

_____

_____

For use by ENGINEER:

_____Accepted as evidenced by affixed SHOP DRAWING REVIEW stamp.
_____Accepted as evidenced by included CHANGE ORDER.
_____Not accepted as submitted. See Remarks.
_____Acceptance requires completion of submittal as required for SHOP DRAWINGS.
_____Not accepted. Do not resubmit.

By: _____ Date: _____

Remarks: _____

END OF SECTION 013323

SECTION 013326 – PRODUCT TESTING AND CERTIFYING

PART 1 - GENERAL

1.1 QUALITY OF MATERIALS

A. Where the specifications call for mill or shop tests, the Contractor shall furnish duplicate copies of attested manufacturer's certificates showing details of quality or performance sufficient to demonstrate conformity to contract requirements. Mill, shop or witness tests shall be subject to view by the Engineer's representative, but the Engineer's representation shall not relieve the Contractor from the necessity of furnishing certificates specified. The Engineer shall be notified by the Contractor in writing, sufficiently in advance of the time of making tests, so that proper arrangements may be made. Waiving of witness of tests by the Engineer may be in writing only by the Engineer. All costs for travel, lodging, food and transportation that are necessary for the Engineer's representative and the Owner's representative to attend witness tests shall be included in the Contractor's bid for those item(s) specifically designated as being subject to witness testing.

B. Unless otherwise specified, all materials, equipment and articles shall be erected, installed, applied, or connected, used, cleaned and conditioned in accordance with the printed instructions and directions of the manufacturer.

C. The installation shall be so made that its several component parts will function together as a workable system. It shall be complete with all accessories necessary for its operation and shall be left with all equipment properly adjusted and in working order.

D. The work shall be executed in conformity with the best practice and so as to contribute to efficiency of operation, minimum maintenance, accessibility and sightliness. It shall also be executed so that the installation will conform and accommodate itself to the building structure, its equipment and usage.

E. Whenever in the contract documents a particular brand, make of material, device or equipment is shown or specified, such brand, make of material, device or equipment is to be regarded merely as a standard and such trade name shall be followed by "or equal".

1.2 QUALITY ASSURANCE

A. The equipment and materials to be furnished under this Contract shall be the products of well established and reliable firms which have had ample experience for at least five (5) years in the manufacture of equipment or materials similar in design and of equal quality to that specified. If required, the manufacturer shall submit a list of installations of similar equipment which have been in successful operation for at least five (5) years.

1.3 EXPERIENCE CLAUSE REQUIREMENT AND PERFORMANCE BONDS FOR MANUFACTURER

A. For every piece of equipment furnished under this Contract, the manufacturer will be required to have a minimum of five (5) years of experience in providing this specific type

of equipment. In lieu of this experience requirement, the manufacturer will be required to provide performance bond(s) for the faithful performance of the equipment and guarantee payment in a sum of not less than one hundred and fifty percent (150%) of the total equipment price for the completed work for that item. In the absence of verifiable experience, the manufacturer will be required to provide the performance bond(s) for the same number of years that the manufacturer was found lacking in experience from the specified five (5) year period. The performance bond(s) shall be from an approved surety company, to the satisfaction of the Owner's Law Director.

B. Agents of bonding companies which write bonds for the performance and payment of the contract shall furnish power of attorney bearing the seal of the company, evidencing such agent's authority to execute the particular type of bond to be furnished, and evidencing also the right of the surety company to do business in the State of Ohio. Copy of this proof shall be attached to each copy of the contract.

C. The bond shall be purchased through a surety company with a local agent upon whom service of process can be made.

D. In event of failure of surety or co-surety, the manufacturer shall immediately furnish a new bond, as required herein. The manufacturer's bond will not be released until all provisions of the contract have been fulfilled.

E. The surety used for the bid bond and performance bond shall be listed in the latest U.S. Treasury Circular 570 and the Penal Sums shall be within the maximum specified for such company in said Circular 570.

END OF SECTION 013326

SECTION 013543 - ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 UNNECESSARY NOISE, DUST AND ODORS

A. The Contractor's performance of this contract shall be conducted so as to eliminate all unnecessary noise, dust and odors.

1.2 SEWAGE, SURFACE AND FLOOD FLOWS

A. The Contractor shall take whatever action is necessary to provide all necessary tools, equipment and machinery to adequately handle all sewage, surface flows and flood flows which may be encountered during the performance of the work. The entire cost of and liability for handling such flows is the responsibility of the Contractor and shall be included in the price for the appropriate item.

1.3 WORK IN FREEZING WEATHER

A. Written permission from the Engineer shall be obtained before any work is performed which, in the judgment of the Engineer, may be affected by frost, cold, or snow. When work is performed under such conditions, the Contractor shall provide facilities for heating the materials and for protecting the finished work.

1.4 POLLUTION CONTROL

A. It shall be the responsibility of the Contractor to prevent or limit pollution of air and water resulting from their operations.

B. The Contractor shall perform work required to prevent soil from eroding or otherwise entering onto all paved areas and into natural watercourses, ditches, and public sewer systems. This work shall conform to all local ordinances and/or regulations, if any, and if not otherwise regulated by local ordinances or regulations shall at a minimum conform to the Ohio EPA General Storm Water NPDES Permit for Construction Activities and the Ohio Department of Natural Resources Rainwater and Land Development manual. This work may consist of but not be limited to construction and continual maintenance of silt fence, bio bag filters, sedimentation traps, stilling basins, check dams, temporary seeding, temporary mulching, erosion mats and other means to clarify waters containing suspended materials from excavations, embankments, cleared and grubbed or stripped areas, stockpiles, well points, and disposal sites and shall be commensurate with the contractor’s schedule, sequence of work, means and methods. If a SWPPP plan is not required for the project, the contractor shall at a minimum submit a plan of their proposed erosion control prevention methods for approval by the Owner and/or other regulatory authorities having jurisdiction prior to starting any construction activities which may cause erosion.

C. The Contractor shall perform work required to prevent dust attributable to their operations from entering the atmosphere. Dust on unsurfaced streets or parking areas and any remaining dust on surfaced streets shall be controlled with water and/or calcium chloride dust palliative as needed.

D. Any material removed from sanitary or storm sewers shall be disposed of in accordance with all applicable regulations.

1.5 WETLAND AND FLOODPLAIN DISTURBANCE

A. Areas noted as wetlands or floodplain in the plans shall not be disturbed unless noted for non-trenchless construction. Areas disturbed shall be restored to their pre-construction state, including the planting of any vegetation or grading to match the existing conditions of the area. Any area not permitted for disturbance that is affected shall be restored at the cost of the Contractor.

END OF SECTION 013543

SECTION 014223 - INDUSTRY STANDARDS

PART 1 - GENERAL

1.1 ABBREVIATIONS

A. Abbreviations, as used, designate the following:

AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
AIEE	-	American Institute of Electrical Engineers
AISC	-	American Institute of Steel Construction
ANSI	-	American National Standards Institute
ASCE	-	American Society of Civil Engineers
ASTM	-	American Society of Testing and Materials
AWWA	-	American Water Works Association
CMS	-	Construction and Material Specifications
NEMA	-	National Electrical Manufacturers Association
NASSCO	-	National Association of Sewer Services Companies
ODOT	-	Ohio Department of Transportation
ORC	-	Ohio Revised Code
UL	-	Underwriters Laboratories, Inc.

1.2 REFERENCE TO OTHER SPECIFICATIONS

A. Where reference is made to specifications such as ASTM, AWWA or AASHTO, the latest edition shall be used, unless otherwise noted on the plans or in the specifications.

1.3 CODES AND STANDARDS

A. All work provided for by these specifications must be installed according to the provisions of the State and local building codes, subject to inspection and acceptance by the State and local inspectors.

END OF SECTION 014223

SECTION 014323 – QUALIFICATIONS OF TRADESMEN

PART 1 - GENERAL

1.1 CHARACTER OF WORKMEN AND EQUIPMENT

A. The Contractor shall employ competent and efficient workmen for every kind of work. Any person employed on the work who shall refuse or neglect to obey directions of the Owner or their representative, or who shall be deemed incompetent or disorderly, or who shall commit trespass upon public or private property in the vicinity of the work, shall be dismissed when the Owner so orders, and shall not be re-employed unless express permission be given by the Owner. The methods, equipment and appliances used on the work and the labor employed shall be such as will produce a satisfactory quality of work, and shall be adequate to complete the contract within the specified time limit.

B. In hiring of employees for the performance of work under this Contract, or any Subcontract hereunder, no Contractor or Subcontractor, nor any person acting on behalf of such Contractor or Subcontractor, shall, by reason of race, sex, creed or color, discriminate against any citizen of the State of Ohio in the work to which the employment relates. No Contractor, Subcontractor, nor any person on their behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, creed, sex or color.

END OF SECTION 014323

SECTION 015213 - FIELD OFFICES

PART 1 - GENERAL

1.1 CONTRACTOR'S OFFICE

A. The Contractor shall be permitted to have an onsite office at an approved location by the Owner.

B. The Contractor shall be solely responsible to provide and maintain an office site of the work during the construction period of the contract (if necessary), at which their authorized agent shall be present at all times while the work is in progress.

C. Office and site shall include all necessary first aid items and equipment for the Contractor’s and Owner’s use.

END OF SECTION 015213

SECTION 015713 - TEMPORARY EROSION CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Furnishing all labor, materials, tools, equipment and services for the temporary soil erosion and sediment control work as indicated.

B. Coordinating the temporary pollution and erosion control with work of all other trades.

C. Reducing to the greatest extent practicable the area and duration of exposure of readily erodible soils.

D. Protecting the soils by use of temporary vegetation or mulch or by accelerating the establishment of permanent vegetation.

E. Mechanically retarding the rate of runoff from the construction site and control disposal of runoff.

F. Trapping all sediment resulting from construction in temporary or permanent debris basins.

G. Using temporary measures to keep erosion under control if construction is suspended for any appreciable length of time.

H. Providing protection against chemical, fuel, or lubricant spills, and sewage pollutants.

I. Protecting project and existing structures from surface water damage due to utility line excavations.

J. Controlling soil erosion and sedimentation by use of silt fences, dikes, ditches, slope protection, sediment pits, basins, dams, slope drains, coarse aggregate, mulches, sod, grasses, filter fabrics, and other erosion control devices or methods.

1.2 RELATED DOCUMENTS AND SECTIONS

A. Section 013319 – Field Test Reporting

B. Section 030000 - Concrete Work

C. Section 310000 - Earthwork

D. Section 333100 – Sanitary Sewer System

1.3 UNIT PRICES

A. Work under this section is incidental to work covered under other sections of these Specifications and shall be paid as work incidental to those items.

1.4 SUBMITTALS

A. Product Data
   1. Filter fabric

B. Shop Drawings

C. Samples

D. Quality Control Submittals
   1. Design Data
   2. Test Reports
   3. Certificates
      a. Seed
      b. Fertilizer
      c. Limestone
   4. Manufacturers Instructions

E. Contract Closeout Submittals
   1. Project Record Documents

1.5 QUALITY ASSURANCE

A. Qualifications – Work shall be performed by personal meeting requirements identified in section 014323 – Qualifications of Tradesmen.

B. Regulatory Requirements – Work performed within Ohio Department of Transportation Right-of-Way or Limited Right of Way shall have maintenance of traffic in accordance with the most recent standards set for in the OMUTCD.

C. Certifications – The Contractor shall provide certification that all materials meet requirements identified in plans, specifications, and bid/contract documents.

D. Field Samples – All testing of native soils, bedding and backfill materials, and pavement base materials shall be in accordance with requirements identified in section 013319 – Field Test Reporting.

E. Pre-Construction Conference – The Contractor, Engineer, and Owner shall meet at a minimum ten (10) business days prior to the mobilization of equipment and materials to the project site. No work shall commence until a pre-construction meeting is held and the work plan by the Contractor is approved by the Engineer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping
   1. Deliver grass seed, fertilizer and limestone in original containers labeled with content analysis.

B. Acceptance at Site

C. Storage and Protection

1.7 PROJECT CONDITIONS

A. Environmental Requirements
   1. All work shall be performed in accordance with erosion control and stormwater pollution prevention measures detailed in section Section 013543, Environmental Protection.

1.8 SEQUENCING AND SCHEDULING

A. All temporary control measures as shown on the Drawings, called for in these Specifications or ordered by the Engineer shall remain in effect during the life of the contract to control soil erosion, sedimentation and water pollution.

B. The Contractor is responsible to develop a work plan for implementation of the erosion control devices and systems. A plan shall be submitted for approval to the Engineer prior to any work commencing.

PART 2 - PRODUCTS

2.1 SEED

A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America.

B. All areas of temporary seeding shall be seeded with grass as shown in the following table:

March 1 - August 15	Per 1000 Square Feet	Per Acre
Oats	3 lbs.	4 bu.
Perennial Ryegrass	1 lb.	40 lbs.
Tall Fescue	1 lb.	40 lbs.

August 16 - November 1*	Per 1000 Square Feet	Per Acre
Rye	3 lbs.	2 bu.
Wheat	3 lbs.	2 bu.
Perennial Ryegrass	1 lb.	40 lbs.

Tall Fescue	1 lb.	40 lbs.

* After November 1, use mulch only

2.2 ORGANIC MULCH

A. Select mulch material based on site requirements, availability of materials and availability of labor and equipment. The following are the minimum rates:

	Rates		
Mulch	Per Acre	Per 1000 ft^2	Notes
Straw (temporary only)	2 tons	90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Wood Chips (permanent or temporary)	400 $yds.^3$	9 - 10 $yds.^3$	Apply approx. 3" deep. Treat with 12 lbs. of nitrogen per ton. Do not use on firm turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark (temporary mulch only)	70 $yds.^3$	1½ - 2 $yds.^3$	Do not use in fine turf areas. Apply about ½" thick. Apply with a mulch blower or by hand.

2.3 FERTILIZER

A. All fertilizer shall be manufactured from cured stock and organic sources. Chemical elements shall be accurately proportioned, uniformly mixed, and delivered to the site in factory-sealed containers fully labeled, bearing the name or trademark and warranty of the manufacturer. Commercial fertilizer for lawn sodding shall be dry or liquid compounds of 12-12- 12 analysis, meeting applicable requirements of State and Federal laws.

2.4 LIMESTONE

A. All limestone shall be ground agricultural grade dolomitic limestone containing at least 10 percent magnesium oxide with a minimum total neutralizing power of 90, with at least 40 percent passing a No. 100 sieve and at least 95 percent passing a No. 8 sieve.

2.5 WATER

A. All irrigation water shall be clean and free from injurious amounts of oil, acid, alkali, or other deleterious substances.

2.6 DITCH CHECKS

A. Temporary ditch checks shall consist of coarse aggregate dikes.

2.7 INLET FILTERS

A. Temporary inlet filters and silt fences shall be adequately supported as detailed on the drawings.

2.8 SLOPE DRAINS

A. Temporary slope drains shall consist of pipe, coarse aggregate, riprap, rock channel protection, mats, plastic sheets or other materials approved by the Engineer. Sediment pits may be included as part of slope drain protection.

2.9 FILTER FABRIC

A. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Requirements
Filtering Efficiency	75% (min.)
Tensile Strength at 20% (max.) Elongation *	Extra Strength - 50 lbs./lin. in. (min.)
	Standard Strength - 30 lbs./lin. in. (min.)
Flow Rate	0.3 gal./sq.ft./min. (min.)

*Requirements reduced by 50 percent after 6 months of installation.

B. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0° F to 120° F.

2.10 BURLAP

A. Burlap shall be 10 ounce per square yard fabric.

2.11 FILTER SUPPORTS AND REINFORCING

A. Posts for silt fences shall be either 4" diameter wood or 1.33 pounds per linear foot steel with a minimum length of 5 feet. Steel posts shall have projections for fastening wire to them.

B. Stakes for filter barriers shall be 1" x 2" wood (preferred) or equivalent metal with a minimum length of 3 feet.

C. Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. The Contractor shall limit the surface area of erodible earth material exposed by clearing and grubbing; the surface area of erodible earth material exposed by excavation; borrow; and fill operations; and provide immediate permanent or temporary control measures to prevent contamination of adjacent streams or other areas of water impoundment. Such work will involve the construction of temporary ditch checks, filters, benches, dikes, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods necessary to control erosion and sedimentation.

B. The Contractor shall incorporate all permanent erosion control features into the Work at the earliest practicable time. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. This will require the establishing of final grades as shown on the Drawings and application of agricultural limestone, commercial fertilizer, seeding and mulching or sodding. When directed by the Engineer, temporary fertilizer, seeding and mulching materials shall be used. In general, the Contractor shall temporarily seed all disturbed areas within seven (7) days if they are to remain dormant for more than forty- five (45) days. Permanent soil stabilization shall be applied to disturbed areas within seven (7) days after final grade is reached on any portion of the site. Temporary control measures will be used when and as directed by the Engineer to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

C. Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures will be required between successive construction stages.

D. The Engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finished grading, mulching, seeding, and other such permanent control measures current in accordance with the accepted schedule. Mulching, seeding, and other such permanent control measures shall be applied after completion of a vertical eight (8) feet of embankment or cut, unless otherwise directed by the Engineer.

Should seasonal limitations or embankment make such coordination unrealistic, temporary erosion control measures shall be taken immediately.

E. The Engineer may increase or decrease the allowable amount of surface area or erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions. Factors such as soil erodibility, slope, cut or fill height, exposed area contributing to a watercourse and weather will be considered in this determination.

F. In the event of conflict between these requirements and pollution control laws, rules, or regulations or other Federal, State or local agencies, the more restrictive laws, rules or regulations shall apply.

G. Temporary seeding areas shall be fertilized at a rate of 12-15 pounds per 1000 square feet of 10-10-10 or 12-12-12 analysis or equal.

H. When directed by the Engineer, the seed bed shall be thoroughly watered to maintain adequate moisture in the upper four (4) inches of soil, necessary to promote proper root growth.

I. When directed by the Engineer, temporary seeded areas shall be mowed when grass exceeds four (4) inches in height.

J. Temporary erosion control features shall be acceptably maintained and shall subsequently be removed or replaced when directed by the Engineer.

K. Removed materials shall become the property of the Contractor and shall be disposed of off the site at the Contractor's expense.

3.2 PERFORMANCE

A. If, in the opinion of the Engineer and Owner, proper control of soil erosion and sedimentation is not being provided by the Contractor, the Owner may take all necessary steps to provide corrective measures and the cost of such services will be deducted from any money which may be due or become due the Contractor.

B. Control work performed for protection of construction areas outside the construction site, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites shall be considered as a subsidiary obligation of the Contractor, with all necessary control costs included in the contract price.

C. In the event that temporary erosion and sediment control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled, and are ordered by the Engineer, such temporary work shall be performed by the Contractor at his expense.

3.3 SILT FENCE

A. The height of a silt fence shall not exceed 36 inches (higher fences may impound volumes of water sufficient to cause failure of the structure).

B. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum six (6) inches overlap and securely sealed.

C. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). When extra strength fabric is used without the wire support fence, post spacing shall not exceed six (6) feet.

D. A trench shall be excavated approximately four (4) inches wide and four (4) inches deep along the line of posts and upslope from the barrier.

E. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of two (2) inches and shall not extend more than 36 inches above the original ground surface.

F. The standard strength filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

G. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of Subparagraph F above applying.

H. The trench shall be backfilled and soil compacted over the filter fabric.

I. Silt fences shall be removed when they have served their purpose, but not before the upslope area has been permanently stabilized.

J. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

K. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

L. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.

M. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

3.4 TEMPORARY MULCHING

A. Application
1. Mulch materials shall be spread uniformly, by hand or machine.
a. When spreading straw mulch by hand, divide the areas to be mulched into approx. 1000 sq. ft. sections and place approx. 90 lbs. of straw in each section to facilitate uniform distribution.

B. Mulch Anchoring
1. Straw mulch shall be anchored immediately after spreading to prevent windblow. One of the following methods of anchoring straw shall be used:
a. Mulch anchoring tool
1. This is a tractor-drawn implement (mulch crimper, serrated straight disk or dull farm disk) designed to punch mulch approximately two (2) inches into the soil surface. This method provides maximum erosion control with straw. It is limited to use on slopes no steeper than 3:1, where equipment can operate safely. Machinery shall be operated on the contour.
b. Liquid mulch binders
1. Application of liquid mulch binders and tackifiers should be heaviest at edges of areas and at crests of ridges and banks, to prevent windblow. The remainder of the area should have binder applied uniformly. Binders may be applied after mulch is spread; however, it is recommended to be sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is the most effective method.
2. The following type of binder may be used:
a.) Asphalt - any type of asphalt thin enough to be blown from spray equipment is satisfactory. Recommended for use are rapid curing (RC-80, RC-250, RC-800), medium curing (MC-250, MC-800) and emulsified asphalt (SS-1, MS-2, RS-1 and RS-2). Apply asphalt at 4 gal./1000 $ft.^2$, 600 gal./acre. Do not use heavier applications as it may cause the straw to "perch" over rills.
b.) Wood Fiber - wood fiber hydroseeder slurries may be used to tack straw mulch.
c. Mulch nettings
1. Lightweight plastic, cotton or paper nets may be stapled over the mulch according to manufacturer's recommendations.

C. Chemical Mulches
1. Chemical mulches may be used alone only in the following situations:
a. Where no other mulching material is available.

b. In conjunction with temporary seeding during the times when mulch is not required for that practice.

2. Chemical mulches may be used to bind other mulches or with wood fiber in a hydroseeded slurry at any time. Manufacturer's recommendations for application of chemical mulches shall be followed.

D. Nets and Mats

1. Nets may be used alone on level areas, on slopes no steeper than 3:1, and in waterways.
2. When mulching is done in late fall or during June, July and August, or where soil is highly erodible, net should only be used in conjunction with an organic mulch such as straw.
3. When net and organic mulch are used together, the net should be installed over the mulch except when the mulch is wood fiber. Wood fiber may be sprayed on top of the installed net.
4. Excelsior blankets are considered protective mulches and may be used alone on erodible soils and during all times of the year.
5. Other products designed to control erosion shall conform to manufacturer's specification and should be applied in accordance with manufacturer's instructions provided those instructions are at least as stringent as this specification.
6. Staples will be made of plain iron wire, No. 8 gauge or heavier, and will be six (6) inches or more in length.
7. Prior to installation:
   a. Shape and grade as required the waterway, channel, slope or other area to be protected.
   b. Remove all rocks, clods or debris larger than two (2) inches in diameter that will prevent contact between the net and the soil surface.
   c. When open-weave nets are used, lime, fertilizer and seed may be applied either before or after laying the net. When excelsior matting is used, they must be applied before the mat is laid.
8. Laying the Net:
   a. Start laying the net from top of channel or top of slope and unroll down-grade.
   b. Allow to lay loosely on soil - do not stretch.
   c. To secure net: Upslope ends of net should be buried in a slot or trench no less than six (6) inches deep. Tamp earth firmly over net. Staple the net every twelve (12) inches across the top end.
   d. Edges of net shall be stapled every three (3) feet. Where two strips of net are laid side by side, the adjacent edges shall be overlapped three (3) inches and stapled together.
   e. Staples shall be placed down the center of net strips at 3-foot intervals. Do not stretch net when applying staples.
9. Joining strips
   a. Insert new roll of net in trench, as with upslope ends of net. Overlap the end of the previous roll eighteen (18) inches, turn under six (6) inches and staple across end of roll just below anchor slot and at the end of the turned-under net every twelve (12) inches.

10. At bottom of slopes
    a. Lead net out onto a level area before anchoring. Turn ends under six (6) inches and staple across end every twelve (12) inches.
11. Check slots
    a. On highly erodible soils and on slopes steeper than 4:1, erosion check slots should be made every fifteen (15) feet. Insert a fold of net into a six (6) inch trench and tamp firmly. Staple at twelve (12) inch intervals across the downstream portion of the net.
12. Rolling
    a. After installation, stapling and seeding, net should be rolled to ensure firm contact between net and soil.
13. All mulches should be inspected periodically, in particular after rainstorms, to check for rill erosion. Where erosion is observed, additional mulch should be applied. Net should be inspected after rainstorms for dislocation or failure. If washouts or breakage occur, re- install net as necessary after repairing damage to the slope. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repair as needed.

3.5 TEMPORARY SEEDING

A. Site Preparation
1. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application and anchoring.
2. Install the needed erosion control practices prior to seeding such as diversions, temporary waterways for diversion outlets and sediment basins.

B. Seedbed Preparation
1. Lime (in lieu of a soil test recommendation) shall be applied on acid soil (pH 5.5 or lower) and subsoil at a rate of 100 pounds per 1000 square feet or two tons per acre of agricultural ground limestone. For best results, make a soil test.
2. Fertilizer (in lieu of a soil test recommendation) shall be applied at a rate of 12-15 pounds per 1000 square feet or 500-600 pounds per acre of 10-10-10 or 12-12-12 analysis or equivalent.
3. Work the lime and fertilizer into the soil with a disk harrow, springtooth harrow or similar tools to a depth of two inches. On sloping areas, the final operation shall be on the contour.

C. Seeding
1. Apply the seed uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed wheat or rye no deeper than one (1) inch. Seed ryegrass no deeper than one-fourth (¼) inch.
2. When feasible, except where a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller or light drag. On sloping land, seeding operations should be on the contour wherever possible.

D. Mulching
   1. Mulch shall be applied to protect the soil and provide a better environment for plant growth.
   2. Mulch shall consist of small grain straw (preferably wheat or rye) and shall be applied at the rate of two tons per acre or 100 pounds (two to three bales) per 1000 square feet.
   3. Spread the mulch uniformly by hand or mechanically so the soil surface is covered.
   4. Mulch Anchoring Methods
      a. Mechanical - use a disk, crimper or similar type tool set straight to punch or anchor the mulch material into the soil.
      b. Asphalt Emulsion - apply at the rate of 160 gallons per acre into the mulch as it is being applied.
      c. Mulch Nettings - use according to the manufacturer's recommendations. Use in areas of water concentration to hold mulch in place.

E. Irrigation
   1. If soil moisture is deficient, supply new seedings with adequate water for plant growth until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

END OF SECTION 015713

SECTION 016600 - PRODUCT HANDLING AND PROTECTION

PART 1 - GENERAL

1.1 DELIVERY AND STORAGE OF MATERIALS

A. The Contractor shall be responsible for delivery and storage of all materials.

B. The Contractor shall coordinate with the Engineer on the arrangement for storing construction materials and equipment. Deliveries of all construction materials and equipment should be made at suitable times.

C. The Contractor shall store all materials required for the performance of this contract at sites designated by the Engineer.

D. All stockpiles shall be neat, compact, completely safe, and barricaded with warning lights if necessary.

E. Precautions shall be taken so that no shade trees, shrubs, flowers, sidewalks, driveways or other facilities will be damaged by the storage of materials. The Contractor shall be responsible for the restoration of all stockpile sites to their original condition.

F. Materials, tools and machinery shall not be piled or placed against shade trees, unless they shall be amply protected against injury therefrom. All materials, tools, machinery, etc. stored upon public thoroughfares must be provided with red lights at night time so as to warn the traffic of such obstruction.

G. Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, shall again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the construction site may be used for storage purposes and for the placing of the Contractor's plant and equipment, but any additional space required therefore must be provided by the Contractor at his expense. Private property shall not be used for storage purposes without written permission of the property owner or lessee, and copies of such written permission shall be furnished the Engineer. All storage sites shall be restored to their original condition by the Contractor at his expense.

END OF SECTION 016600

SECTION 016617 - MAINTENANCE

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section provides general requirements for the maintenance of equipment in the field. Storage maintenance requirements are provided by Section 016600, Product Handling and Protection. Specific maintenance requirements are provided by manufacturers per individual Sections in the Project Manual.

B. Maintenance is performed to ensure delivery to the Owner of equipment in an undeteriorated and fully serviceable condition.

C. This Section also includes requirements for preventive and corrective maintenance during operation of the equipment prior to the commencement of the Warranty period.

1.2 RELATED SECTIONS

A. Section 016600, Product Handling and Protection.

1.3 DEFINITIONS

A. Storage maintenance consists of establishing and maintaining the environment required by the stored materials and performing periodic servicing.

B. Preventive maintenance consists of activities performed on a periodic basis to maintain operating or operational items or equipment.

C. Corrective maintenance consists of correcting faults or failures in an item or equipment. This may include adjustments or replacement of defective parts.

1.4 SUBMITTALS

A. The Maintenance Log shall be submitted to the Owner upon completion of the Operational Demonstration and before the start of the Warranty period.

B. No submittals are required by this Section, except as noted above. Maintenance schedules and practices shall conform to approved submittals required by individual Sections in the Project Manual.

PART 2 – PRODUCTS

2.1 COMPONENTS, ACCESSORIES AND REPAIR PARTS

A. All components, accessories and repair parts used in maintenance shall be supplied by or approved by the equipment manufacturer for use on the equipment.

2.2 SOURCE QUALITY CONTROL

A. All parts and materials used in maintenance shall meet the quality control requirements provided for the item or equipment. These are specified in individual Sections of the Project Manual.

PART 3 – EXECUTION

3.1 EXAMINATION AND VERIFICATION OF CONDITION

A. The Contractor shall prepare a Maintenance Log for all equipment.
   1. This log shall include a list of required maintenance services and inspections, as provided by the manufacturer and submitted under individual Sections of the Project Manual.
   2. The Maintenance Log shall include checklists for the periodic services and inspections required.
   3. The Contractor shall initial and date the requisite log entries upon completion of the individual servicing or inspection.
   4. The Maintenance Log shall be located in the Contractor's Field Office and shall be available for review by the Owner until it is submitted for record purposes upon completion of the Operational Demonstration and the start of the Warranty period.

3.2 PREPARATION

A. Before removing an item from storage per Section 016600, the Contractor shall review the installed location. Protection and services at the installed location must meet the equipment storage requirements.

B. Before moving equipment to the installed location, the Contractor shall have available materials for temporary shelter or services required to establish the proper storage environment after the equipment is installed until it is placed in service in its final operating environment.

3.3 PERFORMANCE OF MAINTENANCE

A. The Contractor shall perform all storage and preventive maintenance and inspections required by the manufacturer at the specified intervals.

B. When notified by the Owner, the Contractor will perform corrective maintenance. This will be performed at no cost to the Owner. Corrective maintenance will be performed per manufacturer's written instructions or by direction of the approved representative of the manufacturer.

C. The Contractor shall restore equipment to its operating condition before start-up.

D. The Contractor shall re-establish storage maintenance in the event an item or equipment is removed from service.

E. When the equipment warranty becomes effective, the Owner will assume responsibility for its maintenance.

END OF SECTION 016617

SECTION 017517 - STARTING OF SYSTEMS/COMMISSIONING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes general requirements for the commissioning of the Work and start-up and operation of systems and equipment.

1.2 SUMMARY

A. Starting, testing, and operating the completed Work including systems and equipment until Substantial Completion is achieved and operation of the completed Work including systems or equipment are accepted by the Owner. Contractor shall cooperate and coordinate with the Owner in the operation, maintenance, and adjustment of the Work.

1.3 RELATED SECTIONS

A. Section 013323 - Shop Drawings, Product Data and Samples

B. Section 016617 - Maintenance

C. Section 017901 - Operational Demonstration

D. Section 017902 - Instruction of Owner’s Personnel

1.4 DEFINITIONS

A. Commissioning: Commissioning is the series of activities, or process, necessary to ensure that systems and equipment are designed, installed, functionally tested, started up and capable of being operated and maintained to perform in conformity with the design intent for the facility improvements. Commissioning includes, but is not limited to factory testing, field testing, dry testing, wet testing, performance testing, manufacturer's checkout, start-up, and Operational Demonstration.

B. Factory Testing: Factory Testing is performance testing, operation testing, or documentation verification conducted in the production facilities, or specialized test facilities, of the equipment supplier. Such testing shall conform to the requirements of the individual sections of the Contract Documents.

"Witnessed" Factory Testing shall mean that the testing is witnessed by the Owner or his designated representative.

C. Field Testing: Field Testing is performance testing, operation testing, or documentation verification conducted in the field after installation, to provide

comparison with the results obtained in the Factory Testing.

D. Dry Testing: Dry Testing is performed by the Contractor without introducing either process material or other test material into the component, system, or unit process.

E. Wet Testing: Wet Testing is testing performed by the Contractor utilizing test material in the component, system, or unit process. Tankage shall be filled with test material to operating level.

F. Performance Testing: Performance Testing is performed by the Contractor to demonstrate system performance in accordance with the Project Manual requirements.

G. Manufacturer's Check-Out: Field inspection, testing, adjustments, and sign off by the approved representative of the Manufacturer, indicating that the component, system, or unit process meets the manufacturer's requirements.

H. Start-Up: Narrowly defined as placing a component, system, or unit process on-line. Start-up can be a commissioning activity or a normal operating activity.

I. Operational Demonstration: A commissioning activity performed by the Contractor wherein the Contractor operates and maintains a fully functional component, system, or unit process for a period of time after stable operation has been achieved.

J. Process Flow: Actual flow from the existing system that will drain into new pump stations and be pumped through proposed pumps and force mains.

1.5 SUBMITTALS

A. Quality Control Submittals:
   1. Field Installation Reports – Submit reports by Manufacturer's Representative in accordance with Paragraph 3.4 of this Section.

B. Commissioning Documentation: Contractor shall prepare and submit all documentation for review and approval. The documentation shall include, but not be limited to, the following:
   1. Certification by the preparer that he/she is the person responsible for the data, and that the data is authentic and accurate.
   2. Certification by the Contractor or equipment or unit process systems supplier that the equipment or the unit process systems were operated continuously for the specified period and that the equipment or unit process systems operated in compliance with the specified operating conditions, parameters and performance: and that the equipment or unit process systems are suitable for Performance Testing.
   3. Pertinent background information shall include, but not be limited to, the following:

a. Equipment or unit process systems Started-Up and Commissioned
b. Start-Up and Commissioning dates
c. Items or performance criteria tested clearly showing requirements and field data that verify requirements were met.
d. Names of witnesses for Start-Up and Commissioning.
e. Any repairs, corrections, or modifications required for the equipment or unit process systems to successfully complete Start-Up and Commissioning.
f. Loop diagrams accurately depicting the installed condition of instrumentation and controls.
g. Any other important background information.

4. Appendix
   a. A summary of all data used in the calculation, including source, formulas with all terms defined.
   b. Calculations for all data submitted, fully defined.
   c. Copies of all raw field data sheets, including those indicating sampling point locations, and notes.
   d. Production and/or operational data.
   e. Calibration procedures and worksheets for sampling equipment.
   f. Copies of calibration records for instrumentation.
   g. PLC Ladder logic documented with comments.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION AND VERIFICATION OF CONDITION

A. The Contractor shall inspect systems and equipment prior to each start-up and verify their readiness for start-up. Conditions hazardous to equipment or personnel shall be corrected by the Contractor prior to start-up of equipment.
   1. Start-up operations shall not proceed using temporary power or temporary instrumentation and control wiring. All electrical and control connections shall be permanent and complete, and all such electrical components and equipment fully functional.
   2. The Contractor shall be responsible to coordinate with the Owner's System Integrator for connection of all new equipment and telemetry devices into the Owner's SCADA system.
   3. The Contractor shall be responsible for all coordination and costs for providing permanent electrical, gas, and/or other non-Owner utility services to the pump stations. This shall be coordinated and scheduled in such a manner to not delay or negatively impact the start of any pump station systems.
   2. Use of repair parts during start-up operations shall not be permitted, except in such situations where the actual on-site verification of such repair parts' operability is specified.
   3. The Contractor shall verify that all initial copies of the Maintenance and

Operating Instructions have received an acceptable disposition as defined in Section 013323, and the only outstanding item is the field verification of the Instructions.

B. On successful completion of Start-up, process flows and solids shall be used for commissioning the equipment and unit process systems to show the equipment and unit process systems function properly. Commissioning shall confirm the proper operation of the equipment and unit process systems with process fluids and process solids, adjustment shall be made, and the equipment or unit process systems shall be optimized and brought into compliance with design criteria in preparation for Operational Demonstration.

C. The Contractor shall coordinate all Start-up and Commissioning activities for equipment and unit processes. The Contractor shall develop a detailed start-up and commissioning plan that includes the following as a minimum:
   1. Description of the overall general start-up and commissioning process.
   2. List of equipment and unit process systems included for start-up and commissioning activities.
   3. Detailed start-up and commissioning sequence of activities.
   4. Listing of staff and responsibilities for activities.
   5. Contractor shall use a form that will be provided by the Owner.

3.2 PREPARATION

A. Prior to start-up of equipment or systems, all necessary test equipment shall be in place and operable.

B. Approved representative(s) of the Manufacturer and Contractor shall be present for the initial start-up of systems or equipment.

C. The Contractor shall request permission to start-up equipment, including electrical gear, and notify the Owner using a standard Start-Up Request form.
   1. The Start-Up Request shall be submitted to the Owner a minimum of 72 hours before the scheduled start-up. Requests shall be made during normal working hours.
   2. The Contractor shall provide all information in the first Section of the Start-Up Request form.
   3. The Owner will indicate approval or disapproval of the request.
   4. Approval of the request is based solely on impact on wastewater treatment plant operations. Approval does not relieve the Contractor of any responsibility for the Owner’s and Contractor’s personnel safety.
   5. The Contractor shall obtain the approved Start-Up Request prior to the system or equipment start-up.
   6. If training is to be conducted in conjunction with the start-up this should be indicated on the Start-Up Request form. All requirements of Section 017902, Instruction of Owner's Personnel must be met for training sessions.
   7. Start-ups performed at the direction of the Contractor, per paragraph 3.3(G) of this Section, do not require advance notification to the Engineer.

D. Normal installation checks, such as for rotation, are not considered start-ups and do not normally require start-up notification. For all equipment and systems so designated in the Contract Documents, or so designated by the Engineer, such checks shall be under the supervision of the approved representative of the manufacturer, and shall be reviewed by the Engineer.
   1. All electrical apparatus which is energized shall be clearly marked.

3.3 CONDUCT OF START-UP AND COMMISSIONING

A. Start-up:
   1. All initial start-ups of equipment or systems shall be performed under the technical direction of the approved representative of the manufacturer.
   2. Any lack of readiness of associated systems or failure of a system or equipment previously started prior to the date of Final Completion of the Project shall require additional initial start-up service to be performed, under the direction of the approved representative of the manufacturer.
   3. The Contractor shall repair, replace or modify any equipment or system which fails to perform as specified in the Contract Documents. Such repair, replacement or modification of deficient work shall be performed under the terms of the General Conditions.
   4. During the Operational Demonstration period per Section 017901, Operational Demonstration and at other times when the system is on-line and an integral part of the Wastewater Treatment Plant operations and process, start-ups shall be performed as required by the Contractor.

B. The Contractor shall be responsible for commissioning all work. Final acceptance shall be by the Owner.

C. The Contractor is responsible for the performance and operation of the systems and equipment during commissioning.

D. When Owner personnel are operating systems or equipment, the Contractor shall make available, at all times, persons knowledgeable about the systems or equipment to direct the Owner personnel in its operation. If personnel from the Contractor are not familiar or able to provide adequate knowledge or guidance to operate such equipment, then they shall coordinate for a manufacturer representative to be on site to provide the necessary instruction.

E. The Contractor shall make all adjustments and corrections necessary to achieve normal, stable operation of systems. Adjustment and corrections shall be in accordance with Section 016617, Maintenance.

F. Any failures of equipment or systems operated under the direction of the Contractor shall be considered deficiencies and shall be corrected in accordance with the General Conditions.

G. During the Operational Demonstration period as defined in Section 017901,

Operational Demonstration and at other times, the work will be on-line and an integral part of the pump station(s) operations and process. The Owner maintains control of pump station operations and processes at all times. Therefore:

1. The Contractor shall not commence, resume, terminate, or suspend the operations without the permission of the Owner and only in a sequence and manner suitable to the Owner.
2. The Contractor shall immediately, on a 24-hour per day, 7-day per week basis, adjust or repair any malfunction in the work which in the opinion of the Owner jeopardizes or may jeopardize the proper operation of the Wastewater Treatment Plant.
3. The Contractor shall not start-up, shut down, adjust, or otherwise alter the operation of any component, system, or unit process without the permission of the Owner except in the case of an emergency and in accordance with the General Conditions.

3.4 QUALITY CONTROL

A. Reports of the Approved Representative of the Manufacturer:

1. The approved representative of the manufacturer shall prepare a daily report on each site visit for each system or item of equipment inspected, adjusted, started-up, or worked on.
2. The report shall state the purpose of the visit, the representative's observations and conclusions, and recommendations for further visits or action.
3. The reports shall be submitted in accordance with Section 013323, Shop Drawings, Product Data and Samples within three (3) days of the visit.

END OF SECTION 017517

SECTION 017800 - FINAL COMPLIANCE AND SUBMITTALS

PART 1 - GENERAL

1.1 The following forms and related sign-offs shall be documented in accordance with provisions of the contract. These forms shall be completed by the Contractor and approved by the Owner before final retainer is approved for release. Forms for Items A to I will be attached to the Contractor's executed copy of the contract.

A. Certificate of Substantial Completion (To be submitted at time of Substantial Completion).

B. Contractor's Certification of Completion.

C. Contractor's Affidavit of Prevailing Wage.

D. Consent of Surety Company for Final Payment.

E. Affidavit of Final Acceptance Date and Correction Period.

F. Before the OWNER will approve and accept the work and release the retainer, the CONTRACTOR will furnish the OWNER a written report indicating the resolution of any and all property damage claims filed with the CONTRACTOR by any party during the construction period. The information to be supplied shall include, but not be limited to, name of claimant, date filed with CONTRACTOR, name of insurance company and/or adjuster handling claim, how claim was resolved and if claim was not resolved for the full amount, a statement indicating the reason for such action.

G. American Iron and Steel Step Certification SR-EPA.62 (Applicable for WPCLF & WSRLA funded projects only).

H. Build America, Buy America Certifications (When Applicable).

END OF SECTION 017800

SECTION 017821 - CLEANING AND PROTECTION

PART 1 - GENERAL

1.1 GENERAL

A. On or before the completion date for the work, the Contractor shall tear down and remove all temporary structures built by him, all construction plant used by him, and shall repair and replace all parts of existing embankments, fences or other structures which were removed or injured by their operations or by the employees of the Contractor. The Contractor shall thoroughly clean out all buildings, sewers, drains, pipes, manholes, inlets and miscellaneous and appurtenant structures, and shall remove all rubbish leaving the grounds in a neat and satisfactory condition.

B. As circumstances require and when ordered by the Engineer, the Contractor shall clean the road, driveway, and/or sidewalk on which construction activity under this contract has resulted in dirt or any other foreign material being deposited with an automatic self-contained mechanical sweeper with integral water spray, vacuum and on-board or supplementary containment.

C. Failure to comply with this requirement when ordered by the Engineer or their representative, may serve as cause for the Engineer to stop the work and to withhold any monies due the Contractor until such order has been complied with to the satisfaction of the Engineer.

D. As the work progresses, and as may be directed, the Contractor shall remove from the site and dispose of debris and waste material resulting from their work. Particular attention shall be given to minimizing any fire and safety hazard from form materials or from other combustibles as may be used in connection with the work, which should be removed daily.

E. The Contractor shall wash all windows and other glass surfaces, leaving all areas free from putty marks, paint, etc.

F. During and after installation, the Contractor shall furnish and maintain satisfactory protection to all equipment against injury by weather, flooding or breakage thereby permitting all work to be left in a new condition at the completion of the contract.

END OF SECTION 017821

SECTION 017823 – MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance information shall be submitted for all manufactured items, i.e. equipment, hardware, pumps, valves, motors, etc.

B. This manual will either contain or make reference to all information that has been issued during the construction and start-up periods, as well as information necessary for the proper operation and maintenance of equipment.

C. It shall be the responsibility of the Contractor who supplies such equipment to obtain from their vendors the required information and submit to the Engineer. This information will be accepted only if properly identified and only after it has been revised, where necessary, to conform to previous transmittals of the same material that have been "approved as noted" by the Engineer. All submittals shall be on 8-1/2" X 11" size paper or folded to that size along with a digital version submitted on USB flash drive.

D. In general and where applicable, the information shall consist of, but not be limited to, six (6) sets of the following:
   1. Descriptive literature, bulletins or other data covering equipment or system.
   2. Complete list of equipment and appurtenances included with system, complete with manufacturer and model number.
   3. Utility requirements.
   4. General arrangement drawing.
   5. Sectional assembly.
   6. Dimension print.
   7. Materials of construction.
   8. Certified performance curve.
   9. Performance guarantee.
   10. Parts list.
   11. Recommended spare parts list with part and catalog number.
   12. Lubrication recommendations and instructions.
   13. Schematic wiring diagrams.
   14. Schematic piping diagrams.
   15. Instrumentation data.
   16. Drive dimensions and data.
   17. Control data.
   18. Operating instructions.
   19. Maintenance instructions, including troubleshooting guidelines and preventative maintenance instructions with task schedule.
   20. Required tools and equipment for operation and maintenance.
   21. Safety considerations for O & M procedures.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORDS, DRAWINGS

PART 1 - GENERAL

1.1 RECORD DRAWINGS

A. The Contractor shall furnish an authentic set of marked-up drawings showing the installation insofar as the installation shall have differed from the Engineer's drawings. The drawings shall be delivered to the Engineer for making revisions to the original drawings immediately after final acceptance by the Owner.

B. The Contractor shall furnish dimensioned drawings indicating locations of all underground mechanical and electrical facilities.

C. The Contractor shall furnish marked up drawings noting any modifications to the pump station equipment or mechanical configuration.

1.2 SERVICE CONNECTION RECORDS

A. The Contractor shall record the location of all service and property connections, new or existing, made to utilities constructed under this contract. Such records shall be turned over to the Owner upon completion of the work. The cost of making such records shall be included in the various unit or lump sum prices stipulated for the various items of the work.

B. The location of each sewer connection as measured along the sewer from the nearest downstream manhole and its description with respect to the sewer shall be recorded. The record shall include the depth of new stubs for future connections and the depth of existing connections as measured from the surface grade. Also, the use of any vertical riser pipe shall be noted.

END OF SECTION 017839

SECTION 017901 – OPERATIONAL DEMONSTRATION

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION

A. Work includes a demonstration of the operation of all systems that of which is required as a part of the Contract. This Operational Demonstration shall be conducted, coordinated and recorded by the Contractor in accordance with the requirements specified herein.

1.2 SUMMARY

A. Section includes requirements for the conduct and reporting of the Operational Demonstration. This work is additional to any other installation, shop and factory testing, field testing, dry testing, wet testing, performance testing, balancing, or adjustments required elsewhere in the Contract Documents.

1.3 RELATED SECTIONS

A. Section 017517 - Starting of Systems - Commissioning

1.4 DEFINITIONS

A. Operational Demonstration is defined in Section 017517 - Starting of Systems/Commissioning.

B. Operational Demonstration Log: A chronological record of the status of the system and equipment during the Operational Demonstration. All changes in status or system parameters, adjustments, and results of tests shall be included. Entries shall be made, noting the date and time, at the occurrence of each event. Operational Demonstration Logs shall be on a form acceptable to the Owner.

1.5 SUBMITTALS

A. Quality Control Submittals:
   1. Test Reports:
      a. Operational Demonstration log per subparagraph 3.4.A of this Section.
      b. Report of Operational Demonstration per subparagraph 3.4.B.2 of this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EXAMINATION AND VERIFICATION OF CONDITION

A. Before beginning the Operational Demonstration, the Contractor shall verify that:

1. All required construction activities are completed, including any activities by any entity that would interrupt the normal operations of the system. Coordinate with the Owner to resolve such conflicts.
2. Adequate parts and supplies for routine maintenance and replacement are on hand to support system operation through the demonstration period.
3. Start-up of equipment and systems per Section 017517, Starting of Systems/Commissioning has been completed.
4. All Repair Parts and Maintenance Materials have been delivered to the Owner.
5. Certain Instruction of Operating Personnel (training) has been scheduled to take place during the Operational Demonstration where specified. All other training will occur within 45 days prior to initiation of Operational Demonstration. The training of Operations Personnel shall be scheduled to take place during the first half of the demonstration period, and the remaining training of Electrical, Instrumentation and Maintenance Personnel shall be scheduled to be complete before the end of the Operational Demonstration.
6. The field verification of the Initial Maintenance and Operating Inspections has been completed in accordance with the Specifications.

3.2 PREPARATION

A. The Contractor shall provide two (2) representatives, a prime and an alternate, who will be responsible for the Operational Demonstration. These representatives will:
   1. Demonstrate the operation of systems and equipment to the Owner's operating personnel.
   2. Direct maintenance and repair work, by either the Contractor or the approved representative of the manufacturer of the system components and equipment.
   3. Maintain a log of the Operational Demonstration, as described herein.
   4. Be available at all times during the Operational Demonstration to perform these duties.

B. Submit start-up notification to the Owner per Section 017517, Starting of Systems/Commissioning.

3.3 OPERATIONAL DEMONSTRATION

A. The Contractor shall perform an Operational Demonstration of the work. Unless otherwise specified, the Operational Demonstration shall be a continuous 1-hour on-site period and 48-hour active oversite period during which the work is operated and maintained in a continuously on-line, fully functional process status.

B. The Operational Demonstration shall encompass the entire work, or the portion thereof designated for Substantial Completion.

C. Filling, draining, heating or cooling to temperature, stabilizing, adjusting, or other start-up activity time shall not be counted as Operational Demonstration time.

D. During the Operational Demonstration period, the Contractor shall on-site supervision, in addition to the requirements of supervision as stated in the General Conditions. The

Contractor shall provide labor and sufficient material to fully operate and maintain the work 24 hours per day, 7 days per week.

E. When systems are on-line, conform to the requirements of Section 017517, Starting of Systems/Commissioning, Paragraph 3.3(G) for alterations in the Wastewater Treatment Plant processes.

F. During the first half of the Operational Demonstration of the system and equipment, Owner personnel will observe the Contractor's personnel operating systems and equipment. The Contractor shall cooperate with this familiarization process.

G. After the first fifteen (15) days following the completion of the Operational Demonstration of system and equipment, operation of equipment will be assumed by the Owner personnel, under the direction of the Contractor, as described in Section 017517 - Starting of Systems/Commissioning.

The Owner remains in control of the pump stations processes per Section 017517 - Starting of Systems/Commissioning. The Contractor shall provide technical direction in the operation of equipment and systems.

H. Start-up and operation of the system and all associated equipment shall be in accordance with the Initial Maintenance and Operating Instructions which have received an acceptable disposition from the Owner. If deviations from these instructions are necessary, these shall be noted in the Operational Demonstration Log, and subsequently submitted as revisions to the Maintenance and Operating Instructions. During the period of time between the completion of the Operational Demonstration and the Date of substantial Completion, the system and equipment will be operated and maintained under the requirements of the second half of the Operational Demonstration. The Owner will not assume full responsibility for maintenance of the system and equipment until all conditions for Substantial Completion have been satisfied and both the Contractor and Owner and accepted the Certificate of Substantial Completion.

I. All required maintenance and servicing prior to the Date of Substantial Completion shall be performed by the Contractor at the specified interval and as necessary. All maintenance and servicing shall be noted in the Operational Demonstration Log.

J. All outages of equipment, system(s), or the pump stations should be noted in the Operational Demonstration Log. The Contractor is responsible for the safe and orderly shutdown and restart of equipment as necessary in the event of an outage. Outage time is not to be included in the Operational Demonstration period.

K. The Contractor shall attend operational coordination meetings as called by the Owner to review operating conditions of equipment and systems.

L. If, during the Operational Demonstration, any part of the work fails to fully conform to the requirements of the Contract Documents, the Operational Demonstration shall be considered to have failed, and the work shall not be considered to be Substantially Complete as defined in the General Conditions and the Owner shall so notify the Contractor in writing. If, during the Operation Demonstration, the provisions of the

General Conditions are evoked to stop the work, the Operational Demonstration will also be considered to have failed.

M. Upon failure of the Operational Demonstration, the Contractor shall promptly remedy any defects in the work and shall promptly reschedule and re-start the complete 30 day, (720 hours) Operational Demonstration time period. No Operational Demonstration time will be considered to have accrued to any part of the work by reason of a failed Operational Demonstration.

N. During the Operational Demonstration, the Owner may require or permit the Operational Demonstration to be suspended:
   1. As provided in the General Conditions.
   2. Upon the written request of the Contractor to correct or adjust the work when in the judgment of the Owner such required correction or adjustment is insufficient to deem the Operational Demonstration to have failed.
   3. If the Operational Demonstration is suspended for any reason except failure, Operational Demonstration time shall accrue to the work from the time of the beginning of the Operational Demonstration to the time of the suspension.

3.4 REPORTING

A. Daily: Copy of the Operational demonstration Logs shall be submitted to the Owner by 9:00 a.m. the following day.

B. Within two (2) weeks of the termination or completion of the Operational Demonstration, the Contractor shall submit for approval:
   1. Any changes to the Maintenance and Operating Instructions.
   2. A report of the Operational Demonstration, describing the equipment utilized and any repairs, modifications, adjustments, or other work performed during the demonstration period.

C. In the event the conduct of the Operational Demonstration or the submittals are unacceptable to the Owner, the Contractor shall perform the additional work or demonstrations required per the General Conditions.

END OF SECTION 017901

SECTION 017902 - INSTRUCTION OF OWNER'S PERSONNEL

PART 1 - GENERAL

1.1 DESCRIPTION

A. General requirements for the conduct of training of permanent plant operating personnel on the care, maintenance and proper operation of the equipment. Specific requirements for training materials and for training are included in the individual Sections of the Contract Documents.

1.2 SUMMARY

A. Work includes, unless as otherwise specifically provided in individual Sections of the Project Manual, the preparation of the detailed lesson plans and the conduct of detailed training for permanent plant operating personnel. Training shall be conducted on all components of equipment, as specified in individual Sections of the Project Manual.

B. Training sessions and hours for all equipment specified as requiring training shall be per the manufacturer’s recommendations. However, in no case shall the number of sessions be less than two (2) to accommodate multiple shifts. Sessions shall cover maintenance, operations and electrical.

1.3 RELATED SECTIONS

A. Section 013323, Shop Drawings, Product Data and Samples

B. Section 017901, Operational Demonstration

1.4 DEFINITIONS

A. Lesson Plan: A Lesson Plan is a submittal containing a statement of the instructional objectives of the training, a training outline, credentials of the instructor, audio/visual requirements, a listing of training materials to be used, and the desired schedule times and dates.

B. Training Aid: A mock-up, model, sample, or other device used during a training class to help demonstrate the maintenance, operation, or control of equipment.

1.5 SUBMITTALS

A. Submittal of Instructor’s credentials, Lesson Plans, instructional materials, training aids, and other training information shall be coordinated with the Training Schedule.

B. Enough copies of instructional materials used for training for everyone present shall be provided at the time of the first training session.

C. Provide two copies of all audio/visual aids utilized during training including films, slides, mock-ups, videotapes, DVDs or other training aids. All multimedia video shall be submitted in either Audio Video Interleave (AVI) format or Moving Pictures Expert Group (MPEG) format.

D. Submit the following:

1. Proposed training Schedule for the entire Contract showing tentative dates for each training session: include number, type and duration of each session. This schedule shall be submitted 120 days prior to the commencement of any individual training being performed.
2. The detailed credentials of the representative of the equipment manufacturer who is to be the course Instructor for each category and type of training. Include Instructor's name, education, knowledge of equipment, experience as a trainer and employment history with the manufacturer. Include specific details of Instructor's experience pertaining to the operation and maintenance of, the training for, the equipment or system specified. These credentials shall be submitted 60 days prior to the commencement of any training.
3. The Lesson Plan shall be submitted sixty (60) days prior to the commencement of any training and shall cover all components of equipment, regardless of source of supply or manufacturer, and shall include:
    a. A title page containing: Title of the Lesson Plan, product name and model of equipment; name of manufacturer, manufacturer address and phone number; name and phone number of manufacturer's contact; job location (Name of Facility); contract no.; specification number; Contractor name, address and phone number; subcontractor name, address, phone (if applicable); submittal number assigned by Contractor; and submittal date.
    b. A table of contents listing the headings: instructional objectives; training outline; credentials of Instructor(s); audio/visual requirements; training materials to be used.
    c. A detailed instructional objective statement on the goal(s) intended to have been achieved by the end of the training session.
    d. The credentials of Instructors are to include name; education; knowledge of equipment; experience of trainer; and employment history with manufacturer.
    e. The audio/visual requirements listing specific equipment that is to be provided by the Contractor for training purposes.
    f. A list of all training materials to be used. An initial Operations and Maintenance (O&M) Instruction Manual, which has received an acceptable disposition, for the equipment shall be required to be utilized by the Instructor in the training and therefore shall be included on this list.
    g. A request of schedule dates and times for each training session.

h. A training outline indicating the category of training (maintenance and operation, electrical and instrumentation or system); description of the session; length, and type (classroom or field). The training shall include as a minimum:
    1) Electrical and Instrumentation Training: System Equipment) Overview:
        a) Describe system (equipment) fundamental operating principals and dynamics.
        b) Identify system's (equipment's) mechanical, electrical and electronic components and features. Review system (equipment) wiring diagrams and process and instrumentation diagrams.
        c) Identify support systems (equipment) associated with the operation (e.g., air intake filters, valve actuators, motors).
        d) Identify and describe safety precautions and potential hazards related to maintenance.
        e) Identify and describe in detail safety and control interlocks.
        f) Identify and describe alarm conditions and response to alarms.
        g) Cover the supply of power to process equipment and related appurtenances, lighting, etc.
        h) Cover low voltage controls, monitoring devices, etc.
    2) Electrical and Instrumentation Training Equipment Preventive Maintenance (PM):
        a) Describe PM inspection procedures required to perform an inspection of the equipment in operation, spot potential trouble symptoms and anticipate breakdowns and forecast maintenance requirements (predictive maintenance).
        b) Define the recommended PM intervals for each component.
        c) Provide lubricant and replacement part recommendations and limitations.
        d) Describe appropriate cleaning practices and recommend intervals.
        e) Identify and describe the use of special tools required for maintenance of the equipment.
        f) Describe component removal and installation, and disassembly and assembly procedures.
        g) Perform at least 2 "field" demonstrations of preventive maintenance procedures.
        h) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
        i) Define recommended torque settings, mounting, calibration and alignment procedures and settings, as appropriate.
        j) Describe recommended procedures to check or test equipment following a corrective repair.
    3) Electrical and Instrumentation Training Equipment Troubleshooting:
        a) Define recommended systematic troubleshooting procedures.
        b) Provide component specific troubleshooting checklists.
        c) Describe applicable equipment testing and diagnostic procedures

to facilitate troubleshooting.

4) Maintenance and Operation Training: System (Equipment) Overview:
   a) Describe system (equipment) operating (process) function and performance objectives.
   b) Describe system (equipment) fundamental operating principals and dynamics.
   c) Identify system's (equipment's) mechanical, electrical and electronic components and features.
   d) Identify support systems (equipment) associated with the operation (e.g., air intake filters, valve actuators, motors).
   e) Identify and describe safety precautions and potential hazards related to operation.
   f) For systems (equipment) comprised of several components: Identify and describe in detail each component's function. Where applicable, group related components into subsystems. Describe subsystem functions and their interaction with other subsystems.
   g) Identify and describe in detail safety and control interlocks.
5) Operation and Maintenance Training, Operation of Equipment:
   a) Describe operating principles and practices.
   b) Describe routine operating, start-up and shutdown procedures.
   c) Describe abnormal or emergency start- up, operating, and shutdown procedures that may apply.
   d) Describe alarm conditions and responses to alarms.
   e) Describe routine monitoring and record keeping procedures.
   f) Describe recommended housekeeping procedures.
6) Operation and Maintenance Training, Troubleshooting:
   a) Describe how to determine if either corrective maintenance or an operating parameter adjustment is required.

4. Once the Lesson Plan submittal has received an acceptable disposition but at least 3 weeks prior to the actual commencement of the training, Contractor shall submit the detailed training material as a Power Point presentation in an electronic format (either DVD, CDR, or flash drive/micro storage) with appropriate labeling. In addition to the electronic format the Power Point material shall be provided in hardcopy for Owner review and approval. The number of copies shall be as defined in Section 013323, Shop Drawings, Product Data and Samples. The text and lettering on the presentation slides shall not be smaller than 12 font size and shall be black in color. Slides shall have an appropriate light colored background, resulting in a high contrast between the text and background.
5. Sample Evaluation Form: Submit with Lesson Plan a sample Evaluation Form. Form shall include area for comments and evaluation of Instructor, classroom training and field instruction. Form shall identify Contract name and number, Specification Section, Job location, date and time of training, title of training session, name of manufacturer, model number of equipment, Instructor name, and Contractor and Subcontractor’s name.

PART 2 – PRODUCTS

2.1 QUALIFICATIONS OF INSTRUCTOR

A. The course Instructor shall be knowledgeable and experienced in the details of operation and maintenance of the equipment.

B. The Instructor must be knowledgeable of the equipment's application specific to this work.

C. The Owner will reject Instructors who are deemed not in compliance with the above stated minimum qualifications. The Contractor will submit for approval alternate Instructors for consideration. No additional cost will be allowed for replacement of Instructors who are unacceptable to the Owner.

PART 3 – EXECUTION

3.1 EXAMINATION AND VERIFICATION OF CONDITION

A. The training site for the classroom instruction will be provided by the Owner. The Owner will provide this location.

B. The Contractor shall coordinate and verify to ensure that, prior to the scheduled training time(s):
1. The equipment is ready for Operational Demonstration in accordance with Section 017901, Operational Demonstration.
2. That all associated construction required to operate the equipment in all normal and anticipated operating modes is complete.
3. That the equipment area is well lit and unobstructed, so that all training class attendees may access, hear, and view the training.
4. That the equipment area is free of construction activities that could present a hazard to training class participants.
5. That adequate training materials, as required by paragraph 1.5 of this Section, are on hand for use during the training session.
6. Any representatives of interfacing Contractors or equipment suppliers needed to perform supporting operations allowing demonstration of equipment operation have been notified and will be available.

3.2 PREPARATION

A. Training classes shall be scheduled through the Owner. Training shall begin within 45 days to the beginning of the Operational Demonstration period. Certain training sessions will occur only during the Operational Demonstration period as specifically noted in the Contract Documents.

B. Training classes shall be conducted and separated for the following personnel:

1. Maintenance and Operation
2. Electrical and Instrumentation
3. Systems Training

C. Verify training materials are compatible with all equipment. The Contractor is responsible for providing other audio/visual equipment and training aids as needed.

D. Classroom and field instruction where specified shall be provided for each group. Field instruction will include attention to applied familiarization with the actual equipment. Training hours as required in the Contract Documents do not include travel, set-up or cleanup time by the Instructor.

E. Training may be either "field" or "classroom" as specified. If not specifically noted, provide field training. For field training, the Instructor will demonstrate all operations of the equipment and may be expected to show assembly and disassembly procedures, maintenance procedures, replacement procedures, and the like. Field training will generally occur at the installed location of the equipment or material unless mock-ups are approved in the Lesson Plan and provided by the Contractor. Such mock-ups will become property of the Owner after the training sessions unless previously requested in the Lesson Plan.

I. Systems Training: The Lesson will provide a detailed description of the system design, intended operation, and interactions of systems components. The Contractor’s portion of Systems Training will provide additional detail descriptions of system's components and their interface with each other and other systems. Contractor's personnel for system training will be the same personnel who provided Operation and Maintenance training and Electrical and Instrumentation training.

J. Training shall be conducted to accommodate the Owner’s shift schedules. Contractor shall coordinate with Owner prior to scheduling the training sessions. Contractor shall anticipate multiple shifts.

3.3 CONDUCT OF TRAINING

A. All topics of the approved Lesson Plan shall be discussed, in the classroom or the field, in complete and sufficient detail to allow plant operating personnel to knowledgeably operate and maintain the equipment in accordance with manufacturer's recommended procedures and safety considerations during all anticipated operational and maintenance situations.

B. Safety concerns and features intended to enhance safety should be specifically addressed.

C. Tasks required to maintain the warranty should be specifically addressed.

D. Frequent reference shall be made to the Operation and Maintenance instructions.

E. Address all questions and comments proposed by the training session participants as they are raised to the maximum extent practicable. If questions or comments cannot be addressed during the training session, additional materials and/or training may be required as determined by the Contractor

F. If any training session exceeds three (3) hours in duration, provide a 1/2- hour break.

G. Ensure that all parts of the training session are legible or audible on the final tape. The Instructor must repeat all questions to ensure that they are audible. Final acceptance of the training is contingent on the acceptability of the videotape.

H. The Contractor will be backcharged for cancelled training classes if the Owner is not notified at least 72 hours prior to scheduled training.

I. Training Sessions shall be attended not only by the Owner's Operating Personnel but also by members of the Contractor or any other entities designated by the Owner.

3.4 EVALUATION

A. Immediately following training, the Instructor shall pass out an evaluation form to the Owner’s personnel. This form shall provide a means for the Owner's personnel to comment on the Instructor and the quality, completeness, and value of the session.

B. Evaluation Forms shall be collected, along with the Attendance Sheet at the end of each training session and the original documents shall be submitted to the Owner for use in determining if additional training is required by the Contractor. If additional training is required due to the material as outlined in the Lesson Plan not being covered correctly or in its entirety or the inability of the Instructor to answer questions pertaining to the operation and maintenance of the equipment, or if the training aids or equipment fail to operate as intended, the Contractor shall provide such additional training at no additional cost to the Owner.

END OF SECTION 017902

SECTION 018000 - SYSTEM PERFORMANCES

PART 1 - GENERAL

1.1 GENERAL

A. It is the intent of this Contract that the final installation shall be complete in all respects.

B. The Contractor shall be responsible for all minor details, whether or not shown on the Drawings or specifically included in these Specifications.

1.2 FACILITIES

A. The facilities and equipment shall function properly and in accordance with plans, specifications and industry standards.

B. The following equipment includes, but is not necessarily limited to, the following:
1. Valves
2. Pumping Equipment
3. Rotating Equipment
4. Aeration Equipment
5. Flotation Equipment
6. Blowers
7. Telemetry
8. HVAC
9. Electrical

1.3 CERTIFICATION

A. The Contractor shall provide written certification from the manufacturers and/or installers that the various major components are in working order or have been installed in accordance with the manufacturer's instructions.

END OF SECTION 018000

SECTION 024116 – STRUCTURE DEMOLITION

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. This section includes all demolition of existing structures and removal of pavement, piping, and equipment necessary to clear space for new construction and/or to rehabilitate existing construction.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

A. Federal, State and local code requirements shall control the disposal of debris resulting from the removal operation.

1.4 PROTECTION

A. Structures shall be removed in such a manner as not to damage portions of the existing structure which are to remain in place.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PAVEMENTS, SIDEWALKS, CURBING, SIMILAR STRUCTURES

A. Removal of existing pavements, sidewalks, curbing, and similar structures shall end at an existing joint or a sawed joint. Sawed joints shall be straight, neat and free from chipped or damaged edges.

B. For removal of reinforced or nonreinforced concrete, the minimum depth of saw cut shall be 3 in.

C. For removal of reinforced concrete, the depth of saw cut shall be sufficient to cut the steel.

D. If the concrete is coated with a bituminous surface or other material, the depth shall be sufficient to cut into the concrete, not including the coating depth, as specified above.

3.2 EXCAVATION OF RIGID PAVEMENT

A. The Contractor shall excavate rigid pavement, consisting of concrete or concrete base with a wearing surface of brick or bituminous concrete, wherever such excavation is required for the purpose of this Contract.

B. Pavement shall be excavated to neat lines and, only to widths required for trenches, for pipe laying and for construction of structures. Adequate provision shall be made to prevent settlement and breakage of pavement beyond the approved limits of excavation.

C. All pavement broken or damaged beyond the limits above stated, or the approved extension thereof, shall be replaced by the Contractor at his expense.

3.3 MANHOLES, CATCH BASINS, INLETS AND SIMILAR STRUCTURES

A. Existing drainage structure designated by the Engineer to be removed shall be completely removed.

B. Catch basins, inlets, and similar structures designated to be abandoned shall be removed to an elevation of at least 3 ft. below the finished subgrade or ground surface. The remaining void shall be filled with selected backfill material compacted to 100% optimum density per ASTM D 698.

C. Manholes designated by the Engineer to be abandoned shall be adjusted to 1' below proposed ground grade and the casting welded closed or an 8" reinforced concrete slab placed over the manhole.

D. Live sewers connected to structures removed or abandoned shall be rebuilt through the area with new pipe. Sewer flow shall be maintained between removal and replacement operations. Abandoned sewers shall be sealed and made watertight with approved precast stoppers or masonry bulkheads.

E. All castings salvaged from abandoned or removed drainage structures shall remain the property of the Owner and shall be cleaned and transported by the Contractor to a site designated by the Engineer or incorporated in the work where called for on the Drawings, scheduled, or so directed.

3.4 GUARDRAIL AND FENCE

A. Where so required by the Drawings, existing guardrail and fence shall be carefully dismantled and stored for reuse or for salvage by the Owner.

B. Wood posts and other materials not considered salvageable by the Engineer shall be disposed of by the Contractor.

C. The Contractor will be required to replace, at no cost to the Owner, material lost or damaged by negligence or by the use of improper methods.

3.5 SUPERSTRUCTURES, TANKS, CHAMBERS AND SIMILAR STRUCTURES

A. Care shall be used in demolishing structural elements which are continuous with structural elements remaining in service. Concrete and masonry shall be cut with a masonry or concrete saw before removing unwanted portions.

B. Methods and equipment used in demolition work shall be chosen so the structural integrity and watertightness of both newly constructed and existing plant structures remain unimpaired by the performance of the demolition work.

C. Existing structures and equipment which are damaged in appearance and/or function by performance of demolition work shall be replaced or repaired to approved first-class condition by the Contractor at no increase in Contract Price.

D. Extreme care shall be used when removing existing concrete from around reinforcing steel which must be used for securing new concrete. If this reinforcing steel is damaged, the Contractor shall remove additional existing concrete until sufficient existing reinforcing steel is exposed to provide adequate embedment length in the new concrete, as approved by the Engineer.

E. Abandoned pipes shall be sealed and made watertight with approved precast stoppers or masonry bulkheads.

3.6 EQUIPMENT REMOVAL

A. All equipment, valves, piping, fittings, and miscellaneous steel structures that are removed shall remain the property of the Owner and shall be stored at site selected by the Owner. The Owner reserves the right to require the Contractor to dispose of certain unwanted portions of removed equipment and materials. The Owner shall have the right to reject any or all materials removed during construction, and the Contractor shall haul away and dispose of these materials in a suitable manner at no additional cost to the Owner.

3.7 DISPOSAL OF DEBRIS

A. All debris resulting from demolition operations; i.e., broken concrete, masonry, pipe, miscellaneous metal, trees and brush, equipment, etc., shall be disposed of off-site.

B. The Contractor shall police the hauling of debris to ensure that all spillage from haul trucks is promptly and completely removed.

3.8 BACKFILLING

A. All trenches, holes, and pits resulting from the removal and abandonment of any structure or obstruction shall be backfilled and compacted in accordance with the requirements of Section 310000.

END OF SECTION 024116

SECTION 030000 - CONCRETE WORK

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. Section 013319 – Field Testing Requirements

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including form work, reinforcing, mix design, placement procedures and finishes
   1. Extent of concrete work is shown on drawings.
   2. Concrete paving and walks are specified in Division 2.
   3. Precast concrete is specified in other Division-3 sections.
   4. Mechanical finishes and concrete floor toppings are specified in other Division-3 sections.

1.3 SUBMITTALS

A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Engineer.

B. Shop Drawings; Reinforcement: Submit original shop drawings prepared for fabrication, bending, and placement of concrete reinforcement. Comply with ACI Detailing Manual showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

C. Shop Drawings; Form work: Submit shop drawings prepared by a registered Professional Engineer for fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joint or reveals, location and pattern of form tie placement, and other items which affect exposed concrete visually.
   1. Engineer's review is for general architectural applications and features only. Design of form work for structural stability and efficiency is Contractor's responsibility.

D. Samples: Submit samples of materials as requested by Engineer, including names, sources, and descriptions.

E. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design tests.
   1. The proposed mix design submittal(s) shall follow the procedures of Chapter 5, Sections 5.2 to 5.3 of ACI-318.

2. Reference should be made to ACI-211.5R "Guide for Submittal of Concrete Proportions" for the required submittal information. Sample forms for presenting the necessary information can be found in the addendum at the end of this section. Example Form B should follow a completed Example A in the submittal when laboratory trial batches are used to document a water-cementious materials ratio curve.
3. Additional data summarizing the past performance records should be an integral part of the submittal if the submittal is based on past performance with the proposed materials and proportions.

F. Materials Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by Engineer. Materials certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, latest revisions, except where more stringent requirements are shown or specified:
1. ACI 301 "Specifications for Structural Concrete for Buildings."
2. ACI 318 "Building Code Requirements for Reinforced Concrete."
3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
4. ACI 347 "Guide to Form work for Concrete."
5. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

B. Materials and installed work may require testing and retesting at anytime during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

C. Engage a testing agency acceptable to Engineer to perform initial material evaluation and certification tests for mix designs and to design concrete mixes.

D. Mockup: Cast mockup of size indicated or as required to demonstrate typical joints, form tie spacing, and proposed surface finish, texture, and color. Maintain sample panel exposed to view for duration of project, after Engineer's acceptance of visual qualities.
1. Demolish mockup and remove from site when directed by Engineer.

E. Pre-installation Conference: Conduct conference at project site to comply with requirements of Division 1 Section "Project Meetings" and the following:
1. At least 35 days prior to submitting design mixes, conduct a meeting to review detailed requirements for preparing concrete design mixes and to determine procedures for satisfactory concrete operations. Review requirements for submittals, status of coordinating work, and availability of materials. Establish preliminary work progress schedule and procedures for materials, inspection, testing and certifications. Require representatives of each entity directly concerned with cast-in-place concrete to attend conference, including, but not limited to, the following:
a. Contractor's Superintendent

b. Agency responsible for concrete design mixes.
c. Agency responsible for field quality control.
d. Ready-mix concrete producer.
e. Concrete Subcontractor
f. Primary admixture manufactures.

1.5 PROJECT CONDITIONS

A. Protection of Footings Against Freezing: Cover completed work at footing level with sufficient temporary or permanent cover as required to protect footings and adjacent subgrade against possibility of freezing; maintain cover for time period as necessary.

B. Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: 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.
1. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least two (2) edges and one side for tight fit.

C. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match Engineer's control sample. Provide solid backing and form supports to ensure stability of textured form liners.

D. Forms for Cylindrical Columns and Supports: Metal, fiberglass reinforced plastic, or paper or fiber tubes. Construct paper or fiber tubes of laminated plies using water-resistant adhesive with wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation.

E. 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.

F. Form Ties: Factory-fabricated, adjustable-length, snapoff metal or glass fiber-reinforced plastic form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1-1/2" to the exposed surface.
1. Provide ties which, when removed, will leave holes not larger than 1" diameter in concrete surface.

2. All form ties shall have a factor of safety of two (2) to determine the recommended safe working load.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Galvanized Reinforcing Bars: ASTM A 767, Class II (2.0 oz. zinc psf) hot-dip galvanized, after fabrication and bending.

C. Epoxy-Coated Reinforcing Bars: ASTM A 775.
1. Repair of damaged epoxy-coating - When required, damaged epoxy-coating shall be repaired with patching material conforming to ASTM A 775. Repair shall be done in accordance with the patching material manufacturer's recommendations.

D. Steel Wire: ASTM A 82, plain, cold-drawn steel.

E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. (Flat sheets only)

F. Welded Deformed Steel Wire Fabric: ASTM A 497.

G. Epoxy - Coated Welded Wire Fabric: ASTM A884, Class A.

H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.
1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I, II or I/II and ASTM C595M, Type IP, unless otherwise specified. (See Table I, Concrete Requirements).
1. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.

B. Fly Ash: ASTM C 618, Class F.
1. Limit use of fly ash to not exceed 25% of cement content by weight.

C. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
1. Limit use of granulated blast-furnace slag to not exceed 30% of cement content by weight.

D. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete, with nominal maximum aggregate size of 1 inch.

1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
2. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to Engineer.
3. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 (0.3-mm) sieve, and less than 8 percent may be retained on sieves finer than No. 50 (0.3 mm).

E. Lightweight Aggregates: Maximum nominal aggregate size of 1 inch and complying with ASTM C 330.

F. Water: Drinkable and complying with ASTM C94.

G. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. "Air-Mix"; Euclid Chemical Co.
   b. "Sika Aer"; Sika Corp.
   c. "MB-VR or MB-AE"; Master Builders.

H. Water-Reducing Admixture: ASTM C 494, Type A, and containing not more than 0.1 percent chloride ions.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. "WRDA"; W.R. Grace.
   b. "Eucon WR-75"; Euclid Chemical Co.
   c. "Pozzolith Normal"; Master Builders.

I. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F and containing not more than 0.1 percent chloride ions.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. "Sikament 300"; Sika Chemical Corp.
   b. "Eucon 37"; Euclid Chemical Co.
   c. "Rheobuild or Polyheed"; Master Builders.

J. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C 494, Type E, and containing not more than 0.1 percent chloride ions.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. "Accelguard 80"; Euclid Chemical Co.
   b. "Pozzutec 20"; Master Builders.
   c. "Daraset"; W.R. Grace & Co.

K. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, and containing not more than 0.1 percent chloride ions.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. "Pozzolith"; Master Builders.
   b. "Eucon Retarder 75"; Euclid Chemical Co.
   c. "Plastiment"; Sika Chemical Co.

L. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   2. Products: Subject to compliance with requirements, provide one of the following:
      a. Catexol 1000CL; Axim Concrete Technologies.
      b. MCI 2000 or MCI 2005; Cortec Corporation.
      c. DCI or DCI-S; W.R. Grace & Co., Construction Products Div.
      d. Rheocrete 222+; Master Builders, Inc.
      e. FerroGard-901; Sika Corporation.

M. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions are not permitted.

N. Fiber Reinforcement:
   1. Synthetic fiber reinforcing shall be added to the concrete for the areas so indicated in the drawings. Only fibers designed and manufactured specifically for use in concrete shall be acceptable as secondary reinforcement, complying with ASTM C1116, not less than 3/4 inch long.
   2. The fibers may be added at the batch plant. The incorporation of said fibers shall be documented on the delivery ticket from the ready mix producer. Fibers shall be added to the concrete in strict accordance with manufacturer's printed instructions. The minimum dosage rate shall be 1.5 lbs/cubic yard.
   3. Nylon fibers containing 100% virgin nylon monofilaments shall be utilized to impart a "non-hairy" surface to the finished concrete.
   4. Products: Subject to compliance with requirements, provide the following fibrous reinforcement or approved equal:
      a. Nycon Fiber; Nycon, Inc.
      b. Nylo-Mono; Forta Corp.
      c. Fibrasol N; Axim Concrete Technologies

2.4 RELATED MATERIALS

A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 26 gage galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Waterstops: Provide waterstops at construction joints and other joints as indicated and specified in Section 333100.

C. Granular Base: Evenly graded mixture of fine and coarse aggregates to provide, when compacted, a smooth and even surface below slabs on grade.

D. Vapor Retarder: Provide vapor retarder cover, ASTM E1745 Class C, over prepared base material where indicated below slabs on grade. Use only materials which are resistant to deterioration when tested in accordance with ASTM E 154, as follows:
   1. Polyethylene sheet not less than 10 mils thick.

2. Water resistant barrier paper consisting of heavy Kraft papers laminated together with glass fiber reinforcement and over-coated with black polyethylene on each side.
    a. Product: Subject to compliance with requirements, provide Moistop Ultra 10 by Fortifiber Corporation, Stego Wrap 10-mil by Stego Industries or equal.

E. Non-Shrink Grout: CRD-C 621 and ASTM C-1107, factory pre-mixed grout.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. Non-metallic
        1) "Set Grout"; Master Builders.
        2) "Euco-NS"; Euclid Chemical Co.
        3) "Five Star Grout"; U.S. Grout Corp.

F. Non-slip Aggregate Finish: Provide fused aluminum oxide grits, or crushed emery, as abrasive aggregate for non-slip finish with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rust-proof, and non-glazing, and is unaffected by freezing, moisture, and cleaning materials.

G. Colored Wear-Resistant Finish: Packaged, dry, combination of materials, consisting of Portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground, non-fading mineral oxides, interground with cement. Color as selected by Engineer, unless otherwise indicated.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. "Colorcron"; Master Builders.
    b. "Surflex"; Euclid Chemical Co.
    c. "Lithochrome"; L.M. Scofield Co.

H. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.

I. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

J. Liquid Membrane-Forming Curing Compound: Liquid type membrane- forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg./sq. m. when applied at 200 sq ft./gal.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. "Masterkure"; Master Builders.
    b. "Ecocure"; Euclid Chemical Co.
    c. "Horn Clear Seal"; A.C. Horn, Inc.

K. Underlayment Compound: Freeflowing, self-leveling, pumpable cementitious base compound for applications from 1 inch thick to feathered edges.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. "Flo-Top"; Euclid Chemical Co.
    b. "Underlayment 110," Master Builders, Inc.
    c. "Thoro Underlayment Self-Leveling"; Thoro System Products.

L. Bonding Compound: Polyvinyl acetate or acrylic base.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Polyvinyl Acetate (Interior Only):
         1) "Euco Weld"; Euclid Chemical Co.
         2) "Weldcrete"; Larsen Products Corp.
         3) "Everweld"; L&M Construction Chemicals, Inc.
      b. Acrylic or Styrene Butadiene:
         1) "Day-Chem AD Bond"; Dayton Superior Corp.
         2) "Everbond"; L & M Construction Chemicals.
         3) "SBR Latex"; Euclid Chemical Co.

M. Epoxy Adhesive: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material "Type," "Grade," and "Class" to suit project requirements.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. "Epoxtite Binder 2390"; A.C. Horn, Inc.
      b. "Sikadur 32 Hi-Mod"; Sika Chemical Corp.
      c. "Euco Epoxy 452 or 620"; Euclid Chemical Co.

2.5 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301 and ACI 211. If the trial batch method is used, use an independent testing facility acceptable to Engineer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Engineer.
   1. Limit use of fly ash to not exceed 25 percent of cement content by weight.

B. Submit written reports to Engineer and Structural Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Engineer.

C. Design mixes to provide normal weight concrete with the following properties, as indicated in Table I.:

TABLE 1

CONCRETE REQUIREMENTS

Concrete Class	Cement Type	Min. 28-Day Compressive Strength PSI	*Max. Water-Cement Ratio	Min. Cement Content Sacks	Slump Min.	Inch Max.	Entrained Air %
A	I	4000	0.45	6	-	-	6±1
B	I	2000	0.74	4-1/2	2	6	5±1-1/2
C	I	4000	0.50	6.38	1	4	6±2
D	II or IP	4000	0.45	6	-	-	6±1

*Maximum Water - Cementitious Materials Ratio

1. All reinforced concrete shall be Class A, except as otherwise specified or shown on the drawings.
2. Concrete used for mud mats, fill and channeling in manholes and chambers shall be Class B unless otherwise noted on the drawings.
3. Class C concrete conforming to ODOT 499 (Class C) shall be used for all concrete pavement, curbing, driveways, and sidewalks, unless noted otherwise on the drawings.
4. Class B concrete may be used for encasing pipelines, fill, and pipe bedding.
5. Class B concrete shall be used as concrete fill in concrete tanks for shaping or sloping bottoms.
    a. The following steps shall be taken for installation of the Class B concrete:

        1) Scrub concrete slabs and/or walls with a stiff wire brush and streams of clean water as a minimum, to remove laitenance.
        2) Apply a bonding agent in accordance with the manufacturer's surface preparation and application recommendations.
        3) The Class B concrete shall then be placed and screeded to bring the surface to final grade.

6. Class D concrete shall be used for sewerage treatment plants and sewerage pump stations, as noted on the drawings.

D. Lightweight Concrete: Lightweight aggregate and concrete shall conform to ASTM C 330. Proportion mix to produce concrete with a minimum compressive strength of 3000 psi at 28 days and a calculated equilibrium unit weight of 110 pcf plus or minus 3 pcf as determined by ASTM C 567. Concrete slump at the point of placement shall be the minimum necessary for efficient mixing, placing, and finishing. Maximum slump shall be 6 inches for pumped concrete and 5 inches elsewhere. Air entrain concrete exposed to weather according to ACI 301 requirements.

E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.

F. Admixtures:
1. Use high range water-reducing admixture (super plasticizer) in Classes A and D concrete unless noted otherwise.
2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
3. Use air-entraining admixture in all concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content within limits shown in Table I.
4. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.
5. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as shown in Table I:

a. Concrete containing HRWR admixture (super-plasticizer): Not more than 8" after addition of HRWR to site-verified 2"-3" slump concrete.

2.6 CONCRETE MIXING

A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, 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. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd., or fraction thereof.
1. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

B. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.
1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.
a. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

3.2 FORMS

A. Design, erect, support, brace, and maintain form work to support vertical and lateral, static, and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct form work so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain form work construction tolerances complying with ACI 347.

B. Design form work to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms to sizes, shapes, lines, and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete

surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

E. Provide temporary openings where interior area of form work is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

G. Provisions for Other Trades: Provide openings in concrete form work to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retightening forms and bracing after concrete placement if required to eliminate mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER INSTALLATION

A. Following leveling and tamping of granular base for slabs on grade, place vapor retarder sheeting with longest dimension parallel with direction of pour.

B. Lap joints 6" and seal with manufacturer's recommended mastic or pressure-sensitive tape.

3.4 PLACING REINFORCEMENT

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.
   1. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations. Repair damages before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement by form work, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

F. Epoxy - Coated Reinforcing Steel:
   1. Epoxy-coated reinforcing bars supported from form work shall rest on coated wire bar supports, or on bar supports made of dielectric material or other acceptable materials. Wire bar supports shall be coated with dielectric material for a minimum distance of 2 inches from the point of contact with the epoxy-coated reinforcing bars. Reinforcing bars used as support bars shall be epoxy-coated. In walls having epoxy-coated reinforcing bars, spreader bars where specified by the Engineer, shall be epoxy-coated. Proprietary combination bar clips and spreaders used in walls with epoxy-coated reinforcing bars shall be made of corrosion-resistant material.
   2. Epoxy-coated reinforcing bars - Equipment for handling epoxy-coated bars shall have protected contact areas. Bundles of coated bars shall be lifted at multiple pick-up points to minimize bar-to-bar abrasion from sags in the bundles. Coated bars or bundles of coated bars shall not be dropped or dragged. Coated bars shall be stored on protective cribbing. Fading of the color of the coating shall not be cause for rejection of epoxy-coated reinforcing bars. Coating damage due to handling, shipment and placing need not be repaired in cases where the damaged area is 0.1 square inches or smaller. Damaged areas larger than 0.1 square inches shall be repaired in accordance with the epoxy material manufacturer's recommendations. The maximum amount of damage including repaired and unrepaired areas shall not exceed 2 percent of the surface area in each linear foot of each bar.

3.5 JOINTS

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Engineer.

   1. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.
   2. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

B. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

C. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.
   1. Joint filler and sealant materials are specified in Section 333100 of these specifications.

D. Contraction (Control) Joints in Slabs-on-Ground: Construct contraction joints in slabs-on-ground to form panels of patterns as shown. Use inserts 1/4 of slab depth, unless otherwise indicated:
   1. Form contraction joints by inserting premolded plastic strips into fresh concrete until top surface of strip is flush with slab surface.
   2. Follow the directions of Insert Manufacturer for finishing the slab and joints.

E. If joint pattern not shown, provide joints not exceeding 15' in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third-bays).
   1. Joint sealant material is specified in Section 333100 of these specifications.

3.6 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto. Electrical conduit shall not be embedded in concrete.

B. Install reglets to receive top edge of foundation sheet waterproofing, and to receive thru-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.

C. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units to support screed strips using strike-off templates or compacting type screeds.

3.7 PREPARATION OF FORM SURFACES

A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.

B. Coat contact surfaces of forms with an approved, nonresidual, low-VOC, from-coating compound before placing reinforcement.

C. Thin form-coating compounds only with thinning agent of type, amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel form work is not acceptable.

3.8 CONCRETE PLACEMENT

A. Preplacement Inspection: Before placing concrete, inspect and complete form work installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to

permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

1. Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

B. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

C. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

D. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

1. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
3. Maintain reinforcing in proper position on chairs during concrete placement operations.

E. Cold Weather Placing: 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.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C), and not more than 80 deg F (27 deg C) at point of placement.
    a. The concrete shall be maintained within this temperature range for not less than seven (7) days.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials or against cold reinforcing steel.

3. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

F. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
   1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). 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. Use of liquid nitrogen to cool concrete is Contractor's option.
   2. 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.
   3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
   4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Engineers.

3.9 FINISH OF FORMED SURFACES

A. Rough Form Finish: For formed concrete surfaces not exposed-to- view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or other similar system. This is an as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed; provide smooth rubbed finish to smooth form finish. Refer to "Concrete Surface Repairs."

C. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finish treatment.
   1. Scarify or roughen entire surface by grinding or similar effective means.
   2. Combined one part Portland cement to 1-1/2 parts fine sand by volume and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.
   3. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.
   4. Repeat the above process if necessary to fill voids or bug holes and obtain a consistent match to adjacent surfaces, subject to acceptance of the Engineer.

D. Grout Cleaned Finish: Provide grout cleaned finish on scheduled concrete surfaces which have received smooth form finish treatment.
   1. Scarify or roughen entire surface by grinding or similar effective means.
   2. Apply Thoroseal plaster mix coating by Thoro System Products or approved equivalent with an approximate thickness of 1/8-inch to ¼-inch.
   3. Follow the manufacturer's recommendations and guidelines regarding surface preparation, application methods and curing.
   4. Repeat the above process if necessary to fill voids or bug holes and obtain a consistent match to adjacent surfaces, subject to acceptance of the Engineer.

E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, Portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
   1. After placing slabs, plane surface to tolerances for floor flatness F(F) 15 and floor levelness F(L) 13, measured according to ASTM E 1155. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.

B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
   1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both, Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of F(F) 18 F(L) 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
   1. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of F(F), 20 and F(L) 17, measured according to ASTM E1155. Grind smooth surface defects which would telegraph through applied floor covering system.

D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

E. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

F. Non-slip Aggregate Finish: Apply non-slip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and elsewhere as indicated.
   1. After completion of float finishing, and before starting trowel finish, uniformly spread 25 lbs. of dampened non-slip aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified.
   2. After curing, lightly work surface with a steel wire brush, or an abrasive stone, and water to expose non-slip aggregate.

G. Colored Wear-Resistant Finish: Provide colored wear-resistant finish to monolithic slab surface indicated.
   1. Apply dry shake materials for colored wear-resistant finish at rate of not less than 100 lbs. per 100 sq. ft., unless greater amount is recommended by material manufacturer.
   2. Immediately following first floating operation, uniformly distribute approximately 2/3 of required weight of dry shake material over concrete surface, and embed by means of power floating. Follow floating operation with second shake application, uniformly distributing remainder of dry shake material with overlapping applications, and embed by power floating.
   3. After completion of broadcasting and floating, apply trowel finish as herein specified. Cure slab surface with curing compound recommended by dry shake hardener manufacturer. Apply curing compound immediately after final finishing.

3.11 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Protect concrete from rapid moisture loss before and during finishing operations.
   1. The evaporation graph, Figure 1, of ACI 308 - Curing Concrete, shall be used to determine the evaporation rate during concrete placement. If the rate of evaporation equals or exceeds 0.2 lbs/sq.ft./hr., steps shall be taken to prevent excessive evaporation from the surface.
   2. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing.
      a. Initial curing may be any of the methods listed herein that maintain a satisfactory moisture content and temperature.
   3. Begin final curing procedures, if they differ from initial curing, immediately following initial curing and before concrete has dried. Continue curing for at least

seven (7) days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. Curing Methods: Perform curing of all structural concrete as herein specified.
   1. Provide moisture curing by following methods.
      a. Keep concrete surface continuously wet by covering with water.
      b. Continuous water-fog spray.
      c. Cover concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
   2. Provide moisture-cover curing as follows:
      a. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

C. Provide curing and sealing compound to pavement, walks, and curbs only, as follows:
   1. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours) and after surface water sheen has disappeared. Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within three (3) hours after initial application. Maintain continuity of coating and repair damage during curing period.

D. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

E. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by moist curing methods.
   1. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

3.12 SHORES AND SUPPORTS

A. Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified.

B. Extend shoring from ground to roof for structures four (4) stories or less, unless otherwise permitted.

C. Extend shoring at least three (3) floors under floor or roof being placed for structures over four (4) stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.

D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support work without excessive stress or deflection.
   1. Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.13 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for five (5) days after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members. Lab cured cylinders will not be considered.

C. Form facing material may be removed five (5) days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.14 RE-USE OF FORMS

A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new form work.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Engineer.

3.15 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. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment with template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
   1. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled. Cure concrete as herein specified.

E. Reinforced Masonry: Provide concrete grout conforming to ASTM C476 for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

3.16 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Engineer.
   1. Saw-cut out honeycomb, rock pockets, voids over 1/4" in any dimension, down to solid concrete but, in no case to a depth of less than 1”. Make edges of cuts slightly undercut to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
   2. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with Portland Cement patching mortar, or precast cement cone plugs secured in place with bonding agent. When other materials are used, apply them in accordance with manufacturer's recommendations.
   1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
   2. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.
   3. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections

regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

4. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.
5. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Engineer.
6. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
8. Perform structural repairs with prior approval of Engineer or Structural Engineer for method and procedure, using specified epoxy adhesive and mortar.
9. Repair methods not specified above may be used, subject to acceptance of Engineer.
10. Underlayment Application: Leveling of floors for subsequent finishes may be achieved by use of specified underlayment material.

3.17 THROUGH SECTION CONCRETE CRACK REPAIRS

A. Sealing through wall or slab cracks.
   1. Seal cracks for a water-tight or structurally bonded repair with epoxy or chemical grouting procedures.
      a. The Contractor shall make proper repairs with epoxy injection or chemical injection with a moisture reactive hydrophilic polyurethane foam grout, as directed by the Engineer.

3.18 MUD MATS

A. Where called for on the plans or as directed by the Engineer, the Contractor shall construct concrete mud mats immediately after cleaning the excavation bottom, to preserve the bearing surface condition. Concrete for mud mats shall be not less than 3 in. thick. Bottom of excavation shall be free of water, mud and loose material prior to mud mat placement. See Section 310000.
   1. Mud mat concrete shall be cast against the side walls of all excavations to completely seal the bottom.

ADDENDUM
EXAMPLE FORM A

CONCRETE SUPPLIER:_____

PROJECT:_____ CONTRACTOR:_____

MIXTURE ID:_____ SPECIFIED f'c:_____PSI

MATERIAL MIXTURE PROPORTIONS lbs-mass/cu.yd. (pcy)

1.0 Cement Type_____ Source:_____

Sp. Gr._____ _____pcy _____cu. ft.

1.1 Other Cementitious Materials:_____ Class:_____ Source:_____

Sp. Gr._____ _____pcy _____cu. ft.

2.0 Aggregate (No. 1) Type:_____ Size:_____ Source:_____

SSD Sp. Gr._____ _____pcy _____ cu. ft.

Dry Rodded Unit Wt.:_____pcf

Alternate (No. 1) Lightweight Aggregate Type:_____ Size:_____Source:_____

Sp. Gr. Factor _____ over dry pcy _____ cu. ft.

Loose Unit Wt._____pcf Estimated Wet_____pcf

2.1 Aggregate (No. 2) Type:_____ Size:_____ Source:_____

SSD Sp. Gr._____ _____pcy _____cu. ft.

Dry Rodded Unit Wt.: _____pcf (If Fine Sized - FM _____)

2.2 Aggregate (Nos. 3, 4, n) Type:_____ Size:_____ Source:_____

SSD Sp. Gr._____ _____pcy _____cu. ft.

Dry Rodded Unit Wt.: _____pcf

3.0 Water: _____gal. _____pcy _____cu. ft.

EXAMPLE FORM A (CONTINUED)

4.0 Admixtures expressed as fluid ounces/cubic yard, and estimated range

Source:_____ Name:_____ Type_____ _____oz

Source:_____ Name:_____ Type_____ _____oz

Source:_____ Name:_____ Type_____ _____oz

Total Admixture Liquid Vol. _____ cu. ft.

(*) Note: Show volume in 4.0 if not included in cubic feet of air or water.

5.0 Other Materials - fibers, color pigment or other additions

Sp. Gr._____ _____pcy _____cu. ft.

Total Mixture Mass and Volume: _____pcy _____cu. ft.

Fresh Concrete Properties

Slump _____ +/-_____ in.

Unit Weight _____ pcf

Air Content _____+/-_____%

If Trail Batch Data -

Identify Batch No. _____

Batch Date _____

Concrete Temp._____°F

Comp. Strength-Average _____°F

Coarse & Fine Aggregate Gradation

Percent Passing

Sieve Size	Aggregate No. 1	2	3	4	Combined
2 in.	____	____	____	____	_____
1-1/2 in.	____	____	____	____	_____
1 in.	____	____	____	____	_____
3/4 in.	____	____	____	____	_____
1/2 in.	____	____	____	____	_____
3/8 in.	____	____	____	____	_____
No. 4	____	____	____	____	_____
No. 8	____	____	____	____	_____
No. 16	____	____	____	____	_____
No. 30	____	____	____	____	_____

7 day avg. _____psi	No. 50	____ ____ ____ ____ _____
28 day avg. _____psi	No. 100	____ ____ ____ ____ _____
	No. 200	____ ____ ____ ____ _____

Comments:_____

_____

Signature: _____ Date:_____

Title: _____

Organization: _____

EXAMPLE FORM B

CONCRETE SUPPLIER:_____

MATERIAL	TRAIL BATCH NUMBER - proportions per cubic yard			
	1	2	3	4
1.0 Cement Source: _____				
Type ____	_____lb	_____lb	_____lb	_____lb
1.1 Other Cementitious Material Sources:_____				
Type ____	_____lb	_____lb	_____lb	_____lb
2.0 Aggregate No. 1 Size_____ Source:_____				
SSD ____	_____lb	_____lb	_____lb	_____lb
Alternate No. 1 Lightweight Aggregates Type _____ Source: _____				
Sp. Gr. Factor _____				
Oven Dry	_____lb	_____lb	_____lb	_____lb
Wet	_____lb	_____lb	_____lb	_____lb
2.1 Aggregate No. 2 Size_____ Source:_____				
SSD ____	_____lb	_____lb	_____lb	_____lb
2.2 Aggregate Nos. 3, 4, n) Size_____Source:_____				
SSD ____	_____lb	_____lb	_____lb	_____lb
3.0 Water	_____lb	_____lb	_____lb	_____lb
4.0 Admixtures Source: _____				
_____ Type _____	_____oz	_____oz	_____oz	_____oz
_____ Type _____	_____oz	_____oz	_____oz	_____oz
_____ Type _____	_____oz	_____oz	_____oz	_____oz

EXAMPLE FORM B (CONTINUED)

5.0 Other Materials

_____ Type _____ _____lb _____lb _____lb _____lb

Total Mass: _____lb _____lb _____lb _____lb

Total Mass/cy: _____pcy _____pcy _____pcy _____pcy

Relative Cubic Yard Volume:
_____cy _____cy _____cy _____cy

Water-Cementitious Material Ratio:

Fresh Concrete Properties

TRAIL BATCH NUMBER

	## -1	## -2	## -3	## -4
Slump-inches	_____	_____	_____	_____
Air-Content %	_____	_____	_____	_____
Unit Wt. pcf	_____	_____	_____	_____
Concrete Temp. °F	_____	_____	_____	_____

Compressive Strength Results (ASTM C192, C39) or Other Specified Test Requirements

7 days	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
Average (7 day)	_____	_____	_____	_____

28 days	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
Average (28 day)	_____	_____	_____	_____
Water-Cementitious Material Ratio:				
	_____	_____	_____	_____

Signature: _____ Date:_____

Title:_____

Organization: _____

END OF SECTION 030000

SECTION 034000.04 - PRECAST CONCRETE CATCH BASINS

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. Under this section the Contractor shall furnish and construct precast catch basins of designated types at locations shown on the Drawings and/or scheduled.

B. This section includes furnishing and installing concrete of classes called for, reinforcing steel, brick, Portland cement mortar, precast concrete inlet structures, flexible joints where specified, inlet castings, making watertight connections to new and existing sewers, and other incidental work.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.4 DEFINITIONS

A. Types of catch basins included under this section shall be as designed and detailed on the Drawings.

B. The term catch basins as used herein refers to nomenclature of standard drawings for specified structures and of details shown on the Drawings.

1.5 SUBMITTALS

A. Manufacturer's Shop Drawings and Certificates:

1. Precast Catch Basins
2. Flexible Joints

B. Supplier's Certificates

1. Brick

1.6 PROTECTION

A. Adequate precautions shall be taken to prevent concrete and/or mortar from freezing. Brick, having a temperature of 40 degrees F or less shall not be set with mortar until heated for a period sufficient to ensure a temperature of 50 degrees F to 80 degrees F throughout the entire mass of material.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Precast Concrete Catch Basin Sections

1. Precast concrete catch basin sections, flat slab tops, and adjusting rings shall conform to ASTM C 478.
2. Joints shall be O-ring type conforming to ASTM C 443.
3. The standard length of riser sections shall be 48 in. Lengths of 32 in. or 16 in. shall be used to meet required dimensions and as specified.
4. Openings for connecting pipes in riser sections, bottom riser sections, and integral base sections, and for access in flat slabs shall be preformed or cored by the manufacturer. Cut-out openings shall be made immediately after the pipe is removed from the casting form. All cored openings for sewer pipe connections shall have flexible joints.
5. Precast integral base sections shall be of monolithic construction. The bottom of the section shall be 6 in. thick minimum and contain 0.32 sq. in. minimum of steel reinforcing each way in top of the slab. Walls shall meet ASTM C 478.

B. Catch Basin Frames and Covers

1. Catch Basin frames and covers shall be as shown on the Drawings.

C. Mortar

1. Mortar used for the structures herein specified shall conform to Specifications for Mortar for Unit Masonry, ASTM C 270 Type S, containing no masonry cement. The mortar shall be composed of one part Portland cement to two parts sand by volume.

D. Flexible joints for precast catch basins pipe openings herein specified shall conform to ASTM C 923, "A-Lok" Type as manufactured by A-Lok Products, "Kor-N-Seal" Type as manufactured by National Pollution Control systems, Inc., or equal.

PART 3 - EXECUTION

3.1 LOCATION AND CONSTRUCTION

A. Location and type of catch basin installed shall be as shown on the Drawings or directed.

B. Construction shall be in conformance with details shown on the Drawings and as specified.

3.2 INSTALLATION OF INTEGRAL BASE SECTIONS

A. Concrete shall be poured so as to provide a minimum of 4-in. thick pad under the entire area of the catch basin. Place the catch basin on the pad before the concrete is completely set so that final leveling adjustment can be made.

B. Six inch (6") granular backfill bedding can be used in lieu of concrete at the direction of the Engineer.

3.3 INSTALLATION OF CAST-IN-PLACE BASES

A. Unless otherwise called for on the Drawings or directed, precast bottom riser sections shall be placed with cast-in-place concrete bases.

B. The base shall be of concrete 9 in. thick minimum placed on undisturbed earth.

C. The cut-out riser section shall be blocked in place above the pipe and the concrete base poured in place. Concrete shall be extended above the lower rim of the riser wall as required to provide a watertight seal around the entire circumference of the riser section.

D. On straight runs the Contractor may carry the sewer pipe through the catch basin and break out the top half after the fill concrete has set. In all cases the sewer pipe shall extend through the catch basin wall to the inside face.

3.4 CHANNELING CATCH BASIN BOTTOMS

A. The bottoms of all catch basins shall be channeled to conduct flow in the planned direction. Channels shall be the true shape of the lower half of the sewer pipe and shall match inverts of connecting pipe at the catch basin wall.

B. In integral base sections (only) channels may be constructed using brick and Portland cement mortar. Mortar shall be 3/4-in. thick minimum between bricks and between bricks and concrete and 1-in. thick minimum on all exposed surfaces.

3.5 PRECAST CONCRETE RISER SECTIONS

A. The shortest length of riser section to be incorporated into the catch basin shall be installed immediately below the flat slab top.

3.6 INSTALLATION OF CATCH BASIN FRAMES

A. Catch basin frames and covers shall be installed to grades shown on the Drawings or as directed.

B. Adjustment of catch basin castings shall be made using specified brick or precast adjusting rings and Portland cement mortar joints. The entire outer surface of adjusting rings and castings shall be plastered with 1 in. minimum Portland cement mortar unless otherwise detailed on the Drawings or directed.

C. The maximum depth of adjustment below any catch basin casting shall be 16 in.

END OF SECTION 034000.04

SECTION 269001 – REMOTE TELEMETRY SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install a Remote Telemetry System (RTS) with appurtenant equipment and accessories as indicated, specified and as necessary for a complete and proper operating system.

B. The RTS shall be completely wired and configured to monitor and control all of the functions listed herein for a complete and proper operating system.

C. The system supplier shall provide all engineering, installation and/or supervision of such, startup, testing and training as specified herein.

D. The system supplier shall provide operation and maintenance manuals as specified herein.

E. The contractor shall include an allowance in the base bid for the project, equal to the attached quotation amount.

1.2 EQUIPMENT COMPATIBILITY

A. The Contractor shall be responsible for coordinating the instrumentation equipment, communication equipment and other related equipment so that all elements are compatible and form a complete working system. Shop drawing submittals shall include sufficient information regarding component compatibility to demonstrate compliance with this requirement.

1.3 SUBMITTALS

A. Shop Drawings: Forward telemetry system information and auxiliary materials for engineer’s review in accordance with General Requirements.

B. As-Built Documentation: Review connection requirements with the telemetry system vendor and produce as built connection schedule for each site.

C. O&M Manual: The manufacturer shall provide copies of an operation and maintenance manual, including storage, installation, start-up, operating and maintenance instructions, and a complete parts list. The O&M manual shall be in compliance with General Requirements.

PART 2 - PRODUCTS

2.1 MONITORING AND CONTROL SYSTEM (SYSTEM INTEGRATOR’S SCOPE)

A. Provide a telemetry control panel (RTU) in NEMA 12 enclosure to interface to control

and monitoring instrumentation on site.

B. RTU shall feature a cellular modem for secure communication to the central monitoring site. The System Integrator shall transfer the cellular service name in Owner's name from the existing water tower site to this new modem.

C. Provide instrumentation, per the drawings and the attached quotation.

2.2 OTHER MATERIALS (BY CONTRACTOR OUTSIDE OF SYSTEM INTEGRATOR'S SCOPE)

A. Contractor is responsible for all installation of all equipment provided by the System Integrator, including the RTU and instrumentation; provide all materials required to complete the installation.

B. For each of the discrete I/O points, provide (2) #14 in conduit from the equipment being monitored, similarly, provide #18 twisted shielded pair cable in conduit for each analog signal. Confirm with the approved final I/O schedule to be produced by the System Integrator as part of the shop drawing process.

C. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.3 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturer's recommendations and shop drawings as approved by the Engineer.

B. Upon completion of the installation, carefully inspect each component and verify that all items have been installed in their proper location, adequately anchored, and adjusted to achieve optimum operation.

C. The System Integrator shall verify connections into the RTU and shall perform Start up services, including modifications to the SCADA programming at the central monitoring site.

3.4 TRAINING

A. Demonstrate to the Owner's operation and maintenance personnel the proper methods for operating and maintaining the equipment, and the contents of the operation and maintenance manual.

3.5 SERVICE

A. The Contractor shall furnish to the Owner, through the Engineer, a written certificate, signed by the System Integrator's field service technician confirming that:

1. The equipment has been properly installed in accordance with manufacturer's recommendations;
2. The equipment check out and initial start-up activities have been completed in accordance with manufacturer's recommendations and under the technician's supervision;
3. The equipment is free from any undue stress imposed by connecting conduit or anchor bolts;
4. The equipment operates satisfactorily and in compliance with the requirements of this Section.

END OF SECTION 269001

SECTION 310000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. The Work covered by this Section shall include all excavation, trenching and related work for the construction of the designated structures and pipelines, backfill and other incidental work.

B. The Work covered by this Section consists of:
1. making all necessary excavations for the construction of all Work;
2. preparing subgrade for foundations, slabs, walks, and pavements;
3. doing all pumping, fluming, and dewatering necessary to keep the trenches and other excavation free from water;
4. providing for uninterrupted flow of existing drains and sewers, and the disposal of water from any sources during the progress of the Work;
5. supporting and protecting all trench walls, structures, pipes, conduits, culverts, posts, poles, wires, fences, buildings and other public and private property adjacent to the Work;
6. removing and replacing existing sewers, culverts, pipelines and bulkheads where necessary;
7. removing after completion of the Work all sheeting and shoring or other soil support materials not necessary to support the sides of trenches;
8. removing and disposing all surplus excavated material;
9. doing all backfilling and grading, of compacting backfill to limits specified or ordered by the Engineer;
10. restoring all property damaged as a result of the Work involved in this Contract.

C. The Work includes transporting surplus excavated materials not needed for backfill at the location where the excavation is made, to other parts of the Work where filling is required, and disposal of all types of surplus material off the site.

D. The Work includes low strength mortar backfill material intended for use in backfilling as shown on the Drawings.

1.2 RELATED DOCUMENTS AND SECTIONS

A. Section 013319 – Field Test Reporting

B. Section 030000 - Concrete Work

C. Section 333100 – Sanitary Sewer System

1.3 DEFINITIONS

A. Backfill: Soil or granular materials used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, not including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding: Layer placed over the excavated subgrade in a trench before laying pipe.

C. Borrow: Satisfactory soil imported for use as fill or backfill.

D. Excavation: Removal and disposal of material encountered above subgrade or foundation elevations.
   1. Additional Excavation: Excavation below subgrade or foundation elevations as directed by Engineer.
   2. Trench: Narrow linear excavation
   3. Unauthorized Excavation: Excavation below subgrade or foundation elevations or beyond indicated dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.
   4. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface or subsurface conditions encountered, including rock, soil materials and obstructions.

E. Embankment: A structure consisting of soil, granular material, shale, rock, or other approved material, constructed in layers to a predetermined elevation and cross-section.

F. Granular materials: Natural aggregate, such as broken or crushed rock, gravel, or sand that can be readily incorporated into an 8-inch layer, and in which at least 65% by weight of the grains or particles are retained in a No. 200 sieve.

G. Laboratory Dry Weight: The maximum laboratory dry weight shall be the weight provided by the laboratory when the sample is tested in accordance with ASTM D-698 Method A, C, or D.

H. Optimum Moisture: The water content at which the maximum density is produced in a soil by a given compaction effort (ASTM D-698).

I. Pavement Prism: Also referred to as the zone of influence. The area below a line drawn 45 degrees to the horizontal from the surface at the edge of pavement, sidewalk or curb.

J. Pipe Embedment: The material placed in a trench surrounding a pipe or conduit consisting of the foundation, bedding, haunching, and initial backfill.

K. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material one (1) cu. yd. or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches.

L. Shale: Laminated material, formed by the consolidation in nature of soil, having a finely stratified structure. For the purpose of these specifications, the following bedrock types shall also be considered shale: mudstone, claystone, siltstone and hard clay.

M. Soil: All earth materials, organic or inorganic, which have resulted from natural processes such as weathering, decay, and chemical reaction.

N. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, pavement, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

O. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage course, or topsoil materials.

P. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Comply with all provisions of Section 013323, Shop Drawings and Submittals.

B. Product Data: For the following:
1. Source-locations of all materials shall be identified to the Engineer.
2. Source quality laboratory test of all fill materials as required to show compliance with material specifications.

C. Shop Drawings: Submit information for the following items:

1. Sheeting and bracing prepared and stamped by a professional engineer, registered in the State of Ohio (where standard trench boxes and/or benching in accordance with OSHA safety standards are not feasible)
2. Dewatering system and standby equipment prepared and stamped by a professional engineer, registered in the State of Ohio.

1.5 REFERENCES

A. AASHTO M 43 Standard Specification for Size of Aggregate for Road and Bridge Construction

B. ASTM C-150 Standard Specification for Portland Cement

C. ASTM C-618 Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete

D. ASTM D-698 Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop

E. ASTM D-1586 Standard Method for Penetration Test and Split-Barrel Sampling of Soils

F. ASTM D-2487 Standard Test Method for Classification of Soils for Engineering Purposes

G. ASTM D-2940 Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports

H. ASTM D-4253 Standard Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table

I. ASTM D-4254 Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

J. State of Ohio - Department of Transportation - Construction and Material Specifications, Item 304, Aggregate Base.

K. State of Ohio - Department of Transportation - Construction and Material Specifications, Material Detail 703.16, Suitable Materials for Embankment Construction.

L. State of Ohio - Department of Transportation - Construction and Material Specifications, Material Detail 703.02.A.2, Fine Aggregate for Portland Cement Concrete

1.6 QUALITY ASSURANCE

A. Qualifications - Work shall be performed by personal meeting requirements identified in section 014323 – Qualifications of Tradesmen.

B. Regulatory Requirements – Work performed within Ohio Department of Transportation Right-of-Way or Limited Right of Way shall have maintenance of traffic in accordance with the most recent standards set for in the OMUTCD.

C. Certifications – The Contractor shall provide certification that all materials meet requirements identified in plans, specifications, and bid/contract documents.

D. Field Samples – All testing of native soils, bedding and backfill materials, and pavement base materials shall be in accordance with requirements identified in section 013319 – Field Test Reporting.

E. Pre-Construction Conference – The Contractor, Engineer, and Owner shall meet at a minimum ten (10) business days prior to the mobilization of equipment and materials to the project site. No work shall commence until a pre-construction meeting is held and the work plan by the Contractor is approved by the Engineer.

1.7 PROJECT CONDITIONS

A. Environmental Requirements
   1. All work shall be performed in accordance with erosion control and stormwater pollution prevention measures detailed in section 015713 – Temporary Erosion Control and Section 013543, Environmental Protection.

B. Existing Conditions
   1. Existing ground elevations of the site are shown by figures and/or by contours on the Drawings. The contours and elevations of the present ground are believed to be reasonably correct, but do not purport to be absolutely so, and, together with any schedule of quantities, are presented only as an approximation. The Contractor shall satisfy themself, however, by actual examination on the site of the Work, as to the existing elevations and contours, and the amount of work required. Any variations shall be confirmed by the Contractor prior to ordering of materials or start of any work.

C. Existing Utilities
   1. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.
   2. Notify Engineer not less than two (2) days in advance of proposed utility interruptions.
   3. Do not proceed with utility interruptions without Engineer's written permission.
   4. Contact utility-locator service for area where Project is located before excavating.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver products to the site, store and protect under provisions of Section 016600, Product Handling and Protection.

B. Comply with all provisions of Section 013543, Environmental Protection.

1.9 SEQUENCING AND SCHEDULING

A. Refer to Section 013319, Field Test Reporting for testing laboratory service scheduling.

1.10 PROHIBITION OF EXPLOSIVES

A. The use of explosives is not permitted.

1.11 FIELD MEASUREMENTS

A. The Contract Drawings may indicate locations where certain utilities, structures or facilities might possibly interfere with the installation of new improvements. The Contractor shall dig such exploratory test pits as may be necessary to determine the exact location and elevation of the indicated subsurface structure and shall make acceptable provision for their protection, support and maintenance in operation. The Engineer shall be provided advance notification when and where excavation for test pits will take place. The Contractor shall provide the Engineer a record of field locations of all listed utilities, structures or facilities a minimum of five (5) days prior to initiating construction of the project. Locations and elevations are to be provided by a Surveyor registered in the State of Ohio.

PART 2 - PRODUCTS

2.1 GRANULAR PIPE EMBEDMENT

A. Crushed gravel or crushed limestone meeting AASHTO M 43 gradation shall be used for bedding, haunching, and initial backfill as shown on the Drawings.

2.2 ONSITE BACKFILL

A. Excavated soil material, capable of meeting specified compaction, and approved by the Engineer for use as backfill in designated locations.

B. Based upon subsurface investigation, the Owner does not guarantee the onsite soils in its present state consists of the proper moisture content to achieve the specified compaction without drying or adding water.

C. Unsuitable Backfill Material

1. Onsite materials that are unsuitable for backfill, unless otherwise specifically shown in the Drawings, include rock or other materials greater than six (6) inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, frozen earth, and the following soils classified per ASTM D-2487:

Symbol	Description
OL	Organic silts and organic silty clays of low plasticity
MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
CH	Inorganic clays of high plasticity, fat clays
OH	Organic clays of medium to high plasticity
PT	Peat, muck, and other highly organic soils

2.3 SPECIAL BACKFILL MATERIAL (ODOT Item 304)

A. Special backfill material shall meet the gradation requirements of ODOT Item 304 and shall consist of crushed gravel or crushed limestone in combination with natural sand or stone. The aggregate shall meet the following gradation requirements:

Sieve	Total Percent Passing
2 inch	100
1 inch	70-100
¾ inch	50-90
No. 4	30-60
No. 30	9-33
No. 200	0-15

2.4 LOW STRENGTH MORTAR BACKFILL

A. Low Strength Mortar shall comply with ODOT Item 613.

B. Submit test data that demonstrates that the proposed mix has a strength of 50 to 100 PSI at 28 days.

C. Each load shall be tested with 3 cylinders for strength test broken at 3, 7, and 28 days until the Engineer is assured that the mix will be between 50 to 100 PSI at 28 days. Thereafter, one set of strength tests shall be taken every 50 CY.

It is intended that the sand be fine enough to stay in suspension in the mixture to the extent required for proper flow. The Engineer reserves the right to reject the sand if a flowable mixture cannot be produced.

D. Mortar Mix Proportioning

1. The initial trial mixture shall be in accordance with Type 2 proportions specified under ODOT Item 613.03. Proportions shall be as follows:

Quantity of Dry Materials per Cubic Yard

Cement	100 lbs.
Fly Ash	0* lbs.
Sand (SSD)**	2420 lbs.
Water	210-300 lbs.

* Entrained air is substituted for fly ash in this mix. (Approximately 5 percent)

**saturated-surface dry

2. These quantities of materials are expected to yield approximately l cubic yard of mortar of the proper consistency. Adjustments of the proportions may be made providing the total absolute volume of the materials is maintained.

2.6 ENGINEERED FILL

A. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940. The aggregate shall meet the following gradation requirements:

Sieve	Total Percent Passing
2 inch	100
1½ inch	95-100
¾ inch	70-92
3/8 inch	50-70
No. 4	35-55
No. 30	12-25
No. 200	0-8

2.7 ACCESSORIES

A. Warning Tape
   1. Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
      a. Red: Electric.
      b. Yellow: Gas, oil, steam, and dangerous materials.
      c. Orange: Telephone and other communications.
      d. Blue: Water systems.
      e. Green: Sewer systems.

B. Detectable Warning Tape
   1. 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:
      a. Red: Electric.
      b. Yellow: Gas, oil, steam, and dangerous materials.
      c. Orange: Telephone and other communications.
      d. Blue: Water systems.
      e. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PROTECTION

A. Excavation; Temporary Sheeting, Shoring, and Bracing
   1. All excavation shall be in accordance with the Occupation Safety and Health Administration (OSHA) regulations.

2. The Contractor shall furnish and install adequate sheeting, shoring, and bracing to maintain safe working conditions, and to protect newly built work and all adjacent neighboring structures from damage by settlement.
3. Bracing shall be arranged so as not to place a strain on portions of completed work until construction has proceeded enough to provide ample strength. Sheeting and bracing may be withdrawn and removed at the time of backfilling, but the Contractor shall be responsible for all damage to newly built work and adjacent and neighboring structures.
4. All sheeting shall be removed unless specifically authorized in writing by the Engineer to be left in place.

B. Construction Sheeting Left in Place
1. The Contractor shall furnish, install, and leave in place construction sheeting and bracing when specified or when indicated or shown on the Drawings.
2. Any construction sheeting and bracing which the Contractor has placed to facilitate his work may be ordered in writing by the Engineer to be left in place. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating an obligation on his part to issue such orders. Failure of the Engineer to order sheeting and bracing left in place shall not relieve the Contractor of his responsibility under this Contract.

3.2 REPLACING, MOVING AND REPAIRING OF EXISTING UTILITIES

A. The Contractor shall:
1. replace, move, repair and maintain all utilities and all other structures encountered in the work
2. coordinate and communicate with applicable utility companies
3. repair all damage done to any of the said structures and appurtenances through his acts or neglect and shall keep them in repair during the life of this contract. The Contractor shall in all cases leave them in as good condition as they were previous to the commencement of the work and to the satisfaction of the Engineer.

3.3 DEWATERING

A. Drainage and Removal of Water
1. The Contractor shall dispose of water from the Work in a suitable manner without damage to adjacent property or structures.
2. The Contractor shall, when ordered by the Engineer, construct tight bulkheads across trench and provide pumps suitable for the removal of any water which may be encountered or which may accumulate in the trenches. Unless otherwise provided for in the Contract Documents, drainage water will not be permitted to flow through the conduit.
3. The trench shall be kept free from sewage and storm, surface, and subsurface water to at least 2 feet below the bottom of the excavation.
4. Where open water courses, ditches, or drain pipes are encountered during the progress of the Work, the Contractor shall provide protection and securing of the continuous flow in such courses or drains and shall repair any damage that may be done to them.

3.4 EXCAVATION CLASSIFICATION

A. All excavated materials are unclassified as defined in Article 1.3.

3.5 GENERAL EXCAVATION

A. All necessary excavation for buildings, structures, pavements, and site improvements shall be performed to accommodate the completion of all related Contract Work.

B. The Drawings show the horizontal and the lower limits of structures. The methods and equipment used by the Contractor when approaching the bottom limits of excavation shall be selected to provide a smooth surface and to prevent disturbing the soil below the bottom limits of excavation. All soil loosened during excavation shall be removed from the bottom of the excavation.

C. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

D. Excavation which is carried below the bottom limits of structures shall be classified as Unauthorized Excavation, unless said excavation below bottom limits of structures has been authorized by the Engineer prior to each occurrence.

E. Unauthorized Excavation shall be filled with Class B concrete to the bottom limits of structures. Under circumstances where structural integrity is not a factor, the Engineer may authorize the filling of Unauthorized Excavation with Low Strength Mortar Backfill or Special Backfill material compacted to 100% density as specified under the compaction requirements in this Section. Such work shall be at the cost of the Contractor.

3.6 TRENCH EXCAVATION

A. Excavation for trenches in which pipelines, sewers, and conduits are to be installed shall provide adequate space for workmen to space and joint pipe properly, but in every case the trench shall be kept to a minimum width. The width of trench shall not exceed the limits shown on the Drawings.

B. Excavation shall be to the depth necessary for placing of granular bedding material under the pipe as shown on the Drawings. If over-excavation occurs, the trench bottom shall be filled to grade with compacted granular bedding material.

C. Trenching operations shall not be performed beyond the distance that will be backfilled and compacted the same day.

D. In general, backfilling shall begin as soon as the conduit is in approved condition to receive it and shall be carried to completion as rapidly as possible. New trenching shall not be started when earlier trenches need backfilling or the surfaces of streets or other areas need to be restored to a safe and proper condition.

3.7 EXCAVATION OF UNSUITABLE MATERIALS

A. Unsuitable materials existing below the Contract bottom limits for excavation shall be removed as directed by the Engineer. Such excavation shall not exceed the vertical and lateral limits as prescribed by the Engineer.

B. In utility trenches, the voids left by removal of unsuitable excavated material shall be filled with AASHTO M 43 No. 1 and No. 2 aggregate conforming to the material requirements of Article 2.1 of this Section.

C. In excavations other than utility trenches, the voids left by removal of unsuitable excavated material shall be filled with material consisting or either: (1) Special Backfill Material; (2) Class B concrete; or (3) Low Strength Mortar Backfill, whichever is ordered by the Engineer.

D. Removal of unsuitable excavated material and its replacement as directed will be paid on basis of Contract Conditions relative to Changes in Work unless specific unit prices have been established for excavation of unsuitable material.

3.8 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. It shall be the responsibility of the Contractor to dispose of all surplus material that cannot be used in backfill or embankments at his expense outside the limits of the project. Unsuitable excavated material, including rock or large boulders, shall be disposed of outside the limits of the project.

B. Surplus material may be wasted adjacent to or incorporated in the regular construction only when ordered in writing by the Engineer.

3.9 BACKFILL

A. Pipelines, Sewers and Conduits

1. All pipe shall have bedding extending the width of the trench with depth in conformance with the Drawings. The bedding material shall be thoroughly compacted by tamping until no further densification is possible.
2. Pipe cover material shall be used for filling above the pipe bedding along the sides of the pipe and to a height of twelve (12) inches over the top of the pipe. The pipe cover material shall be brought up evenly on both sides of the pipe to eliminate the possibility of lateral displacement of the pipe and shall be thoroughly compacted by tamping until no further densification is possible. Care shall be taken to spade the aggregate under the pipe haunch below the spring line.
3. All trenches and excavations shall be backfilled immediately after pipe is laid therein, unless otherwise directed by the Engineer.
4. After the pipe cover has been placed and compacted around the pipe as specified above, the remainder of the trench may be backfilled by machine.

The backfill material shall be deposited in eight (8) inch horizontal layers, and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case will backfilling material from a bucket be allowed to fall directly on a pipe and in all cases the bucket must be lowered so that the shock of the falling earth will not cause damage.

B. Structures

1. Backfilling shall not commence before concrete has attained specified strength. Do not use equipment for backfilling and compaction operations against structures that will overload the structure.
2. Backfilling around and over structures shall be carefully placed and tamped with tools of suitable weight to a point one (1) foot above the top of same. Additional backfill may be required to protect the structure from damage from heavy equipment. Backfill shall be placed in uniform layers not exceeding eight (8) inches in depth. Each layer shall be placed, then carefully and uniformly compacted to the specified density so as to eliminate the possibility of displacement of the structure.
3. After the backfill has been placed and compacted around the structure to the height specified above, the remainder may be backfilled by machine. The backfill material shall be deposited in eight (8) inch horizontal layers, and each layer shall be thoroughly compacted to the specified density by approved methods before a succeeding layer is placed. In no case will backfilling material from a bucket be allowed to fall directly on a structure, and in all cases the bucket must be lowered so that the shock of the falling earth will not cause damage.

C. Where any new, proposed, or future pavement, driveway, parking lot, curb, curb and gutter, or walk is to be placed over a backfilled area, Special Backfill material shall be used for any portion of the trench falling within the pavement prism.

D. Where it is necessary to undercut or replace existing utility conduits and/or service lines, the excavation beneath such lines shall be backfilled the entire length with approved Granular Pipe Embedment Material compacted in place in eight (8) inch layers to the required density. The approved Granular Pipe Embedment Material shall extend outward from the spring line of the conduit a distance of two (2) feet on either side and thence downward at its natural slope.

3.10 LOW STRENGTH MORTAR BACKFILL

A. Low strength mortar backfill shall be discharged from the mixer as recommended by the supplier and approved by the Engineer.

B. Low strength mortar backfill may be placed in the trench in as few lifts as may be practical.

C. Secure conduit or pipelines before placing low strength mortar backfill to prevent conduits and pipelines from floating during backfilling.

D. For low strength mortar backfill placed against existing structures of unknown strength, backfill material shall be brought up uniformly in maximum 12 inch lifts and allowed to cure for a minimum of 24 hours or until it can carry a person's weight without leaving imprints before the next lift is placed.

E. Low strength mortar backfill shall be brought up to subgrade elevation or the pavement prism, whichever may be applicable.

3.11 SUBGRADE

A. All soil subgrade shall be prepared in accordance with this subsection.

B. Drainage
   1. The surface of the subgrade shall be maintained in a smooth condition to prevent ponding of water after rains to insure the thorough drainage of the subgrade surface at all times.

C. Unsuitable Subgrade
   1. Where unsuitable subgrade or subgrade not meeting the required bearing capacity is encountered in cuts, due to no fault or neglect of the Contractor, in which satisfactory stability cannot be obtained by moisture control and compaction, the unstable material shall be excavated to the depth required by the Engineer.
   2. Suitable material required for the embankment to replace the undercut will be paid on basis of Contract Conditions relative to changes in Work.
   3. Where soft subgrade in cuts is due to the failure of the Contractor to maintain adequate surface drainage as required in this article, or is due to any other fault or neglect of the Contractor, the unstable condition shall be corrected as outlined above at no expense to the Owner.

D. Full Width New Pavement Construction
   1. After the surface of the subgrade has been shaped to approximate cross section grade, and before any pavement, base or subbase material is placed thereon, the subgrade shall be compacted. When the rolling is completed, all surface irregularities shall be corrected and the surface of the subgrade shall be shaped as necessary to conform to the grade and cross section shown on the Drawings within the tolerance set forth in this Section and shall be so maintained until the overlying course is in place.

3.12 TOLERANCES

A. The Contractor shall check the work under this item with templates, slope boards or other devices satisfactory to the Engineer. The completed work shall conform to the Drawings within the following tolerances:
   1. For subgrade, the surface shall at no place vary more than ½ inch from a ten-foot straight edge applied to the surface parallel to the centerline of the pavement, nor more than ½ inch from subgrade elevation established by construction layout stakes.

3.13 CONSTRUCTION WITH MOISTURE AND DENSITY CONTROL

A. All backfill shall be constructed using moisture and density control. All subgrade, except rock and shale in cut sections, shall be constructed using moisture and density control.

B. Backfill and subgrade material which does not contain sufficient moisture to be compacted in accordance with the requirements of Article 3.17 of this Section shall be sprinkled with water as directed by the Engineer to bring the moisture content to within the range of optimum plus or minus three (3) percent. Water shall be thoroughly incorporated into the material by means of discs or other approved equipment.

C. Backfill and subgrade material containing excess moisture shall be dried, prior to installation, to a moisture content not greater than three (3) percentage points above optimum, except that for material within the moisture content range specified herein that displays pronounced elasticity or deformation under the action of loaded construction equipment, the moisture content shall be reduced to optimum or below if necessary to secure stability. For subgrade material, these requirements for maximum moisture shall apply at the time of compaction of the subgrade and also at the time of placing pavement or subbase. Drying of wet soil shall be expedited by the use of plows, discs, or by other approved methods when so ordered by the Engineer.

3.14 COMPACTION REQUIREMENTS

A. The bottom of excavations upon which concrete foundations or structures are to be placed shall be compacted so as to obtain 100% of maximum dry density per ASTM D-698 in the top twelve (12) inches.

B. The top twelve (12) inches of stripped original subgrade and final subgrade shall be compacted to not less than 100% of maximum dry density per ASTM D-698.

1. Subgrade under new, proposed, or future pavement shall be compacted 18 inches beyond the edge of pavement, paved shoulders or paved medians.

C. Compaction of subgrade for sidewalks (regardless of paving material) shall be 100% of maximum dry density per ASTM D-698 in the top six (6) inches.

D. Compaction of non-paved areas shall be 90% of maximum dry density per ASTM D-698.

E. Aggregate pipe embedment and aggregate backfill around structures shall be compacted to not less than 100% of maximum dry density per ASTM D-4253 and ASTM D-4254.

F. Final backfill shall be compacted to not less than 100% of maximum dry density per ASTM D-698.

G. Fill placed within the interior of structures shall be compacted to not less than 100% of maximum dry density per ASTM D-698.

I. Test Sections
1. If it is determined by the Engineer that the composition of the material is such that it cannot be tested for density using a nuclear densometer or other methods; or where, in the opinion of the Engineer, in-place compaction testing is not feasible; and if approved by the Engineer, the Contractor may construct a test section to demonstrate acceptable compaction effort in lieu of in-place compaction testing. Test sections shall be constructed at no additional cost to the Owner.
2. The test section shall be completed by repeatedly compacting the material until no further density is achieved. This value shall be the Minimum Test Section Density (MTSD). The compaction equipment used to complete the test section shall be of suitable size to compact the material and shall be the same equipment used to compact the in-place material.
3. The test section shall be constructed with moisture density control as specified in this Section.
4. The material shall be compacted to at least 98% of the MTSD.
5. Each lift of in-place fill or backfill shall be densified using a compactive effort equal to or greater than the effort applied to achieve the MTSD; i.e., if six passes were required to achieve MTSD, then each lift of material shall be compacted using six or more passes.
6. Construct a new test section when, in the opinion of the Engineer, the fill or backfill material has changed character or when the supporting material has changed character.

3.15 GRADING

A. 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.

B. Site Grading
1. Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
a. Lawn or unpaved areas shall be graded to plus or minus 1 inch.
b. Walks shall be graded to plus or minus 1 inch.

C. Grading inside Building Lines
1. Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

END OF SECTION 310000

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Protecting existing trees, shrubbery and vegetation to remain.
   2. Removing trees and other vegetation.
   3. Clearing and grubbing.
   4. Topsoil stripping.

B. Related Sections include the following:
   1. Division 32 - Section "Seeding" for finish grading, including placing and preparing topsoil for lawns and planting.

C. Restrictions that apply to tree clearing:
   1. No clearing of trees shall take place between April 1st and September 30th.
   2. Areas marked as “Forested Wetlands” on the plans shall have trees specifically marked for removal prior to installation of any sewer related improvements. The Contractor shall not remove any trees outside the limits of easements or areas noted where temporary disturbance is allowed.

1.3 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; 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 (50 mm) in diameter; and free of weeds, roots, and other deleterious materials.

1.4 MATERIALS OWNERSHIP

A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.5 SUBMITTALS

A. Prior to beginning any work on the project, the Contractor shall provide two (2) sets of photographs that depict the condition of existing landscape items on the developed properties within the project. These photographs shall be in addition to the pre-construction documentation that is specified under Section 013236.

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 authorities having jurisdiction.

B. Improvements on Private Property: Authority for performing indicated removal and alteration work on private property adjoining Owner's property will be obtained by Owner before award of Contract.
   1. Extent of work on private property is indicated on the drawings.

C. Salvable Improvements: Carefully remove items indicated to be salvaged and store within project limits where indicated.

D. Notify Ohio Utilities Protection Service before site clearing.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways and streets.

C. Locate and clearly flag trees and vegetation to remain or to be relocated.

D. Protect existing site improvements from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation as necessary and approved for installation of new construction. Removal includes digging out and the complete removal of stumps and obstructions and grubbing roots.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
   3. Completely remove stumps, roots, obstructions, and debris extending to a depth of the proposed sewer, force main, or structure subbase elevation.
   4. Tree stump located in residential lawned areas are to be ground with a stump grinder.
   5. Use only hand methods for grubbing within drip line of remaining trees.

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 8-inch (200-mm) loose depth and compact each layer to a density equal to adjacent original ground.

3.3 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
   1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
   2. Do not stockpile topsoil within drip line of remaining trees.
   3. Dispose of excess topsoil as specified for waste material disposal.
   4. Stockpile surplus topsoil and allow for respreading deeper topsoil.

3.4 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off site.

B. Burning: Burning is not permitted.

END OF SECTION 311000

SECTION 312000 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes construction dewatering.

B. Related Sections include the following:
   1. Section 315000 – Excavation Support and Protection
   2. Section 310000 – Earthwork, for excavating, backfilling, site grading and for site utilities.

1.3 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control ground-water flow into excavations and permit construction to proceed on dry, stable subgrades.

   1. Maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.
   2. Prevent surface water from entering excavations by grading, dikes, or other means.
   3. Accomplish dewatering without damaging existing buildings adjacent to excavation.
   4. Remove dewatering system if no longer needed.

1.4 SUBMITTALS

A. Shop Drawings for Information: For dewatering system. Show arrangement, locations, and details of wells and well points; locations of headers and discharge lines; and means of discharge and disposal of water.

   1. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
   2. Include a written report outlining control procedures to be adopted if dewatering problems arise.
   3. If retaining "Design" Option in "Performance Requirements" Article, retain subparagraph below, revised if necessary, to meet requirements of authorities having jurisdiction or to follow customary practice in Project's location.
   4. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

B. Qualification Data: For Installer and professional engineer.

C. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by dewatering operations.

D. Record drawings at Project closeout identifying and locating capped utilities and other subsurface structural, electrical, or mechanical conditions performed during dewatering.

1. Note locations and capping depth of wells and well points.

E. Field Test Reports: Before starting excavation, submit test results and computations demonstrating that dewatering system is capable of meeting performance requirements.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with water disposal requirements of authorities having jurisdiction.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

B. 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 geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be 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 the Project Manual.

C. Survey adjacent structures and improvements, employing a qualified professional engineer or land surveyor, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During dewatering, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS (Not Used)

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 and 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.

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.

B. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed, or until dewatering is no longer required.

C. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to 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.

D. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

1. Maintain piezometric water level a minimum of 24 inches below surface of excavation.

E. 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 in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

F. 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. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.

1. 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.

G. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

3.3 OBSERVATION WELLS

A. Provide, take measurements, and maintain at least the minimum number of observation wells or piezometers indicated and additional observation wells as may be required by authorities having jurisdiction.

B. Observe and record daily elevation of ground water and piezometric water levels in observation wells.

C. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. Suspend construction activities in areas where observation wells are not functioning properly until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

1. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

END OF SECTION 312000

SECTION 315000 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes temporary excavation support and protection systems.

B. Related Sections include the following:

1. Detailed drawings "Temporary Facilities and Controls" for temporary utilities and support facilities.
2. Section 312000 – Dewatering: for dewatering excavations.
3. Section 310000 – Earthwork: for excavating and backfilling and for existing utilities.

1.3 PERFORMANCE REQUIREMENTS

A. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.

1. Provide professional engineering services needed to assume engineering responsibility, including preparation of Shop Drawings and a comprehensive engineering analysis by a qualified professional engineer.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Install excavation support and protection systems without damaging existing buildings, pavements, and other improvements adjacent to excavation.

1.4 DEFINITIONS

A. Lagging: A temporary or permanent excavation support structure consisting of heavy timber boards, planking, sheathing, or reinforced precast concrete planks secured in place by steel H-piles.

B. Proof Load: An applied load 25 percent greater than the design load, imposed by load test.

C. Sheeting: A line of timber or planks, plain or tongue-and-grooved on sides, driven end-wise into the ground to protect sub grade operations.

D. Sheet Piling: Interlocking steel sheet piling installed vertically to hold back earth or retain soil and to keep water out of a foundation excavation. May be a temporary or permanent structure.

E. Shores/Shoring: Props or posts of timber or other material in compression, used for temporary support of excavations.

F. Slide Rail Shoring System: Slide-Rail Systems are modular, high-capacity shoring systems that are typically used in areas of poor soil conditions exist. Double-walled steel panels slide into tracked rails as earth is excavated allowing for minimal soil movement or loss of support. Slide rail systems are predominantly used in areas where loose sandy or structurally unstable soil exist. Full depth trench support is maintained during excavation and backfill operations by means of placing or removing individual panels as the depth of trench changes.

G. Soldier Piles: Vertical steel H-piles installed to take the side thrust. Also called soldier beams.

H. Strut: A brace or supporting member which resists thrusts in the direction of its own length; may be vertical, diagonal, or horizontal.

I. Waler: A horizontal beam used to brace or support vertical sheeting or sheet piling.

1.5 DESIGN CRITERIA

A. Design excavation support systems to support earth pressures, utility loads, equipment, applicable traffic and construction loads, and other surcharge loads in a manner which will allow the safe and expeditious construction of permanent structures without movement or settlement of the ground and in a manner which will prevent settlement of and damage to, or movement of, adjacent buildings, structures, utilities, or other facilities during the various stages of construction. Include evaluation of the effects of dewatering and flooding of excavation.

B. Design each component to support the maximum loads which may occur during various stages of construction. Include lateral pressure due to earthquake. For the purpose of this Section, the design load means the maximum load the support member will have to carry in actual practice, and the proof load means a specified test load greater than the design load.

C. Support of excavation structures shall be analyzed for all conditions which may occur during the various stages of construction. Among others, these conditions include: installation, relocation and removal of struts; flooding and dewatering of excavations; and concreting of excavation bottom. The loading conditions on opposite sides of a cut may not be equal. In this case, both sides shall be designed for and be compatible with the larger loading. The conditions to which the design applies shall be indicated on the Shop Drawings.

D. Carry the bottom of support system to a depth below the main excavation as adequate to prevent lateral and vertical movement. Where additional excavation is carried below the main excavation, provide means to prevent movement of the main excavation supports.

E. Design the excavation support system to allow the required free excavated space for workers, concrete formwork, wall waterproofing, and drainage systems.

F. Design excavation support systems for staged installation and removal to conform to construction and backfill sequences as indicated. Leave excavation support systems in place, except as specified otherwise herein or in the Contract Specifications.

G. Employ walers and struts for horizontal support as required for excavation faces to be retained by sheet piles. Provide struts with intermediate vertical and horizontal supports as required to prevent buckling. Struts shall be preloaded by wedging or jacking to 50 percent of the design load.

H. Provide diagonal bracing where needed for stability of the system.

1.6 SUBMITTALS

A. Shop Drawings and calculations: Submit Shop Drawings and supporting calculations for excavation support systems.

B. Pre-construction Surveys: Submit pre-construction surveys as specified in Article 1.7A herein.

C. Movement Detection Procedures: Submit procedures for detection of movement as specified in Article 3.1 herein.

D. Shop Drawings for Information: Prepared by or under the supervision of a qualified professional engineer for excavation support and protection systems.

1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

E. Qualification Data: For Installer and professional engineer.

F. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by the absence of, the installation of, or the performance of excavation support and protection systems.

1.7 SITE CONDITIONS

A. Pre-construction Surveys: The Contractor shall submit to the Engineer, for review and approval, pre-construction surveys for existing structures and facilities located above or adjacent to the new construction and which may be affected by the work. These surveys shall include photographs, maps, plans, written descriptions, and surveyed foundation levels as necessary to fully document pre-construction conditions.

B. Provision for Contingencies:

1. Monitor performance of components of excavation support systems, both for vertical and horizontal movement, at regular intervals. Provide strut-monitoring devices, installed in accordance with the manufacturer's instructions, at locations indicated or required.
2. Provide and secure approval for a contingency plan, or alternative procedures, to be implemented in the event of an unfavorable performance of the system.
3. Have materials and equipment available to implement the approved contingency plan.

C. Existing Utilities:

1. Proceed with caution in areas of utility facilities and structures. Expose existing utilities by hand-excavation or by other methods acceptable to the utility owner.
2. If existing utility facilities and structures interfere with proposed method of excavation support, modify or relocate such facilities in accordance with the utility owner's recommendations.

D. Loads:

1. Lateral loads shall not be transferred to new concrete structures by removal of excavation support systems until the new structure has attained its 28-day compressive strength, or except as otherwise indicated.

1.8 PROJECT CONDITIONS

A. Coordinate with requirements specified in Division 1 Section "Temporary Facilities and Controls" for temporary utilities.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

C. 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 geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for excavation support and protection.
2. The geotechnical report is included elsewhere in the Project Manual.

D. Survey adjacent structures and improvements, employing a qualified professional engineer or land surveyor; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M.

C. Steel Sheet Piling: ASTM A 328/A 328M with continuous interlocks.

D. Slide Rail Systems: Pre-engineered excavation support system as designed and supplied by Efficiency Production, Inc., United Rentals or approved equivalent.

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 that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems 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. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces is not impeded.

D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.

E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

3.2 INSTALLATION REQUIREMENTS

A. Install excavation support systems for safety and preservation of existing improvements. Excavation support systems shall consist of structures designed by the Contractor to support the various excavations.

B. Construct support systems in accordance with approved Shop Drawings and in a manner that will ensure that supported faces will be stabilized. Provide for additional soil pressure caused by adjacent surcharge loads.

C. No part of the excavation support systems that will remain permanently in place shall be placed or allowed to deflect within the limits of permanent structures.

D. Piles and vertical members of excavation support systems shall be within 1.0 percent of plumb.

E. Do not use combustible waste or similar material for packing or soil retention in excavations.

3.3 SHEET PILING

A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock to form a continuous barrier. Limit vertical offset of adjacent sheet piling to 60 inches (1500 mm). Accurately align exposed faces of sheet piling to vary not more than 2 inches (50 mm) from a horizontal line and not more than 1:120 out of vertical alignment. Cut tops of sheet piling to uniform elevation at top of excavation.

B. Drive or vibrate sheet piles in plumb position, with each pile interlocked with ad-joining pile for its entire length so as to form a continuous diaphragm throughout the length of each run of wall.

C. Provide driving method so that interlocking members can be extracted, if re-quired, without injury to adjacent fills

D. Do not drive piles within 100 feet of concrete less than seven days old.

3.4 INSTALLATION OF SLIDE RAIL SHORING SYSTEMS

A. Most tieback systems are proprietary. Add material requirements to Part 2 if particular tieback is required. If tiebacks are permanent, consider level of corrosion protection of tendons and anchorage connections.

B. Tiebacks: Drill for, install, grout, and tension tiebacks into position. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.

1. Test loading shall be observed by a qualified professional engineer responsible for design of excavation support and protection system.
2. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.5 DETECTION OF MOVEMENT

A. For each existing structure or facility within a zone of influence extending upward from the bottom of the excavation on a slope of 2 horizontal to 1 vertical, install settlement detection devices on each footing, foundation, wall, or other feature to be monitored. Settlement detection devices shall be capable of being read to an accuracy of 0.005 foot.

B. Take and record readings not less than once per week during performance of the work.

C. Stop work, notify the Engineer, and take immediate remedial action if movement of the existing structure occurs during performance of the work. All construction activities shall be immediately halted when the settlement of any structure or facility reaches 0.3 inch and shall not be resumed until after implementation of approved remedial measures.

D. Upon completion of the work, take weekly readings of the measurement points for a period of 4 weeks, or longer if movement persists, and report the results to the Engineer.

3.6 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

1. Remove excavation support and protection systems to a minimum depth of 48 inches (1200 mm) below overlying construction and abandon remainder.
2. Repair or replace, as approved by Architect, adjacent work damaged or displaced by removing excavation support and protection systems.

B. Leave excavation support and protection systems permanently in place.

END OF SECTION 315000

SECTION 321000- PAVEMENT REPLACEMENT

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. The Contractor shall furnish all of the equipment, labor and materials necessary to install, replace, and/or restore existing pavement structures together with their respective appurtenances as shown on the plans and as specified herein. This work shall include all of the subgrade preparation, subbase, base, intermediate pavement course(s), and finish pavement courses together with curbing, guttering, tack and/or prime coating, sealing and other pertinent work as necessary to meet the conditions of this contract.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.4 REPAIR OR REPLACEMENT WORK

A. For the repair and/or replacement of all existing pavement structures and their respective appurtenances that are removed and destroyed or otherwise damaged by the Contractor in the course of his performance of the work required under this contract, the Contractor shall furnish all equipment, labor, and materials as necessary to properly restore to a condition equal to that at their entry, and to the satisfaction of the Engineer, the Ohio Department of Transportation, the County Engineer, City Engineer, and all pertinent property owners, all cinder, slag, gravel, water-bound macadam, bituminous macadam, asphalt and brick or concrete driveways, curbs, sidewalks and roadways in strict accordance with the drawings and as specified herein.

B. In general, this item will include concrete, steel reinforcement, brick, stone, slag, cinders, gravel, asphalt and other bituminous materials and curbs, gutters, driveway culverts, road and curb drains and the demolition, excavation and removal of existing driveways, sidewalks and roadways.

1.5 REFERENCE TO OTHER PARTS

A. Other sections of these specifications shall apply, as and where applicable to this section and such sections will be the same as though they were included in this section.

B. For all old work where pavement is being repaired and/or replaced as a result of damages occurring thereto during the course of the work of this contract, all clearing and grubbing,

removal and storage of topsoil, excavation and/or placing of compacted fill and granular backfill, shall be done as required under other parts of these specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Generally, for all repair and replacement work, all new materials shall match the existing and adjoining work in both composition and quality unless otherwise ordered, specified herein, and/or shown on the drawings. In any stone driveway or roadway, the material used for stone fill shall conform to the existing material.

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. All pavement work shall be done in strict accordance with the specifications of the governmental body concerned and the latest ODOT specifications as applicable or at the direction of the Engineer.

B. All pavements disturbed by the Contractor's operations shall be relaid to the thickness of the adjoining pavement and, in all cases, the restoring of pavements, shall apply both to foundation courses and to the wearing surface.

C. Should cracks or settlements appear in adjoining pavements, the paving shall be removed to the extent necessary to secure firm and undisturbed bearing and shall be replaced in a satisfactory manner.

D. No permanent pavement shall be installed, repaired, and/or restored unless, or until, in the opinion of the Engineer, the condition of the backfill is such as to properly support the pavement.

E. Where new or replacement concrete pavement or base is placed adjacent to existing concrete pavement or base, contraction joints shall be provided in the new or replacement pavement so as to form a continuous joint with that in the existing pavement.

3.2 ROADWAY SUBGRADE

A. The entire area to be occupied by the roadways and parking areas shall be cleared, topsoil removed and stored, and the excavation or compacted fill made as required and brought to the proper cross-sections. Pipe trenches and other excavations shall be backfilled as required, and thoroughly compacted within the limits of the roadways or parking areas.

B. After the surface of the subgrade has been properly shaped and before any stone or slag is placed, the entire subgrade shall be thoroughly rolled and compacted to a depth of 12 inches under this section. Rolling shall be done with an approved type of self-propelled roller, weighing not less than ten (10) tons. All hollows and depressions which develop

during the rolling shall be filled with acceptable materials, and the subgrade rerolled. The process of filling and rolling shall be repeated until no depressions develop, and the entire subgrade has been brought to a uniform condition of stability.

C. All places which, in the opinion of the Engineer cannot be properly rolled, shall be tamped with handheld mechanically or pneumatically powered tampers.

D. In making the compacted fill and in doing the final subgrade rolling, the Contractor shall see that the material to be compacted and/or rolled has the proper moisture content to secure maximum compaction. When, in the opinion of the Engineer, the material is too wet, the compacting shall be delayed until the material has dried sufficiently. When, in the opinion of the Engineer, the material is too dry, the material shall be sprinkled with water in an amount to secure the proper moisture content.

END OF SECTION 321000

SECTION 321613.13 - CONCRETE CURBS

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. Under this section the Contractor shall furnish and construct curbing of various, designated types as shown or scheduled on the Drawings.

B. This section includes preparation of the base and/or subgrade construction of curbs, other work and materials incidental to the construction of curbing.

1.3 OWNER'S STANDARDS AND SPECIFICATIONS

A. Items preceded by ODOT shall refer to the latest edition of the State of Ohio, Department of Transportation, Construction and Material Specifications.

PART 2 - PRODUCTS

2.1 CONCRETE

A. All concrete used shall be Class C as specified in Section 030000.

2.2 CURBING

A. Other materials for curbing shall meet the applicable requirements of ODOT Item 609.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All soil subgrade under curbs shall be compacted in accordance with Section 310000.

B. All construction for curbing shall be in accordance with ODOT Item 609 for the type called for on the Drawings.

END OF SECTION 321613.13

SECTION 321623 - CONCRETE WALKS AND STAIRS

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. Under this section the Contractor shall furnish and construct sidewalks and stairs as shown or scheduled on the Drawings, specified or directed.

B. This section includes preparation of the base and/or subgrade construction of walks, adjustment of manhole castings and valve boxes to conform to new elevations and other work and materials incidental to the construction of walks and stairs.

1.3 OWNER'S STANDARDS AND SPECIFICATIONS

A. Items preceded by ODOT shall refer to the latest edition of the State of Ohio, Department of Transportation, Construction and Material Specifications.

PART 2 - PRODUCTS

2.1 CONCRETE

A. All concrete used shall be Class QC 1 as specified in section 030000.

2.2 WALKS AND STAIRS

A. Other materials for walks and stairs shall meet the applicable requirements of ODOT Item 608.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All soil subgrade under walks and stairs shall be compacted in accordance with Section 030000.

B. All service boxes, manholes and inlet tops shall be set to the required grades.

C. All construction for walks and stairs shall be in accordance with ODOT Item 608 for the type called for on the Drawings.

D. Minimum thickness of concrete walks shall be 4 inches.

E. Stairs shall be as detailed on the drawings.

END OF SECTION 321623

SECTION 329200.19 – SEEDING AND MULCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Installation of seeded areas shall be in areas impacted by the installation of improvements detailed in plans or areas disturbed by the Contractor due to lay down of materials, mobilization of equipment, or incidental to the construction operations. Work shall include supplying all seed, topsoil, soil conditioning materials, mulching materials and watering, and the incorporation of these materials into the work as specified.

B. The Contractor shall place topsoil at the depths specified in those areas requiring seeding. Topsoil shall be furnished by the Contractor.

1.2 SUBMITTALS

A. Product Data: For the following:
   1. Provide copies of soils tests for both new topsoil (provided) and onsite topsoil for review and approval. This applies to all areas that require seeding, including reconditioned areas.
   2. Provide location of properties from which topsoil is to be obtained, names and addresses of owners, depth to be stripped, and crops grown in the past 2 years.
   3. Provide the name of the seed supplier, name and phone number, list of the seed, including varieties of seed, labels, and an analysis of the seed for review, 4 weeks prior to the start of seeding.
   4. Provide soil amendments information based on soils test requirements.
   5. Hydroseed mixture, mulch and application rates prior to performing the work.

1.1 QUALITY ASSURANCE

A. Any subcontracted restoration work shall be performed by a qualified firm specializing in landscape work.

B. The Contractor shall have a soils test done at his expense and analyzed by a state approved testing agency. Soil tests shall be done on both the topsoil stockpiled from the site and new topsoil brought to the site. A minimum of two (2) tests shall be done. The tests shall include percent organic matter, pH, Buffer pH, Phosphorus, Exchangeable Potassium, Calcium, Magnesium, Cation Exchange Capacity and Percent Base Saturation with recommendations for nitrogen, phosphate, potash, magnesium and lime based on plant type and use.

C. Seed: All seed specified shall meet O.D.O.T. specifications as to the percentage purity, weed seed, and germination. All seed shall be approved by the State of Ohio, Department of Agriculture, Division of Plant Industry, and shall meet the requirements of these specifications.

D. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

1.4 PROJECT CONDITIONS

A. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, such conditions shall be rectified by the Contractor before planting, with approval from the Owner's Representative.

C. Soil Stabilization: The Contractor shall provide permanent or temporary soil stabilization to denuded areas within fifteen (15) days after final grade is reached on any portion of the site. Any such area which will not be regraded for longer than fifteen (15) days shall also be stabilized. Soil stabilization includes any measures which protect the soil from the erosive forces of raindrop impact and flowing water. Applications include seeding and/or mulching, or the use of other erosion control measures as directed by the Owner's Representative. If necessary, the Contractor shall coordinate soil stabilization practices with the local Soil and Water Conservation District.

D. Spring-sown work shall be installed between April 1st and May 30th and Fall-sown work shall be installed between September 1st and October 15th. No permanent seeding shall take place between May 30th and September 1st and between October 15th and April 1st. The dates for seeding may be changed at the discretion of the Owner's Representative.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall be furnished by the Contractor. Stockpiled material, if any, shall be utilized prior to obtaining additional topsoil.

B. All topsoil shall conform to the U.S. Department of Agriculture soil texturing triangle and shall contain between 3% to 8% organic matter. Topsoil shall be loamy and not consist of more than 38% clay. New topsoil shall be screened to remove clay lumps, brush, weeds, litter, roots, stumps, stones larger than ½" in any dimension and any other extraneous or toxic matter harmful to plant growth.

C. New topsoil shall be obtained only from naturally well drained sites where topsoil occurs in a depth of not less than 4". Do not obtain from bogs or marshes.

D. Soil amendments shall be added according to the soils test requirements. Amendments can include, but are not limited to fertilizer, lime, compost, sand, and organic matter. Organic matter shall consist of composted leaves or other approved material.

2.2 SEED

A. Seed shall be vendor mixed, delivered in original bags and shall be proportioned as follows:

Common Name	Proportion by Weight
Kentucky Blue Grass	50%
Perennial Rye	50%

2.3 MULCH

A. Mulch shall be clean straw free of seed and weed seed.
   1. Anchoring for mulch shall be an ODOT specified SS-1 at 60 gal./ton non-toxic tackifier such as Hydro-stik, or equal, or by securing with a photo degradable netting.

B. If hydroseeding is used, wood fiber mulching material shall be used and shall consist of virgin wood fibers manufactured expressly from whole wood chips and shall conform to the following specifications.

- Moisture content	10.0% $\pm$ 3.0%
- Organic content	99.2% $\pm$ 0.8% O.D. Basis
- pH	4.8 $\pm$ 0.5
- Water holding capacity, minimum (grams of water per 100 grams of fiber)	1,000

C. Wood fiber mulching material shall be processed in such a manner as to contain no growth or germination inhibiting factors and must contain a biodegradable green dye to aid in visual metering during application.

PART 3 - EXECUTION

3.1 PREPARATION - GENERAL

A. Rough grading to a depth necessary to accept the specified thickness of topsoil must be approved prior to placing topsoil.

B. Loosen subgrade, remove any stones greater than ½" in any dimension. Remove sticks, roots, rubbish, and other extraneous matter.

C. Spread topsoil to a minimum depth of 4 inches, to meet lines, grades, and elevations shown on plan, after light rolling and natural settlement. Remove sticks, roots, rubbish, stones greater than 1/2" in any dimension, and other extraneous matter. Topsoil shall be tilled thoroughly by plowing, disking, harrowing, or other approved methods. Add specified soil amendments and mix thoroughly into the topsoil.

D. Preparation of Unchanged Grades: Where seed is to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for planting as follows: Till to a depth of not less than 6 inches. Apply soil amendments and

initial fertilizers as specified. Remove high areas and fill in depressions. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots and other extraneous matter. Soils test requirements apply here as well.

1. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such material outside of project limits. Do not turn existing vegetation over into soil being prepared for seed. If necessary, supply and install topsoil in areas where there is no topsoil left after vegetation has been removed.
2. Apply specified soil amendments at rates specified in the soils test and thoroughly mix into upper 2 inches of topsoil. Add topsoil if existing grade has less than 4" of topsoil. Delay application of amendments if planting will not follow within two (2) days.

E. Fine grade areas to smooth, even surface with loose, uniformly fine texture. Roll, rake, and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades. Remove sticks, roots, rubbish, stones greater than 1/2" in any dimension, and other extraneous matter. Limit fine grading to areas which can be planted immediately after grading.

F. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

G. Restore areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

3.2 SEEDING

A. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage. Seed shall not be sown when the ground is frozen, muddy, or when weather conditions prevent proper soil preparation, interference with sowing and/or proper incorporation of seed into the soil.

B. Sow seed using a spreader or hydroseeder. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing 3 lbs. per 1000 S.F. at right angles to each other. Total amount to equal a minimum of 6 lbs. per 1000 S.F.

C. For seed sown with a spreader, mulch shall be spread uniformly to form a continuous blanket at a rate of 100 lbs. per 1,000 S.F. Mulch shall be 1 1/2" loose measurement over seeded areas and shall be anchored.

D. Contractor has the option to hydroseed large lawn areas, using equipment specifically designed for such application. The rate of application of wood fiber mulching materials is 40 lbs./1,000 S.F. Contractor shall not hydroseed within close proximity to buildings and structures, or when unfavorable wind conditions may blow the hydroseed material onto the structure. Contractor shall clean all areas not to be seeded of overspray.

E. The seeded area shall be watered, as soon as the seed is applied, at the rate of 120 gallons per 1000 square feet. The water shall be applied by means of a hydroseeder or a water tank under pressure with a nozzle that will produce a spray that will not dislodge the mulching material. The cost of this watering shall be included in the cost of seeding and mulching.

3.3 DORMANT SEEDING METHOD

A. Seeding shall not take place from October 15 through November 20. During this period prepare the seed bed, add the required amounts of lime and fertilizer, and other amendments, then mulch and anchor.

B. From November 20 through April 1, when soil conditions permit, prepare the seed bed, lime and fertilize, apply the selected seed mixture, mulch, and anchor. Increase the seeding rate by 50 percent.

3.4 RECONDITIONING EXISTING LAWNS

A. A soils test shall be required for existing lawns prior to any reconditioning.

B. Recondition all existing lawn areas damaged by Contractor's operations including storage of materials and equipment and movement of vehicles. Also recondition existing lawn areas where minor regrading is required.

C. Provide soil amendments as called for in the soils test.

D. Provide new topsoil, as required, to fill low spots and meet new finish grades.

E. Cultivate bare and compacted areas according to the topsoil specifications.

F. Remove diseased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from the Contractor's operations, including oil drippings, stone, gravel, and other loose building materials.

G. All work shall be the same as for new seeding.

H. Water newly planted seed areas. Maintenance of reconditioned lawns shall be the same as maintenance of new lawns.

3.5 ESTABLISHMENT

A. Maintain work areas as long as necessary to establish a uniformly close stand of grass over the entire lawn area. A uniformly close stand of grass is defined as the seeded areas having

90%+ coverage of grass at 60 days after seeding. 90%+ coverage is defined as very little or no dirt showing when seeded area is viewed from directly overhead.

B. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth acceptable lawn.
   1. Mowing
      a. Mow lawn areas during the period of maintenance to a height of 2 inches whenever the height of the grass becomes 3 inches. A minimum of 3 mowings is required during the period of maintenance.
   2. Refertilizing
      a. Distribute fertilizer on the seeded area between August 15 and October 15,

during the period when grass is dry, and in accordance with the manufacturer's recommendations. The fertilizer shall be as specified in the soils test.

3. Reseeding
    a. Reseed with the seed specified for the original seeding, at the rate of 4 lbs. per 1,000 S.F. in a manner which will cause minimum disturbance to the existing stand of grass and at an angle of not less than 15 degrees from the direction of rows of prior seeding.
4. Watering
    a. The Contractor shall keep all work areas watered daily to achieve satisfactory growth. Water shall be applied at a rate of 120 gallons per 1,000 square feet. If water is listed as a pay item, it shall be separately paid for based on the actual amount of water used, measured in thousands of gallons.
5. Any mulching which has been displaced shall be repaired immediately. Any seed work which has been disturbed or damaged from the displacement of mulch shall be repaired prior to remulching.

3.6 INSPECTION AND ACCEPTANCE

A. When seeding work is complete and an acceptable stand of growth is attained, the Contractor shall request the Owner's Representative to make an inspection to determine final acceptance.

B. Acceptance shall be based upon achieving a vigorous uniformly stand of the specified grasses. If some areas are satisfactory and some are not, acceptance may be made in blocks, provided they are definable or bounded by readily identified permanent surfaces, structures, or other reference means. Partial acceptance decisions may be made by the Owner's Representative. Excessive fragmentation into accepted and unaccepted areas shall not be allowed. Unaccepted areas shall be maintained by the Contractor until acceptable.

C. No payment shall be made until areas are accepted.

D. All seeded areas shall be guaranteed for one full growing season to commence upon final acceptance of the areas.

END OF SECTION 329200.19

SECTION 330507.13 – HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 Specifications sections apply to this section.

1.2 DESCRIPTION

A. This section contains guidelines and specifications applicable to the installation of pipelines using horizontal directional drilling (HDD). It includes minimum requirements for design, materials, and equipment used for the horizontal directional drilling for the substantially trenchless construction of pipelines. The section also includes materials, dimensions, and other pertinent properties of pipe and required accessories. These properties provide minimum performance requirements for various components including joints.

B. Installation of pipelines shall be carried out by HDD where shown on the drawings and elsewhere by approval of the Engineer. The bore path shall be designed by the drilling contractor to ensure that pipe joints do not deflect more than 50% of manufacturer's recommended maximum deflection.

1.3 QUALITY ASSURANCE

A. All horizontal directional drilling operations shall be performed by a qualified Contractor having a minimum of five (5) years’ experience of installing pipe using directional drilling methods.

B. The Contractor shall have demonstrated experience and expertise installing pipe using directional drilling methods involving work of a similar nature to the work required by this project including the following:

1. The installation of greater than 5,000 LF of Gravity Flow Sewers.
2. The installation of greater than 5,000 LF of Pressure Flow Sewers
3. The installation of at least 5,000 LF of 4-inch diameter or greater pipe.
4. The installation of pipe at depth of 20 feet or greater.

C. All field supervisory personnel employed by the Contractor shall be adequately trained in directional boring methods and have at least three (3) years’ experience in the performance of the work and tasks required.

D. The Contractor shall show demonstrated experience and expertise in directional drilling methods by providing a job list with pipe sizes and depths similar to the specifications required by this project. This list shall also include a name and telephone number for contact.

1.4 SUBMITTALS

A. Prior to beginning work, the Contractor shall submit to the Engineer a work plan detailing the procedure and schedule to be used to execute the project. The work plan shall include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience including back-up personnel, a list of subcontractors, a schedule of work activity, a safety plan (including MSDS of any potentially hazardous substances to be used), traffic control plan in accordance with Ohio Department of Transportation OMUTCD, and environmental protection plan and contingency plans for possible problems. The work plan shall be comprehensive, realistic, and based on actual working conditions for this particular project. The plan shall document the thoughtful planning required to successfully complete the project.

B. Specifications on material to be used shall be submitted to Engineer. Material shall include the pipe, fittings, drilling mud, drilling additives, and any other item which is to be an installed component of the project or used during construction.

C. Submittal requirements in 1.3 Quality Assurance as listed above.

PART 2 - PRODUCTS

2.1 GENERAL

A. The bore path alignment and design for HDD shall be based on the Engineer's plans and other factors. Some of these factors are the pipe bell and barrel diameters, the optimum individual pipe length (18' nominal), bore path inside diameter, and maximum deflection capabilities of the joint.

B. Prior to the start of drilling, reaming, and pipe placement operations, the Contractor shall properly locate and identify all existing utilities and structures in proximity to the pipeline alignment. The Contractor shall confirm the alignment of all critical utilities using vacuum excavation or other suitable excavation method for further detailed confirmations as necessary.

2.2 MATERIALS

A. High Density Polyethylene Pipe: Pipe and fittings shall meet the requirements of ASTM F714. Pipe used for directional drilling shall be a minimum thickness equivalent to DR 13.5 HDPE pipe. Joints shall be butt fusion welded in accordance with ASTM F2620. Approved manufacturers include JM Eagle or approved equivalent.

2.3 EQUIPMENT

A. The Contractor shall have equipment appropriate for horizontal directional drilling installations. This includes the preparation and maintenance of the bore path using drilling fluids appropriate for the geology of the soils.

B. The directional drilling machine shall consist of a hydraulically powered system to rotate, push, and pull hollow drill pipe into the ground at variable angles down to 8 degrees above horizontal, while delivering a pressurized fluid mixture to a guidable drilling and piping installation. The machine shall be anchored to the ground to withstand the pulling, pushing, and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. The rig shall have a system to monitor the maximum pull-back pressure during the pull-back operation. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drill string and an audible alarm which automatically sounds when an electrical current is detected.

C. The drill head shall be a steerable type and shall provide the necessary cutting surfaces and drilling fluid jets.

D. Mud motors shall be of adequate power to turn the required drilling tools.

2.4 GUIDANCE SYSTEM

A. A conventional electromagnetic sound walkover system, Magnetic Guidance System (MGS) probe, or proven gyroscopic probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at the maximum depth required and in any soil condition including hard rock. It shall enable the driller to guide the drill head by providing immediate information to the tool face, azimuth (horizontal direction), and inclination (vertical direction). The guidance system shall be accurate to +/- 2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 1.5 meters horizontally.

B. The Guidance System shall be of a proven type and shall be set up and operated by personnel trained and experienced with this system. The operator shall be aware of any geo-magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

2.5 DRILLING FLUID SYSTEM

A. A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water, and appropriate additives. The mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be a minimum of 500 gallons. The mixing system shall continually agitate the drilling fluid during drilling operations.

B. Additives to drilling fluid such as drill soap, polymers, etc., shall be "environmentally safe" and be approved for such usage. No diesel fuel shall be used.

C. Unless otherwise authorized, an environmentally safe drilling fluid that does not contain bentonite shall be used for all HDD operations where drilling will be done under any stream, river or other watercourse.

2.6 OTHER EQUIPMENT

A. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe. Rollers shall be used as necessary to assist in pull-back operations and in layout/jointing of piping.

B. Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of Engineer.

C. Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the Engineer prior to commencement of the work.

2.7 PROOF-OF-DESIGN TESTS

A. The pipe manufacturer shall have representative proof-of-design tests of flexible restrained pipe joints.

2.8 TRACER WIRE

A. All piping shall be installed with a continuous, insulated solid number 10 gauge UF (underground feeder per National Electrical Code Article 339) copper wire for location of non-metallic pipe with an electronic pipe tracer.

B. The wire color shall match the pipe stripe as specified in T02622 and taped along all non-metallic pipes.

C. Splices, if required, shall be with Buchanan connectors or approved equivalent.

D. Upon completion, the Contractor shall demonstrate to the Engineer or his representative that the wire is continuous and unbroken through the entire pipe run by providing full signal conductivity when energized. If the wire is broken, the Contractor shall repair it at no additional cost.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The Engineer must be notified three days in advance of starting work. The Directional Bore shall not begin until the Engineer is present at the job site and agrees that proper preparations for the operation have been made. The Engineer approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract.

B. The drawings show existing utilities that are believed to be near the directional drill alignment. There is no guarantee that these utilities are located as shown or that other utilities may not be present. The Contractor is to field locate existing utilities in advance of the work so as not to delay work and to avoid conflict or disruption of utility services.

3.2 DRILLING PROCEDURE

A. The work site within right-of-way as indicated on drawings shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. The Contractor shall confine all activities to designated work areas.

B. The entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If the Contractor is using a magnetic guidance system, drill path shall be surveyed for any surface geo-magnetic variations or anomalies.

C. The Contractor shall adhere to all applicable state, federal, and local safety regulations, and all operations shall be conducted in a safe manner.

D. Pipe lengths shall be connected together in one length if space permits. Pipe shall be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.

E. The pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100 feet. In the event that pilot does deviate from bore path more than 5%, the Contractor shall notify Engineer and Engineer may require Contractor to pull-back and re-drill from the location along bore path before the deviation.

F. Upon successful completion of pilot hole, the Contractor shall ream bore hole to a minimum of 25% greater than outside diameter of pipe bell for straight pulls and 50% greater for curved or radius pulls using the appropriate tools. Contractor shall have the option to pre-ream or ream and pull back pipe in one operation if conditions allow. The Contractor shall not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

G. After successfully reaming bore hole to the required diameter, the Contractor shall pull the pipe through the bore hole. In front of the pipe shall be a swivel. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations the Contractor shall not apply more than the maximum safe pipe pull force at any time. In the event that pipe becomes stuck, the Contractor shall notify the Engineer. The Engineer and Contractor shall discuss options and then work shall proceed accordingly.

H. Excess pipe shall be removed and the bore hole associated with this excess pipe shall be filled with flowable fill or grout unless the area of the excess pipe is excavated and backfilled as part of the tie-in operations. In the event that a drilling fluid fracture, inadvertent returns, or returns loss occurs during pilot hole drilling operations, the Contractor shall cease operations and shall discuss corrective options with the Engineer; then work shall proceed accordingly.

3.3 BASIC ASSEMBLY/PULLING METHODS.

A. Cartridge Assembly (Option 1). Cartridge Assembly option is defined as the assembling of individual sections of pipe in a secured entry and assembly pit. The pipe sections are assembled individually and then progressively pulled into the bore path a distance equivalent to a single pipe section. This assembly-pull process is repeated for each pipe length until the entire line is pulled through the bore path to the exit point.

B. Assembly-Line or Ramp Method (Option 2). Assembly-Line option is defined by the pre-assembly of multiple lengths of pipe with subsequent pulling installation into the bore path as a long pipe string. With this option, the Contractor shall provide an entry ramp to the entrance of the bore path. The ramp shall be of sufficient length and grade such that any one pipe joint does not exceed the allowable joint deflection at any point prior to the pipe string entering the bore path.

C. The Contractor shall be responsible for providing the necessary equipment or ground surface preparation to allow the pipe to be pulled back along the surface prior to the entry ramp and bore path.

D. The pulling head may also be used as one of the two (2) bulkheads required for a low pressure air test of the pipe string prior to pull back, if required by the engineer. After complete installation, the pulling head may also be helpful with or without further connection of piping in normal higher pressure hydrostatic testing of the installed piping.

3.4 JOINT CLEANING/ASSEMBLIES IN HDD

A. The Contractor shall be responsible for the proper assembly of all pipe and appurtenances in accordance with the Manufacturer's written installation procedure and as supplemented by these guidelines. Prior to joint assembly all joints and joint components shall be thoroughly cleaned and examined to ensure proper assembly and performance. In the event that the Contractor is not experienced with the assembly of the type of flexible restrained joint being used, it shall be the responsibility of the Contractor to contact a factory-trained representative for recommendations on the proper and efficient installation of the joint.

3.5 PIPE TESTING

A. Following the successful pullback of the pipe, the Contractor shall hydro-test pipe from end to end.

3.6 SITE RESTORATION

A. Following drilling operations, the Contractor shall de-mobilize equipment and restore the work-site to original condition. Any noticeable surface defects, due to the drilling operation, shall be repaired by the Contractor.

3.7 RECORD KEEPING AND RECORD DRAWINGS

A. The Contractor shall maintain a daily record of the drilling operations and a guidance system log with a copy given to Engineer at completion of boring.

B. The MGS data shall be recorded during the actual crossing operation. The Contractor shall furnish as-built plan and profile drawing based on these recordings showing the actual location horizontally and vertically of the installation, and all utility facilities found during the installation. The MGS data shall be certified accurate by the Contractor to the capability of the MGS System.

C. Record drawings shall be completed and reviewed by the Engineer and prepared at the Contractor's expense. The as-built drawings shall be certified by the Contractor for accuracy.

3.8 CONTINGENCY AND RESOURCE PROTECTION PLAN

A. On-Site Monitoring

1. During drilling operations, visual inspection along the bore path of the alignment shall take place at all times.

2. The Contractor shall supply the following information to the monitoring team throughout the duration of the HDD operation at specific time intervals (e.g. upon completion of each drill rod):
   a. Position of the drilling head relative to the drilling point of entry;
   b. Estimated total volume of drilling fluid that has been pumped during the drilling operation;
   c. Comparison of the current total volume of drilling fluid used and the estimated current total volume of returns;
   d. Equipment breakdowns and repairs;
   e. Any abnormal drilling fluid pressure at the time of occurrence;
   f. Any change of drilling fluid contents (e.g. new bentonite mixture or introduction of LCMs.

B. Field Response Plan

1. During the drilling process, the operator shall adjust the thickness of the bentonite mixture to match the substrate conditions and ensure continuous flow. Subsequently, the operator shall closely monitor drilling pressures and penetration rates so use of fluid pressure shall be optimal to penetrate the formation.
2. A complete and sudden loss of returns serves as a signal to both the operator and the monitor that something more significant may be occurring and to watch closely for a possible surface release. This plan uses the loss of returns or pressure, the use of a tracing dye and visual indications, to trigger response and mitigation actions.
3. In the event of a sudden loss of approximately 75 percent of expected returns, or in the event that a surface release of drilling fluid or dye are detected, the Contractor shall immediately cease operations to determine what actions need to be taken. In areas containing sensitive resources, agency notifications shall be made and the

decision to resume operations shall be determined in consultation with the appropriate agencies' representatives.

4. All equipment required to contain and clean up a frac-out release shall either be available at the work site or readily available at an off-site location within 10 minutes of the bore site. Required equipment will be made available by manual transport; unless vehicle transportation is required due to magnitude of equipment and access is available. This equipment includes the following:

    a. Heavy weight plastic clean gravel filled sand bags (at least 20 bags);
    b. Geotek filter bags 10-by-12 foot size or equivalent (at least 3 bags per segment):
    c. Several hard plastic (5-gallon) buckets;
    d. One wide heavy-duty push broom;
    e. Three flat bladed shovels;
    f. Silt fence (appropriate coverage up to 40 foot perimeter);
    g. Certified weed-free hay bales (appropriate coverage up to 40 foot perimeter);
    h. Two bundles of absorbent pads to use with plastic sheeting for placement beneath motorized equipment while in operation in the vicinity of a riparian/stream zone;
    i. Straw logs (wattles or fiber rolls) (at least two 10-foot rolls);
    j. Portage pumps;
    k. A minimum of 100 feet of hose; and
    l. Vacuum truck (800 and 3,000 gallon).

5. General responses to frac-out releases related commitments are as follows:

    a. Directional boring would stop immediately;
    b. The bore stem would be pulled back to relieve pressure on frac-out;
    c. The Owner and Owners' site representative would be notified to ensure adequate response actions are taken and notifications are made;
    d. Terrestrial releases would be cleaned up using on-site equipment;
    e. A dike/berm may be constructed around the frac-out (terrestrial only) to entrap released drilling fluid;
    f. Response equipment stored off-site in readily accessible locations (e.g. portable pumps and full equipped 800 or 3,000 gallon vacuum trucks) would be mobilized to recover larger releases of drilling fluid;
    g. Access to the frac-out release area would be via existing roads and temporary work easements. Additional access needed to perform clean-up activities would be coordinated with and require approval of all regulating entities.

C. Proper Notification and Documentation

1. If frac-out occurs or any degree of dye were detected within the water column of a stream, the Contractor shall immediately notify the appropriate permitting agencies, and additional follow-up response actions would be developed in coordination with agency representatives.

2. Documentation of environmental compliance shall include written reports of observations, documentation of events and follow-up, and project tracking.

D. Training of Personnel

1. Prior to the commencement of construction, the Contractor shall conduct an on-site training session for members of his monitoring team, Owners' personnel and Owners' site representative. The training session shall cover the following topics:

   a. Details of the information found within the Contractor's safety, traffic control and environmental protection and contingency plans;
   b. Specific permitting conditions and requirements;
   c. Requirement to retain copies of all appropriate permits on the site during all operations;
   d. Sensitive resources located at or near the site;
   e. Requirement to monitoring during all operations;
   f. Proper lines of communication;
   g. Proper lines of authority and responsibility;
   h. Information the Contractor shall provide to the monitoring personnel and Owners' site representative;
   i. Contact names and phone numbers of the appropriate individuals and agencies; and
   j. Types of events that the Contractor is required to report and to whom.

2. The Contractor shall provide an overview of the drilling operation in their work plan. The training session shall ensure that Contractor personnel recognize the authority of the on-site monitors to stop drilling.

END OF SECTION 330507.13

SECTION 330507.23 - HORIZONTAL BORING AND PIPE JACKING

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. The work under this section shall include all underground utility crossings where indicated on the contract drawings by boring a casing and placing the carrier pipe within the casing. It is intended that this section apply to all State highways, railroads, and other facilities or structures designated by the Engineer. This section shall also include all necessary excavation, water removal, casing and carrier pipe, and the furnishing of all labor, material, tools, equipment and accessories to complete the work as specified, shown on the contract drawings, or as directed by the Engineer.

B. The Contractor shall provide all shoring, blocking or other special supports required to maintain uninterrupted traffic flow, together with all watchmen, flagmen and other services necessary to complete the work.

1.3 QUALITY ASSURANCE

A. Boring shall follow the guidelines of “Horizontal Auger Boring (HAB) Projects, Second Edition (ASCE MOP 106)”.

1.4 JOB CONDITIONS

A. The Contractor shall provide a safe working condition for his personnel and the public with sheeting, if required, for the receiving and boring pits and include barricades around the pits.

1.5 SUBMITTALS

A. Certificates of compliance shall be submitted for casing pipe.

B. Plans and description of the boring arrangement to be used shall be submitted to the Engineer for approval and no work shall proceed until such approval is obtained.

1.6 ALTERNATIVES

A. The Contractor is not limited to any one method for boring. The following methods can be used:
   1. Auger Boring.
   2. Slurry Boring.

3. Hand Tunneling.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Casing pipe shall conform to ASTM A139, or API 5L, Grade B, and shall be the size and have wall thickness indicated on the drawings.

B. Carrier pipe shall conform to drawings.

C. Drilling fluid shall consist of a mixture of water and a gel-forming colloidal material such as bentonite or approved equal.

D. Materials used for sheeting, sheet piling, cribbing, bracking, shoring and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots and of proper dimensions, as required by the Occupational Safety and Health Administration regulations.

2.2 EQUIPMENT

A. All equipment used in the execution of work covered under the utility permit shall have the built-in capacity, stability and necessary safety features required to fully comply with the specifications and requirements without showing evidence of undue stress or failure.

B. It shall be the responsibility of the Contractor to assure that the equipment to be used in the crossing operation is in sound operating condition. Backup equipment may be required where job site conditions indicate that severe damage to the roadway or a hazardous condition may result in the event of an equipment breakdown and where the condition of the equipment to be used indicated that routine component replacement or repair will likely be necessary during the crossing.

C. Jacks shall be hydraulic, mechanical or manual power units providing horizontal thrust for pushing casing and carrier pipe. Jacks shall have sufficient power to satisfactorily complete the proposed crossing according to manufacturer's recommendations.

D. Dewatering equipment shall be used to evacuate ground and surface water from the boring and receiving pit areas.

1. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site and they shall be in constantly attended operation on a 24-hour basis until their operation can be safely halted. When dewatering, close observation shall be maintained to detect any settlement or displacement of the roadway.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Excavation of the receiving and boring pits shall adequately and safely accommodate the boring equipment, materials and workmen.

B. The face and sides of each pit shall be properly sloped or sheeted and care shall be taken to ensure the safety of the workmen, the integrity of the surface being bored and the traveling public.

C. When augers, or similar devices, are used for pipe emplacement, the front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe.

D. The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered.

E. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than one-half (1/2) inch. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft or poor material.

F. Preparation of the pit floors, whether of dirt, stone or concrete slab, shall be determined by the job conditions. Dewatering provisions shall be considered and implemented as required.

G. If an obstruction is encountered during installation to stop the forward action of the pipe, and it becomes evident that it is impossible to advance the pipe, operations will cease and the pipe shall be abandoned in place and filled completely with grout at the Contractor's expense. The new boring location, direction and depth shall be chosen by the Owner.

H. The casing shall be bored in a straight line and on a uniform and level grade.

I. After the casing is installed, the carrier pipe shall be pushed through on skids to prevent injury to pipe or joints. Every precaution shall be taken to ensure that the joints are and will remain in perfect condition.

J. Bored or jacked installations shall have a bore hole essentially the same as the outside diameter of the pipe. If voids should develop or if the bored hole diameter is greater than the outside of the pipe by more than approximately one (l) inch, grouting or other methods approved by the Engineer shall be employed to fill such voids. Cost of such grouting shall be at the Contractor's expense.

3.2 GROUTING

A. Where grouting is required in accordance with specifications of the Owner it shall be as follows:
   1. A uniform mixture of grout shall be placed under pressure between the casing and carrier pipe. Grouting shall start at the lowest point and proceed upwards simultaneously on both sides of the carrier pipe. A plug shall be installed in each grout hole as the grouting is completed.

2. Grouting shall be kept as close to the heading as possible. Grouting shall proceed as directed by the Engineer.

3.3 BLASTING

A. Blasting will not be permitted.

3.4 PERMITS AND INSURANCE

A. Permits
   1. The Owner will obtain all permits necessary for working within the right-of-way. The Contractor shall make, with the proper authority, satisfactory arrangements for the actual work of this Item.

B. Insurance
   1. The Contractor shall be responsible for obtaining any and all insurance required by the proper authorities to perform this work at his own expense. The Contractor shall save harmless the Owner, and any all public agencies affected by this Contract for work performed under this Item from any claims, damages or injury and shall immediately make whatever repairs are necessary to correct any damage to any highway facility and/or right-of-way.

END OF SECTION 330507.23

SECTION 333100 - SANITARY SEWER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Furnishing all labor, materials, tools, equipment, and services for all gravity sanitary sewers as shown on the Drawings.

B. Although such is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a functional and complete installation.

1.2 RELATED DOCUMENTS AND SECTIONS

A. Section 013319 – Field Testing Requirements

B. Section 310000 – Earthwork

C. Section 030000 – Concrete Work

D. Section 015713 – Temporary Erosion Control

1.3 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Granular pipe bedding and cover material specified in Section 310000 – Earthwork

B. Special backfill material specified in Section 310000 – Earthwork

1.4 SUBMITTALS

A. Product Data
   1. PVC pipe, each type specified
   4. Ductile iron pipe
   5. Manhole castings
   6. Precast concrete manholes
   7. Manhole steps

B. Shop Drawings
   1. Precast concrete manholes showing:
      a. Orientation plan for each manhole or inlet indicating where all pipes connect.
      b. The size and elevation of connecting pipes.
      c. Details of drop connections.
      d. Invert concrete channeling details.
      e. Pipe to manhole connection details.

f. Casting and step orientation.

C. Samples

D. Quality Control Submittals
1. Design Data
2. Test Reports
3. Certificates
a. Evidence of current membership in specified manufacturer's associations.
b. Evidence of ODOT precertification for the manufacturing RCP pipe.
c. Evidence of National Precast Concrete Association (NPCA) certification for the manufacture of precast concrete manholes.
4. Manufacturers Instructions

E. Contract Closeout Submittals
1. Project Record Documents
2. Operation and Maintenance

1.5 REFERENCES

A. ASTM A-48 Standard Specification for Gray Iron Castings

B. ASTM C-12 Standard Practice for Installing Vitrified Clay Pipe Lines

C. ASTM C-76 Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

D. ASTM C-150 Standard Specification for Portland Cement

E. ASTM C-270 Standard Specification for Mortar for Unit Masonry

F. ASTM C-425 Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings

G. ASTM C-443 Standard Specifications for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

H. ASTM C-478 Standard Specifications for Precast Reinforced Concrete Manhole Sections

I. ASTM C-700 Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated

J. ASTM C-990 Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

K. ASTM C-1173 Standard Specification for Flexible Transition Couplings for Underground Piping Systems

L. ASTM D-2321 Standard Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe

M. ASTM D-3034 Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings

N. ASTM D-3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

O. ASTM F-477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

P. ASTM F-679 Standard Specification for Poly(Vinyl Chloride) (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings

Q. ANSI/AWWA C111/A21.11 American National Standard for Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings

R. ANSI/AWWA C151/A21.51 American National Standard for Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water and Other Liquids

S. AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in., for Water Distribution

1.6 QUALITY ASSURANCE

A. Comply with all provisions of Section 014323 – Qualifications of Tradesmen.

B Comply with all provisions of Section 014126 – General Regulations and Permits.

C. Field samples shall comply with Section 013319 – Field Test Reporting and Section 013326 – Product Testing and Certifying

D. Before and during installation, the Contractor shall comply with provisions under Section 013119 – Project Meetings

E. All pipes, fittings, valves, and appurtenances shall be appropriately marked for identification purposes. The materials and methods of manufacture, and completed pipes, fittings, valves, and appurtenances shall be subject to inspection and rejection at all times. OWNER and ENGINEER have the right to make inspections

1.9 PROJECT CONDITIONS

A. Environmental Requirements
   1. All work shall be performed in accordance with erosion control and stormwater pollution prevention measures detailed in section 015713 – Temporary Erosion Control and Section 013543, Environmental Protection.

B. Existing Conditions
   1. Contractor shall verify locations of underground utilities whether shown or not show on the plans. The Contractor is responsible to confirm all utilities,

including service connections, prior to excavation and beginning of any work.

2. Contractor shall protect existing structures and utilities from damage. Repair if damaged by this work.
3. Do not change pipe sizes without securing written approval of Engineer.

C. Field Measurements
1. If it becomes necessary to change location of sanitary sewer lines due to underground utility interference, secure approval of Engineer.
2. If Contractor initiated, make changes approved by the Engineer without added cost to Owner.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the site, store and protect under provisions of Section 016600 – Product Handling and Protection.

B. Acceptance at Site
1. All material and all equipment shall be subject to visual inspection and acceptance or rejection after delivery to the site of the work. All rejected material shall immediately be removed from the site.

C. Comply with all provisions of Section 013543 – Environmental Protection.

1.10 SEQUENCING AND SCHEDULING

A. Perform no pipe work in fill areas until embankment or fill has been completed to at least two (2) feet above proposed top of pipe and fill has been properly compacted.

PART 2 - PRODUCTS

2.1 PIPE

A. Polyvinyl Chloride Pipe (PVC) 4" - 15" Diameter, less than 13’ of cover over top of pipe
1. All polyvinyl chloride pipe in this size range shall conform to ASTM D-3034, SDR 35, shall be integral bell and spigot type, with joints conforming to ASTM D-3212 and elastomeric seals conforming to ASTM F-477.
2. All pipe and fittings shall be marked or stenciled in conformance with ASTM D-3034. All gaskets shall be marked or stenciled with the ASTM specification designation, name or trademark of the manufacturer, and pipe size.
3. Acceptable manufacturers shall be current members of the Uni-Bell Plastic Pipe Association.

B. Polyvinyl Chloride Pipe (PVC) 4" - 15" Diameter, greater than 13’ of cover over top of pipe

1. All polyvinyl chloride pipe in this size range shall conform to ASTM D-3034, SDR 26, shall be integral bell and spigot type, with joints conforming to ASTM D-3212 and elastomeric seals conforming to ASTM F-477.
2. All pipe and fittings shall be marked or stenciled in conformance with ASTM D-3034. All gaskets shall be marked or stenciled with the ASTM specification designation, name or trademark of the manufacturer, and pipe size.
3. Acceptable manufacturers shall be current members of the Uni-Bell Plastic Pipe Association.

C. Ductile Cast Iron Pipe
1. Ductile cast iron pipe shall be designed in accordance with ANSI/AWWA C150/A21.50 and manufactured in accordance with ANSI/AWWA C151/A21.51 and shall be Thickness Class 54. Pipe shall be coated with a bituminous material on the outside and shall be cement mortar lined in accordance with ANSI/AWWA C104/A21.4. Joints shall be mechanical or push-on in conformance with ANSI/AWWA C111/A21.11 incorporating rubber gaskets. Mechanical joints shall be used wherever joint restraint is required. Bolts for mechanical joints shall be made of either high strength cast iron containing a minimum of 0.50 percent copper or high strength low alloy steel conforming to ANSI/AWWA C111/A21.11.
2. All pipe shall be marked or stenciled in conformance with ANSI/AWWA C151/A21.51. All gaskets shall be marked or stenciled with the ASTM specification designation, name or trademark of the manufacturer, and pipe size.
3. Acceptable manufacturers are:
   a. U.S. Pipe
   b. Tyler Pipe
   c. Approved Equivalent

E. High Density Polyethylene (HDPE) Pipe (Force Main)
1. High Density Polyethylene Pipe: Pipe and fittings shall meet the requirements of ASTM F714. Pipe used for open trench work shall be a minimum thickness equivalent to DR 13.5 HDPE pipe.
2. Joints shall be butt fusion welded in accordance with ASTM F2620.
3. Approved manufacturers are:
   a. JM Eagle or
   b. Approved Equivalent

2.2 PRECAST CONCRETE MANHOLES

A. All precast manhole units shall be manufactured in accordance with the provisions of ASTM C-478.

B. Joints between manhole units shall be gasketed and shall comply with the requirements of ASTM C-443. All gaskets shall be marked or stenciled with the ASTM specification designation, name or trademark of the manufacturer, and pipe size.

C. The standard length of riser units shall be 48 inches. Lengths of 32 inches or 16 inches shall be used to meet required dimensions.

D. Openings for connecting pipes in riser units, bottom riser units, integral base units, and for access in flat slabs shall be preformed or cored by the manufacturer. Cut-out openings shall be made immediately after the pipe is removed from the casting form.

E. Connectors between new precast concrete manholes and pipes shall be made by casting the connector integrally with the manhole wall. The connectors shall be composed of EPDM with stainless steel take down bands for compressing the connector against the outside diameter of the pipe. The connectors shall comply with the requirements of ASTM C-923, and shall be "Z-Lok" Type as manufactured by A-Lok Products; or an approved equivalent.

F. All openings in existing manholes shall be field cored and shall have mechanical connectors complying with the requirements of ASTM C-923 and shall be equal to Kor-N-Seal as manufactured by NPC, Inc., Milford, NH.

G. Annular spaces at pipe entrances shall be field sealed with a one component, hydraulic cement based, fast setting repair mortar equal to Thoro Products Waterplug as manufactured by ChemRex Inc., Shakopee, MN.

H. The top four (4) inches to twelve (12) inches of the manhole shall provide for adjustment of casting to grade. Adjustment shall be through the use of a maximum of two (2) precast concrete adjusting collars.

I. Where pressure tight manhole frames and covers are specified, threaded inserts shall be cast in eccentric cones or flat slab tops, and holes formed or cored in adjusting rings to match bolt size and spacing specified for manhole casting.

K. Precast concrete shall be manufactured by an NPCA certified plant.

2.3 MANHOLE STEPS

A. All steps shall be minimum of twelve (12) inches in width with safety side lugs to prevent slipping and shall conform to the latest OSHA requirements. Manhole steps shall be of polypropylene plastic reinforced with a 3/8", No. 60 grade epoxy coated reinforcing rod.

B. Manhole steps shall conform to the requirements of ASTM C-478.

C. Acceptable manufacturers are:
   1. American Step Company, Inc.
   2. Lane International, Inc.
   3. M. A. Industries, Inc.

2.4 CASTINGS

A. All castings shall be true to pattern and free from cracks, gas holes, flaws and excessive shrinkage. Surfaces shall be free from burnt-on sand and shall be reasonably smooth. Runners, fins, risers and other cast-on pieces shall be removed. Castings for manhole frames and covers and for any other purpose under these specifications shall conform to all the requirements for Class No. 35B for Gray Iron Castings of the ASTM A-48. All castings shall be commercially machineable and, in the case of manholes, the frame and cover shall be so machined that it will be impossible to rock the cover after it has been seated in the proper position in the frame.
   1. Manhole frames and covers shall be as detailed on the Drawings.
   2. Frame and cover shall be painted with one coat of the manufacturer's standard asphaltum paint.

2.5 MASONRY MORTAR

A. Mortar shall conform to ASTM C-270, Type M, but shall not contain masonry cement.

B. Mortar shall be UltraMortar Type M as manufactured by UltraKote Products, Inc. or Lafarge Mortar Cement, Type M as manufactured by Lafarge Corporation, or approved equal.

C. Only sufficient mortar shall be prepared for immediate use, and any mortar that has set shall not be retempered or used in the work.

D. Setting accelerators or anti-freeze compounds shall not be used.

2.6 MANHOLE ENCAPSULATION MATERIALS

A. Manhole encapsulation material shall be irradiated and cross-linked polyethylene impermeable backing, coated with protective heat-activated adhesive. Material width shall be sufficient to extend 4-inches below the cone unit-grade ring joint and 4-inches above the grade ring-frame joint.

B. The manhole encapsulation material shall be as manufactured by Canusa, Division of Shaw Resources Inc., The Woodlands, TX or equal.

C. Primer shall be as recommended by the manufacturer.

2.7 PREFORMED BUTYL MASTIC SEALANT

A. Preformed butyl mastic sealant material shall be furnished in 1-inch wide strips conforming to the requirement of ASTM C-990.

B. The butyl mastic sealant shall be Bidco C-56 as manufactured by Bidco Sealants, Inc., Park Hills, MO or equal.

2.8 COUPLINGS

A. Non-Pressure Pipe Couplings
   1. Connection of dissimilar gravity sewer pipe materials or pipe sizes shall utilize a rubber type coupling with a sealing "O" ring under each of two sealing clamp bands and a Type 316 stainless steel shear ring. Coupling shall be manufactured with natural and synthetic rubbers conforming to ASTM C 425 and ASTM C 1173.
   2. Coupling shall be Flex-Seal Adjustable Repair Coupling as manufactured by the Mission Rubber Company, Corona, CA, or approved equal.

B. Pressure Pipe Couplings
   1. Connection of dissimilar pressure sewer pipe materials or pipe sizes shall be a mechanical restraining coupling, composed of ductile iron, has working pressure of 200 psi or greater, and rubber gasket seals in accordance with ASTM D2000. Bolts and nuts shall be composed of 304 Stainless Steel. Coatings shall be fusion bonded epoxy.
   2. Coupling shall be Romac 501 as manufactured by Romac Industries Inc, or approve equivalent.

PART 3 - INSTALLATION

3.1 ALIGNMENT AND GRADE

A. Horizontal and Vertical Control
   1. All horizontal and vertical control required for the complete layout and performance of the Work under this contract shall be done by a registered surveyor at the Contractor's expense, and any observations by the Engineer of the Contractor's methods will not relieve the Contractor of his responsibility.
   2. The Contractor shall be solely responsible for the accuracy of all horizontal and vertical control.

B. Alignment and grade shall be established by means of a laser beam.

C. The Contractor shall furnish all material and labor to establish line and grade of the generated laser beam from the benchmarks and control points indicated on the Drawings. The laser shall be securely anchored and checked periodically by the Contractor. The laser calibration shall be demonstrated when requested by the Engineer. Strict adherence to the manufacturer's operation procedure shall be observed. Only qualified and trained employees may be assigned to install, adjust, or operate laser equipment, and proof of qualifications of the equipment operator must be available at all times. Areas in which lasers are used must be posted with standard laser warning placards, and the laser beam shall be turned off when not needed. During rain, snow, dust, excessive heat, or fog the operation of laser systems shall be prohibited where practicable because of beam scatter.

3.2 PIPE INSTALLATION

A. All pipe installation shall conform to the trench and bedding details shown on the Drawings.

B. PVC pipe shall be installed in full compliance with ASTM D-2321.

C. Only one type and strength of pipe shall be used between any two consecutive manholes, unless otherwise shown on the Drawings. The Contractor shall use the stronger, thicker wall pipe where depths between manholes vary between the specified ranges for differing PVC dimension ratios (DR).

D. After the trench has been excavated and the pipe bedded, the pipe shall be laid to the line and grade as shown on the Drawings. All joints shall be made as hereinafter specified. In no case shall any material except bedding material be placed under the bell of the pipe to secure proper grade.

E. Prior to being lowered into the trench, each pipe shall be carefully inspected and those which are damaged or not meeting the specified requirements shall be rejected and clearly marked as rejected and removed from the Work. Satisfactory means shall be used to hold the pipe in line until embedment of pipe is complete. Precautions shall be taken to ensure that the spigot end of the pipe being laid is pushed the proper depth into the bell of the preceding pipe.

F. All conduit shall be laid starting at the outlet end and laid with the bell end upstream.

G. In no case shall more than thirty (30) feet of trench be opened in advance of the pipe laying operations.

H. Conduit shall not be laid in water, mud, or any otherwise unsuitable trench. No drainage shall run through the newly laid pipe. All sewers shall be temporarily capped with a watertight seal at the open ends at the completion of each day's work and no drainage water shall be permitted to flow through the sewer.

I. All trenches and excavations shall be backfilled as specified as soon as possible after the pipe is laid and jointed. Where concrete encasement or cradle is used, pipe shall not be backfilled for at least twenty four (24) hours after placing concrete except that pipe may be covered to a depth of not to exceed sixteen (16) inches over the top of the pipe.

3.3 JOINTING

A. Polyvinyl Chloride (PVC) Pipe

1. Dust, dirt and foreign matter shall be removed from joint surfaces. When jointing pipe using the required compression type joint, a lubricant recommended by the gasket manufacturer shall be used. The gasket shall be lubricated by drawing it through lubricant held in the hand of the worker, thus coating the entire surface of the gasket.

2. When laying the pipe in concrete bedding, care shall be exercised to prevent the joint materials from coming in contact with the fresh concrete until after the joint has been completed.

B. Ductile cast iron push-on joints
1. The gasket seat and the gasket shall be thoroughly cleaned and should be wiped with a clean cloth and a thin film of lubricant applied to the inside surface of the gasket that will come in contact with the entering pipe. Use only the lubricant furnished with the pipe. In no case shall a mineral oil or petroleum base lubricant be used.
2. The plain end of the pipe to be jointed shall be thoroughly cleaned and started into the socket so that it is in contact with the gasket. In some cases it may be desirable to apply a thin film of lubricant to the outside of the plain end for about one (1) inch back from the end. The joint is then completed by exerting sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket. Any manufacturer approved method may be used to home the pipe.
3. When laying the pipe in concrete bedding, care shall be exercised to prevent the joint materials from coming in contact with the fresh concrete until after the joint has been completed.

3.4 PERMISSIBLE DEFLECTION AT JOINTS

A. No pipe deflections or springing of joints, to effect a change in direction will be allowed, except by permission or direction of the Engineer, or as shown on the Drawings. Any permitted or directed deflection shall be a maximum of 80 percent of the allowable deflection value established by the pipe manufacturer.

3.5 MANHOLES

A. Build each manhole to dimensions shown on Drawings and at such elevation that pipe sections built into wall of manhole will be true extensions of line of pipe.

B. Set frames for manholes, within areas to be paved, to final grade. In asphalt pavement, surround frames set to grade with a ring of compacted asphalt concrete base material immediately after backfilling operations are complete. Place asphalt concrete mixture up to one (1) inch below top of frame, slope to grade, and compact with hand tamp.

C. Precast bases shall be placed on a bed of crushed gravel or crushed limestone, meeting AASHTO M 43 gradation, having a minimum thickness of six (6) inches. The bedding shall be compacted and provide uniform support for the entire area of the base.

D. Provision shall be made for a minimum of four (4) inches and a maximum of twelve (12) inches of precast concrete grade rings between the uppermost precast section and the bottom of the cast iron manhole frame in order to set manhole cover to grade.

E. No more than two lifting holes or other lifting devices shall be utilized for handling the precast sections. All lifting holes shall be acceptably sealed with a hydraulic cement based, fast setting repair mortar, meeting the requirements of Article 2.5 of this Section, prior to backfilling around the manhole.

F. Inverts shall be formed to the equivalent of half-pipes in concrete and as follows:

1. Carry concrete out to the manhole wall with a slope of 1" in./ft. from the top of the half-pipe.
2. The bottoms of all manholes shall be channeled to conduct flow in the planned direction. Channels shall be the true shape of the lower half of the sewer pipe and shall match inverts of connecting pipe at the manhole wall.

3.6 DROP MANHOLES

A. Where shown on the plans, drop manholes shall be built in accordance with the Drawings.

3.7 BRANCH CONNECTIONS

A. In general, provision shall be made in the sewers for service connections by inserting a wye branch in the sewer at the location shown on the Drawings, where required or ordered, for each service connection with a branch size called for by the Drawings but never less than six (6) inch, for sewers ten (10) feet or less in depth. Where indicated on the plans, the Contractor shall construct a riser, as per detail, in such manner, that the top of the riser shall be not less than seven (7) feet below grade or at such elevation as to properly receive the required service connection, with full regard to elevation of service sewer and slope from building or structure to the sewer which shall not be less than one percent (1.5%).

B. The approximate location of service connections are shown on the Drawings based upon available information. The Owner may increase the number of connections or delete some connections as the sewer is being built. Connection locations shall modified as needed to avoid utility conflicts, minimize site disturbances, and limit bends.

C. Openings at the outer ends of the connections shall be closed and sealed with approved stoppers when connection is not immediately placed into service.

3.8 MAINTAINING SEWAGE FLOW

A. The Contractor shall be required to maintain the flow in all existing live sewers during construction and the method employed shall be approved by the Engineer.

3.9 REPLACING, MOVING AND REPAIRING OF EXISTING UTILITIES

A. The Contractor shall replace, move, support, or repair and maintain all pipes for

water, steam, air or gas, and all wire conduit(s), and all other structures encountered in the work and repair all damage done to any of the said structures and appurtenances through his acts or neglect and shall keep them in repair during the life of the Contract. The Contractor shall in all cases leave them in as good condition as they were previous to the commencement of the work and to the full satisfaction of the Owner.

3.10 CONNECTION TO EXISTING SEWER SYSTEM

A. The Contractor shall make connections to the existing sewer system as shown on the Drawings. The connections shall be made by the Contractor at such hours that will cause the least disturbance to the flow in the existing sewer system.The Contractor, however, shall notify the Engineer at least five working days in advance of the time he desires to make the connections and no such connections shall be made until the permission of the Engineer is obtained.

3.11 CLEAN-UP

A. Before final acceptance for the Work, the Contractor shall clear the sewers of any mortar, dirt or other refuse that may have been left or accumulated in the sewers. All manholes and other structures shall be cleared of all forms, scaffolding, bulkheads, centering, surplus mortar, rubbish or dirt and left in a clean and proper condition.

3.12 DEFECTS TO BE MADE GOOD

A. If, at any time before the completion of the contract, any broken pipes, or any defects, are found in the sanitary sewers or in any of their appurtenances, the Contractor shall cause the same to be removed and replaced by proper material and workmanship, without extra compensation for the labor and material required. All materials shall be carefully examined by the Contractor for defects before placing and any found defective shall not be placed in the line.

END OF SECTION 333100

SECTION 333100.17 - SERVICE LATERALS, TEES OR RISERS

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. The contractor shall furnish and install all service laterals, tees and risers at the locations shown on the Drawings or as directed by the Engineer.

B. Material to be furnished and installed, but not limited to:

1. All pipe, fittings, specials, bends, beveled pipe, adapters, bulkheads, yard drains, clean outs, stoppers, plugs, joint restraints, joints and jointing materials, and pipe supports.
2. Granular material for bedding and encasement of pipelines.
3. Class B concrete for blocking and encasement of pipelines.
4. Make connections to all existing and/or new facilities and provide temporary services.
5. Install temporary plugs and/or stoppers and harnessing.
6. Test and clean pipelines.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

B. Field inspection
1. All pipe sections, specials and jointing materials shall be carefully examined for defects, and no piece shall be laid that is known to be defective.
2. Any defective piece discovered installed shall be removed and replaced with a sound one in a manner satisfactory to the Engineer at the Contractor's expense.
3. Defective material shall be marked with lumber crayon and removed from the job site before the end of the following day.

C. Field testing
1. All materials, process of manufacturing, and finished pipe shall be subject to inspection and approval.
2. The Engineer may select one sample of pipe on the job site of each production run of each size and type of pipe to be tested by the laboratory. The Contractor shall furnish the first test piece of pipe core and any additional samples required.

1.4 SUBMITTALS

A. Submit shop drawings in accordance with the General Requirements showing layout plan and dimensions, schedule of pipe fittings and specials, materials and class for each size and type of pipe, joint details, and any special provisions required for assembly.

B. A pipe manufacturer's certificate stating that the materials have been sampled and tested in accordance with the appropriate provisions and meet the requirements of the designated specification and shall be signed by an authorized agent of the manufacturer.

C. If directed by the Engineer, each certificate shall be accompanied by a report showing test results compared to specification requirements. Test specimens shall be selected in conformance with the designated specification, except that not less than two tests shall be made for each production run of each size, type, and class of pipe furnished, and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

PART 2 - PRODUCTS

2.1 SEWER PIPE AND JOINT MATERIALS

A. All sewer pipe and joint materials for service laterals and risers shall be of the type specified in the specifications herein (and Part II of Section 333100), or as shown on the Contract Drawings.

PART 3 - EXECUTION

3.1 PREPARATION OF TRENCH

A. Preparation of trenches shall be done as specified in the specifications herein, or as shown on the Contract Drawings.

3.2 PIPE INSTALLATION

A. Installation shall be done as specified in the specifications herein, or as shown on the Contract Drawings.

3.3 TESTING

A. Testing shall be done as specified in the specifications herein, or as shown on the Contract Drawings.

3.4 SERVICE LATERALS, TEES OR RISERS

A. The following are included for payment under this item:

1. T-branch as indicated on the drawings or in the proposal for standard service lateral or riser.
2. Riser for standard service sewer.

3. Standard service sewer.
4. Reconnecting existing service sewer.

B. All T-branches, risers and service laterals shall be 6-inches in diameter unless specifically shown or called for as of a different size.

C. All stoppers, which shall be approved by the Engineer, shall be sealed in the pipe in such a manner that they will be watertight and will not move during testing for leakage. All stoppers for T-branches shall be painted yellow for the sanitary sewer connection.

D. Each T-branch for standard service laterals or service risers shall consist of the furnishing and placing of a T-branch in the trunk or street sewer complete with stopper, joint materials, required excavation, bedding, backfill and location marker. T- branches for service connections installed at locations shown on the contract drawings shall be "Kor-N-Tee" type as manufactured by National Pollution Control Systems, Inc.; or equal.

E. Each riser for a standard service lateral, or sewers, shall consist of the furnishing and placing of a straight pipe riser (and curved pipe riser, if necessary) from the T-branch in the trunk or street sewer, 90 degree long radius bend or double Y-branch at the top of the riser, stoppers, concrete encasement, required excavation and location marker. A riser will be used whenever directed by the Engineer or shown on the drawings. Payment for only one (1) riser will be made whether a 90 degree long radius bend or a double Y-branch is used at the top of the riser.

F. Each standard service lateral shall consist of furnishing and installing all curved and straight pipe at the grade determined by the Engineer from the T- branch or riser to the property line, unless otherwise shown on the drawings, including bedding, backfill, excavation and location marker.

G. Reconnecting of existing service laterals shall each consist of the furnishing and installing of the T- branch and all curved and straight pipe as required, the removal of such existing service laterals as is necessary, and the furnishing and placing of all materials to securely plug the discontinued service to the old sewer and make proper connection to the new sewer. All excavation required to complete the reconnection shall be included.

H. The Contractor shall furnish and place all pipe, specials, joint materials, bedding and concrete encasement or supports for all service connections as shown on the drawings. All pipe and specials shall be new and no salvaged materials shall be used.

I. Risers, T-branches, service laterals and reconnections, shall be constructed at the location shown on the drawings or where ordered by the Engineer.

J. The location of T-branches, risers and the ends of the service connections shall, unless otherwise ordered, be marked by a vertical oak strip two (2) inches in cross-section, extending from the end of the branch to the bottom of the pavement or to within one (1) foot of the surface of the ground.

K. Where curbs are available the location of the end of each service connection shall be marked by a two (2) inch cross cut into the top of the curb on the side of the street to be served by the connections.

L. In all cases, the open ends of pipe shall be securely closed with carefully fitted stoppers and sealed to prevent the entrance of water, earth or other substance into the sewer. Approved plastic stoppers may be used if they properly fit into the bell.

END OF SECTION 333100.17

SECTION 333216 - FACTORY BUILT PUMP STATION PACKAGE

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 SUMMARY

A. The Contractor shall furnish and install one factory-built, automatic pumping station. The station shall be complete with all needed equipment factory-installed in a welded steel chamber with welded steel entrance tube and with ladder to provide access.

B. The principal items of equipment shall include two vertical, close-coupled, motor driven, non-clog pumps; valves; internal piping; central control panel with circuit breakers; motor starters and automatic pumping level controls; lighting; sump pump; ventilator; dehumidifier and all internal wiring.

C. These specifications describe equipment as manufactured by Smith & Loveless, Inc. This is not done to eliminate others equally as good and efficient. Any substitution of equipment or materials will be considered for one reason only; that the equipment proposed for substitution is superior or equal in construction and/or efficiency to that described in the specifications and work space equal to or greater than shown on the drawings is provided, and that high quality has been demonstrated by at least five years of service in similar installations.

D. The Electrical power available at the project site will be as follows:
   1. 480/277 volt, 3 phase, 4 wire

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and application instructions.

PART 2 - PRODUCTS

2.1 PUMP CHAMBER

A. The station shall be built by the manufacturer in two (2) major sections consisting of an 8-foot diameter pump chamber and the required section(s) of 44-inch diameter of entrance tube, for ease in shipment and handling. These sections shall be joined at the job site by welding.

B. The field weld joints shall be cleaned and heavily coated with Versapox epoxy resin, provided by the manufacturer. The pump chamber shall contain all pumps and other equipment and shall be a vertical cylinder of circular cross-section with shell of ASTM A-36 steel plate. The top and bottom of the station shall be a minimum 3/8 inch thick ASTM A-36 steel plate.

C. The exterior of the station shall be designed so all welds exposed to ground water after installation are continuous or sealed throughout their length so that water cannot seep between uncoated steel surfaces. In addition, the structure shall be designed so that sharp corners and similar difficult-to-coat conditions are held to an absolute minimum. The thickness of the steel cylinder shall be determined by the structural requirements for the depth of bury involved and shall be a minimum of 1/4 inch. It shall be the responsibility of the manufacturer to determine the structural requirements of the shell based on the external loads specified on the plans.

D. Lifting eyes adequate to support the entire weight of the pump station shall be provided and welded to the station head. Tiedown holes shall be provided for anchoring the discharge line at the point it leaves the station. Lifting loops shall be located on the ceiling of the pump station over each pump at an adequate height to permit a hoist to be used for pump disassembly.

E. A sump with walls of 1/4 inch structural-grade steel plate shall be provided. Where the steel discharge line passes through the station wall, it shall be welded to the station shell with a continuous weld.

F. Clip angles shall be welded to the exterior chamber, as indicated on the plans. The chamber shall be securely fastened by means of the clip angles to the base slab with adhesive anchors.

2.2 ENTRANCE TUBE

A. The entrance tube shall be provided in one or more sections as required and the diameter shall be as shown on the drawings. The entrance tube shall be constructed of ASTM A-36 structural grade steel plate. The length shall be adequate to place the cover above the surrounding ground as shown on the drawings.

B. The entrance tube shall be adequately stiffened and the field joints arranged so that the joint may be welded from the outside of the tube with all welding being performed in a down-hand position. The bottom of the tube shall be attached to an angle, shop welded to the head of the pump station. This field joint shall also be weldable in the down-hand position. Two (2) lifting loops shall be provided on each section of entrance tube for handling and installation.

C. A PVC ventilation duct with inlet vent shall extend from the top of the entrance tube into the station. The inlet vent shall be covered with a screen to exclude rodents and foreign objects.
   1. The bottom of the inlet vent on the exterior of the entrance tube shall be four (4) feet above finished grade.

D. A discharge air duct shall be provided with a screen and shall be four (4) feet above finished grade.

E. The entrance tube cover shall be of fiberglass reinforced plastic and shall have a reflective color to reduce heat absorption. The cover shall have a suitable drip lip around the edge and shall be provided with a weatherproof lock of the pin tumbler type which can be opened from the inside without a key. The lock shall be self-locking upon closing the lid.

F. The fiberglass cover shall have a rung which forms an extension of the access ladder when the cover is latched in the open position. A latch mechanism shall be provided to keep the cover open under any normal load.

G. The access ladder shall be of heavy aluminum construction and have grooved non-slip rungs of 1-1/4 inch nominal outside diameter spaced on 12-inch centers. Neoprene rubber sleeves shall be provided to cover the joint between the adjoining ladder sections.

2.3 WELDING

A. All steel in the station structure shall be joined by electric arc welding with fillets of adequate section for the joint involved. All welded joints on the exterior of the station shall be continuous throughout their length to exclude groundwater.
   1. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
   2. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
      a. If recertification of welders is required, retesting will be Contractor's responsibility.

2.4 PROTECTION AGAINST CORROSION

A. After welding, all inside and outside surfaces of the structure shall be steel shot-blasted to a 2-mil minimum profile commercial blast. Immediately after cleaning, a single 6-mil minimum thickness inert coating shall be factory applied. The coating shall be Versapox epoxy resin, formulated for abrasion and corrosion resistance. The dry coating shall contain a minimum of 85% epoxy resin with the balance being pigments and thixotropic agents.

B. A touch-up kit shall be provided for repair of any mars or scratches occurring during installation. This kit shall contain detailed instructions for use and shall be the same material as the original coating. A heavy synthetic rubber mat shall be cemented to the station floor to protect the coating on the steel floor.

C. Two (2) 17-pound magnesium anode packs shall be provided for cathodic protection. The anode packs shall be provided with 15-feet long insulated copper leads. Copper lugs shall be provided by the manufacturer on opposite sides of the station for anode connections.

2.5 VERTICAL NON-CLOG PUMPS

A. Vertical non-clog pumps shall be in accordance with the requirements described in the following paragraphs and in the Equipment Schedule of this section.

B. All pumps used for one application shall be produced by the same manufacturer.

C. Pumps shall be of the manufacturer and model noted in Equipment Schedule or approved equal.

D. Each pump shall be shop tested for capacity, head, speed, power, and efficiency, after interior coatings have been applied, in accordance with Standards of the Hydraulic Institute. Six (6) certified copies of each test curve shall be furnished to the Engineer for approval. The pumps shall not leave the manufacturer's plant until receipt of the Engineer's approval.

E. Each pump shall also be hydrostatically tested in accordance with the Hydraulic Institute Standard Test Code.

F. The pump casing shall be of the volute type with integral horizontal discharge suction nozzle. It shall be made of the material specified in the Equipment Schedule of sufficient strength, weight, and thickness to provide accurate alignment and prevent excessive deflection. The casing shall also have a drain connection provided.

G. The impellers shall be made of cast iron accurately machined and statically and dynamically balanced. The impellers shall be secured to the shaft with a key and locknut which prevent loosening by torque from either forward or reverse rotation. A minimum clearance of 0.20 inches between the eye and suction piece shall be maintained to provide long life. The impeller shall be a one piece, single suction, enclosed two-vane, radical flow design with well rounded leading vanes which taper toward the trailing edge.

H. Means for maintaining pump efficiency shall be provided as indicated on the Equipment Schedule.

I. The pump shaft shall be stainless steel of sufficient diameter to carry the maximum loads imposed and to prevent vibration and fatigue. The pump shaft shall be sealed against leakage by a single mechanical seal. The seal shall be of carbon and ceramic construction with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramic shall be held in mating position with the stationary carbon by a stainless steel spring. Seal systems requiring filtering elements will not be acceptable.

J. Bearing shall be anti-friction type mounted in removable cast iron frame and arranged to eliminate all radial play. The bearings shall be grease or oil lubricated. Suitable seals shall be provided in the bearing covers to prevent the entrance of contaminants. The bearings shall be designed for a minimum AFBMA B-10 life of 100,000 hours.

K. The motor shall be attached to the volute by a one-piece cast iron adapter and backhead. The pump shall be arranged so that the rotating element can easily be removed from the volute without disconnecting the seal system or electrical wiring or disassembling the motor, impeller, backhead or seal, so that any foreign object may be removed from the pump or suction elbow. Volute or suction elbow clean-outs will not be an acceptable substitute.

L. One set of special tools required for service and maintenance shall be provided with each set of pumps.

M. Each pump shall be supplied with taps for gauge connections. Each pump shall be provided with a discharge pressure gauge.

N. Ceramic Coating

1. The two (2) pumps shall have their wetted parts and shaft sleeves ceramic-coated.
2. The manufacturer of the pumps shall measure all critical clearances upon reassembly of the coated parts and reaffirm all warranties on the pumps. Pumps shall be tested for performance after reassembly.
3. The ceramic coating system shall consist of sand or shot blast cleaning of the metal; application of a bond coat to the parent metal and application of a flame sprayed ceramic coating which shall be a combination of aluminum oxide and titanium oxide. The temperature of the parent metal during application shall not exceed 250F.
4. The thickness shall be approximately .015 inches; the texture as sprayed shall be 250-300 micro inches; ground finishes shall be 20 micro inches; the macro hardness shall be 60 Rc; the dielectric strength (volts/mil) shall be 300 and the density (g/cc) shall be 3.5.
5. The coating shall be resistant to heat up to 500F and resistant to abrasion and cavitation.
6. Ceramic coatings shall be as provided by Douglas Corporation, Tekonsha, Michigan; Sturm Company, Barbersville, West Virginia; or equal.

2.6 MOTORS

A. The pump motors shall be vertical, solid shaft, NEMA P-base, squirrel-cage induction type, suitable for 460 volt, 3 phase, 60 hz. They shall have Class F insulation, suitable for temperatures up to 115C, but the motors shall have Class B temperature limits of 90C rise by resistance, at 115% of rated load. The motors shall have normal starting torque and low starting current, as specified for NEMA Design B characteristics. They shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in cast connection box and shall be clearly identified.

B. The motors shall have 1.15 service factor. The motors shall not be overloaded beyond their nameplate rating, at the design condition, nor at any head in the operating range.

C. The motor-pump shaft shall be centered, in relation to the motor base, within 0.005 inches. The shaft run-out shall be limited to 0.003 inches.

D. The motor shaft shall equal or exceed the diameter specified under pumps, at all points from immediately below the top bearing to the top of the impeller. A bearing cap shall be provided to hold the bottom motor bearing in a fixed position. Bearing housings shall be provided with fittings for lubrication as well as purging old lubricant.

E. The motor shall be fitted with heavy lifting eyes, each capable of supporting the entire weight of the pump and motor.

F. Thermal sensors shall be used to monitor stator temperatures. The stator shall be equipped with two (2) thermal switches, embedded in the end coils of the stator winding. These shall be used for activating remote alarm system and wired to the external terminal box.

G. The motors shall be in conformance with the latest recommendations of IEEE and NEMA, including noise requirements.

H. Electrical Controls

1. For each pump motor, there shall be included: a combination circuit breaker/overload unit providing overload protection, short circuit protection, manual reset and individual disconnect for all phases; across-the-line magnetic contractor; a 24 volt control circuit transformer with disconnect and overload protection shall be included with an automatic electrical alternator providing alternating operation of pumps under normal conditions or, in case of high level, allowing two pumps to operate simultaneously. Each motor thermal overload block shall be furnished with one auxiliary contact (N.O.) to be used for future alarm connection. The contact shall be wired to the external terminal box.
2. If a motor is disabled (e.g. overload, or in off position) it shall shut down and lock out. If the faulted motor is lead, an induced alternation shall occur. If the faulted motor is lag, the next motor shall automatically substitute. Overload and disconnect functions shall be provided by a single thermo-magnetic component.
3. Units shall be precalibrated to match motor and control characteristics and factory sealed to insure trip setting is tamper-proof; hand/off/automatic pump operation selector switch; provide 2 N.C and 2 N.O auxiliary isolated contacts for Owner's use; pump running pilot lights, running time meters, a minimum 50 watt strip heater to provide condensation protection and lighting arrestor. A delayed start feature shall be incorporated into the control panel, preventing, in the event of power failure, simultaneous starting of both pumps.
4. Terminal strips shall be provided for the pump motor, controls, and level control wiring.
5. The control equipment shall be mounted within a NEMA Type 1, dead-front enclosure, fabricated of steel and reinforced as required. The circuit breaker, motor-starter section shall be provided with removable plastic covers, complete with suitable latching devices. All circuit breakers, motor-starter reset buttons and pump

control switches shall be mounted so that they are operable without danger of contact with the live electrical parts. It shall not be necessary to remove the front of the cabinet to make minor adjustments to the ventilating blower time, pressure switches, etc.

6. A grounding type convenience duplex outlets shall be provided on the side of the cabinet for operation of 115 volt AC devices.
7. Each single-phase auxiliary motor shall be equipped with an over-current protection device, in addition to its branch circuit breaker, or shall be impedance protected.
8. All switches shall be labeled and a coded wiring diagram shall be provided.
9. To control the operation of the pumps with variations of liquid level in the wet well, a pressure transducer and differential pressure switches shall be provided. The pressure transducer shall have a minimum opening of 1-1/2 inches and be designed specifically for wastewater service in order to minimize maintenance.
10. To protect the pressure switches, the pressure transducer, connecting piping and pressure switch diaphragms shall be filled with an incompressible liquid.
11. Isolation valves shall be provided in the connecting piping for the pressure transducers to facilitate maintenance.
12. The pressure switches shall be of the mercury-tube type, with sensitive pressure elements and independent high and low adjustments for each pump capable of a minimum differential of 18 inches of water.
13. All outgoing wiring (480 volt, 240/120 volt, control circuit) shall be connected to the external terminal box (NEMA 4x) located near the entrance tube cover.

2.7 DEHUMIDIFIER AND VENTILATING BLOWER

A. A dehumidifier assembly with hermetically sealed freon refrigeration type compressor, expansion coil, fan and condenser coil shall be furnished to maintain the relative humidity of the air in the pump chamber low enough to keep the electrical equipment dry and to prevent condensation on the walls.

B. The moisture removing capability of the dehumidifier will vary with the temperature and relative humidity within the station. The minimum capacity rating at 80F and 68% relative humidity shall be 15.5 pints per day. The maximum capacity at 80F and 90% relative humidity shall be 25 pints per day. The dehumidifier shall be controlled automatically by an adjustable humidistat. The dehumidifier shall be located above the floor on a shelf and the condensate drained to the sump.

C. Fresh air shall be drawn into the station through the PVC air duct in the entrance tube. The squirrel-cage ventilating blower shall have a minimum capacity of 160 CFM and shall be controlled by a 15-minute cycle timer with a range of 0-100% so as to provide essentially continuous ventilation without exceeding the capabilities of the dehumidifier.

D. Ventilation systems so arranged that intake air is not pulled into the station through an inlet duct will not be acceptable.

E. The ventilating blower shall have a high velocity discharge directed across the station parallel to the floor such that vortexing and vigorous mixing will ensure adequate dehumidification and purging of the station air. It shall be positioned on the head of the station to prevent inadvertent damage by service personnel.

F. A switch shall be provided at the top of the entrance tube for operation of the lights and ventilating blower when entering the station. The air vent shall have suitable screen to prevent the entrance of foreign objects.

2.8 LIGHTING

A. Adequate lighting, consisting of a twin 40-watt fluorescent lamp fixture shall be provided for the convenience and safety of the operator. The lighting shall provide illumination for all areas in the station.

2.9 SUMP PUMP

A. A submersible sump pump with close-coupled, vertical motor shall be installed in the pump. It shall have a minimum capacity of 1000 GPH at design head. The design head this pump will operate against is the static head from the sump to 3-feet below grade. A mechanical seal on the shaft shall exclude liquid from the motor housing.

B. The sump pump shall be controlled automatically by a built-in float switch, capable of operation on a 5-inch differential. It shall discharge into the combination base beam suction line through double check valves and a gate valve within the sump chamber.

C. Separate sump pump discharge piping subject to damage during backfilling or settling will not be acceptable.

D. The sump shall be located in the station on the opposite side as the wet well such that the slope of the station and integral suction lines provide that any air entrapment bleeds back toward the wet well for added pump protection.

2.10 PIPING

A. Pump suction lines shall be 1/4 inch minimum steel tube, designed as an integral part of the station reinforcing, terminating inside the wet well to ensure an air tight conduit to the pumps. Suction line size shall be as shown in the equipment schedule.

B. Bronze fitted, double-disc gate valves shall be provided inside the chamber on the suction and discharge sides of the pumps. The discharge line from each pump shall be fitted with a spring loaded wafer type check valve for increased station maintenance room. The check valve shall be the spring-loaded type with external lever arm and an easily replaced resilient seat. Check valves shall have stainless steel shaft with replaceable bronze shaft bushings and shall be sealed through the bearings with O-rings.

C. Expansion joints shall be provided for the discharge end of each pump between the pump discharge flange and the discharge check valve.

1. The expansion joint shall be a single piece, leakproof tube made of Butyl-Dacron with copper coated steel wire embedded in the carcass for reinforcing. The flanges shall be supplied at both ends with split galvanized retaining rings. Flanges and retaining rings shall be drilled to match standard ANSI-125 flanges. The internal operating conditions shall be as per the application shown on the Drawings and

temperature range from 0°F to 250°F. Discharge expansion joints shall be fitted with a control unit to restrict axial elongation. The expansion joint shall be as manufactured by General Rubber Corporation, Mercer, or equal.

D. Stations with suction lines above the base of the station reducing maintenance/service area will not be acceptable.

E. The common discharge header shall exit through the side of the station and terminate in a plain end Schedule 40 steel pipe. A special M.J. gasket shall be provided to adapt the plain-end steel discharge pipe to a cast iron M.J. bell. The diameter of all pipe and valves shall be in the Equipment Schedule.

F. Suction and discharge lines shall not incorporate grout sleeves as a means to penetrate the station shell.

2.11 WIRING

A. The pump station shall be completely wired at the factory, ready for external power feeder and control lines connection. All wiring in the pump station shall meet the requirements of the National Electrical Code and shall be as indicated on the wiring diagram. All wiring outside the panel shall be in conduit, except for 115-volt accessory items, which are provided with connecting insulated service cord. The manufacturer shall provide conduit from the control panel across the ceiling, and up the entrance tube to receive the feeder lines. The conduit shall terminate in a external NEMA 4x terminal box located near the entrance tube four (4) feet above finished grade.

B. Accessory items such as the sump pump and dehumidifier shall be plugged into selectively polarized, grounded convenience outlets, located close to their installed position so that such items can be readily removed and serviced if necessary.

C. Pump station wiring, motor starters, etc. shall be supplied which will accommodate the future installation of 10 H.P pump's motor.

2.12 FACTORY TESTS

A. All components of the pump station shall be given an operational test at the pump station manufacturer's facility to check for excessive vibration, for leaks in the piping or seals and for correct operation of the automatic control system and all auxiliary equipment. The pump suction and discharge lines shall be coupled to a reservoir and the pumps shall recirculate water for at least one hour under simulated service conditions.

The automatic controls shall be adjusted to start and stop the pumps at approximately the levels required by the job conditions. The control panel shall undergo both a dry logic test and a full operational test with all systems operating. The Engineer and/or Owner reserve the right to witness these tests.

B. Factory test instrumentation must include flow measuring with indicator; compound suction gauge; bourdon tube type discharge pressure gauge; electrical meters to measure

amperes, volts, speed indicator and a vibrometer capable of measuring both amplitude and frequency.

C. A description of test equipment must be included with submittal data.

2.13 SPARE PARTS

A. A complete replacement pump shaft seal assembly shall be furnished within the lift station. The spare seal container shall include complete installation instructions. Spare volute gaskets for the main pumps shall also be furnished.

2.14 ACCESSORIES

A. Each pump shall be provided with easily identifiable terminal points to facilitate the exchange of the central control functions between the pumps and the process control system as indicated on the Contract Drawings.

B. Pressure Gauges and Connections:

1. Pump suction and discharge flanges shall be tapped for gauge connections as indicated in the Specifications.
2. Gauge connections shall be 1/2 inch in diameter.
3. Each connection shall include a shut-off needle valve and necessary lengths of pipe to allow the mounting of a pressure gauge. The open end on the gauge connection shall be plugged to prevent the accumulation of debris.
4. Each pump shall be supplied with a liquid filled pressure gauge with snubber and diaphragm seals. Liquid shall be silicone, capable of withstanding a temperature range of -60F to +150F. The gauge shall be adequately sized to indicate discharge pressure. The gauge shall be properly installed on the pump discharge lines. The gauge shall operate over a range of 0 to 50 psig pressure. Gauges shall be a product of H.O. Trerice, Ashcroft, or equal.

C. Each set of pumps shall be provided with one set of special tools required for complete service and maintenance.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The equipment shall be installed in accordance with the manufacturer's recommendations.

3.2 INITIAL LUBRICATION

A. Initial lubrication required for start-up and field test operation shall be furnished and applied in accordance with the manufacturer's recommendations.

3.3 INSPECTION, START-UP AND TESTING

A. The manufacturer shall make final adjustments, provide initial start-up, and instruct the Owner's personnel in the operation and maintenance of the equipment.

3.4 PUMP TEST

A. Unless otherwise noted, certified performance data based upon tests of each actual pump proposed to be furnished shall be submitted to the Engineer for acceptance. Tests shall be performed in accordance with the Test Code of the Hydraulic Institute Standards and shall demonstrate compliance with the operating conditions specified. The Engineer shall be notified and afforded the opportunity to witness the test.

3.5 MOTOR TEST

A. Tests shall be performed in accordance with the American Standard Test Code.

B. Short commercial test: For motors of less than 25 Hp, a certified report of the short commercial test of each actual motor proposed to be furnished shall be submitted to the Engineer for acceptance.

3.6 INSTALLATION AND OPERATING INSTRUCTIONS

A. Installation of the pump chamber, entrance tube and related appurtenances shall be done in accordance with written instructions provided by the manufacturer.

B. The manufacturer shall further provide a complete and detailed Installation, Operation and Maintenance Manual. This manual shall cover, in addition to installation and general operating procedures, the operation, maintenance and servicing procedures of the major individual components provided with the pump station.

C. The manufacturer shall provide the services of a factory-trained representative for a maximum period of one day to perform initial start-up of the pump station and to instruct the Owner's operating personnel in the operation and maintenance of the equipment.

3.7 GUARANTEE

A. The manufacturer shall have a minimum of five (5) years experience in the design and manufacture of automatic factory-built underground pump stations and shall guarantee for one (1) year from date of start-up or eighteen (18) months from date of shipment, whichever is shorter, that the structure and all equipment will be free from defects in design, material and workmanship. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the manufacturer will not be accepted. The manufacturer shall assume prime responsibility for the guarantee of the station and all components.

3.8 EQUIPMENT SCHEDULE

A. PUMP STATION PUMPS

Type of Pump	Vertical Non-Clog

Number Required	2
Arrangement	Duplex
Liquid Pumped	Domestic Sewage
Liquid Temperature	35 - 75F
Pump Casing	Cast Iron
Design Capacity, Each	300 GPM
TDH, Each	48 feet
Minimum Motor Horsepower	7.5 HP
Motor Speed	1170 RPM
Motor Efficiency	94% $\pm$ 1%
Service Factor	115%
Power Requirements	460 Volt, 3 Phase, 60 Hz
Solid Size, Maximum	3-inch Sphere
Minimum Pump Efficiency	68%
Model Smith & Loveless No. 4B3A, or approved equal	
Common outlet discharge size	6 inches
Suction Tube size	6" x 6"
Suction piping & valve size	4 inches
Discharge piping & valve size	4 inches
Bearing lubrication	Grease

B. Provide elapse time meters for each pump meter and a separate elapse time meter for parallel pump operation.

C. Provide controls for pump operation at various wet well liquid levels as indicated on the drawings.

D. Provide one (1) float for High Water Alarm (the float shall be installed at floor level) in the Pump chamber and connected to the external terminal box.

E. Provide ceramic coating on all wetted parts and shaft sleeves.

END OF SECTION 333216

SECTION 400507 - PROCESS PIPE HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawing and general provisions of the Contract, including the General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes hangers and supports for process piping systems and equipment.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 5 Section "Metal Fabrications" for materials for attaching hangers and supports to building structure.

1.3 DEFINITIONS

A. Terminology used in this Section is defined in MSS SP-90.

1.4 SUBMITTALS

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of hanger and support.

C. Submit pipe hanger and support schedule showing manufacturer's Figure No., size, location, and features for each required pipe hanger and support.

D. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

E. Shop Drawings shall be signed and sealed by a qualified professional engineer for multiple piping supports and trapeze hangers. Include design calculations and indicate size and characteristics of components and fabrication details. Shop drawings for each type of hanger and support, indicating dimensions, weights, required clearances, and methods of component assembly.

1.5 QUALITY ASSURANCE

A. Qualify welding processes and welding operators according to AWS D1.1 "Structural Welding Code--Steel."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

B. Qualify welding processes and welding operators according to ASME "Boiler and Pressure Vessel Code," Section IX, "Welding and Brazing Qualifications."

C. NFPA Compliance: Comply with NFPA 13 for hangers and supports used as components of fire protection systems.

D. Listing and Labeling: Provide hangers and supports that are listed and labeled as defined in NFPA 70, Article 100.

1. UL and FM Compliance: Hangers, supports, and components include listing and labeling by UL and FM where used for fire protection piping systems.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

E. Licensed Operators: Use operators that are licensed by powder-operated tool manufacturers to operate their tools and fasteners.

1.6 PERFORMANCE REQUIREMENTS

A. Design channel support systems for piping to support multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.

B. Design heavy-duty steel trapezes for piping to support multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Hangers, Supports, and Components: Factory-fabricated according to MSS SP-58.

1. Components include galvanized coatings where installed for piping and equipment that will not have a field-applied finish.
2. Pipe attachments include nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing.

B. Thermal-Hanger Shield Inserts: 100-psi (690-kPa) average compressive strength, waterproofed calcium silicate, encased with sheet metal shield. Insert and shield cover entire circumference of pipe and are of length indicated by manufacturer for pipe size and thickness of insulation.

C. Powder-Actuated Drive-Pin Fasteners: Powder-actuated-type, drive-pin attachments with pull-out and shear capacities appropriate for supported loads and building materials where used. Fasteners for fire protection systems include UL listing and FM approval.

D. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used. Fasteners for fire protection systems include UL listing and FM approval.

2.2 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36 (ASTM A 36M), steel plates, shapes, and bars, black and galvanized.

B. Bolts and Nuts: ASME B18.10 or ASTM A 183, steel, hex-head, track bolts and nuts.

C. Washers: ASTM F 844, steel, plain, flat washers.

D. Grout: ASTM C 1107, Grade B, nonshrink, nonmetallic.

1. Characteristics include post-hardening, volume-adjusting, dry, hydraulic-cement-type grout that is nonstaining, noncorrosive, nongaseous and is recommended for both interior and exterior applications.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
3. Water: Potable.
4. Packaging: Premixed and factory-packaged.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATION

A. Specific hanger requirements are specified in the Section specifying the equipment and systems.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping specification Sections.

3.2 HANGER AND SUPPORT INSTALLATION

A. General: Comply with MSS SP-69 and SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Arrange for grouping of parallel runs of horizontal piping supported together on field-fabricated, heavy-duty trapeze hangers where possible.

C. Install supports with maximum spacings complying with MSS SP-69.

D. Where pipes of various sizes are supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.

E. Install building attachments within concrete or to structural steel. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert to forms. Install reinforcing bars through openings at top of inserts.

F. Install concrete inserts in new construction prior to placing concrete.

G. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual. Do not use in lightweight concrete slabs or in concrete slabs less than 4 inches (100 mm) thick.

H. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install according to fastener manufacturer's written instructions. Do not use in lightweight concrete slabs or in concrete slabs less than 4 inches (100 mm) thick.

I. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

J. Heavy-Duty Steel Trapezes: Field-fabricate from ASTM A 36 steel shapes selected for loads being supported. Weld steel according to AWS D-1.1.

K. Support fire protection systems piping independent of other piping.

L. Install hangers and supports to allow controlled movement of piping systems, permit freedom of movement between pipe anchors, and facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

M. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

N. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so that maximum pipe deflections allowed by ASME B31.9 "Building Services Piping" is not exceeded.

O. Insulated Piping: Comply with the following installation requirements.

1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ASME B31.9.
2. Saddles: Install protection saddles MSS Type 39 where insulation without vapor barrier is indicated. Fill interior voids with segments of insulation that match adjoining pipe insulation.
3. Shields: Install MSS Type 40, protective shields on cold piping with vapor barrier. Shields span an arc of 180 degrees (3.1 rad) and have dimensions in inches (mm) not less than the following:

NPS (Inches)	LENGTH (Inches)	THICKNESS (Inches)

1/4 to 3-1/2	12	0.048
4	12	0.060
5 and 6	18	0.060
8 to 14	24	0.075
16 to 24	24	0.105

4. Pipes 8 Inches (DN 200) and Larger: Include wood inserts.
5. Insert Material: Length at least as long as the protective shield.
6. Thermal-Hanger Shields: Install with insulation of same thickness as piping.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural steel stands to suspend equipment from structure above or support equipment above floor.

B. Grouting: Place grout under supports for equipment, and make a smooth bearing surface.

3.4 METAL FABRICATION

A. Cut, drill, and fit miscellaneous metal fabrications for pipe and equipment supports.

B. Fit exposed connections together to form hairline joints. Field-weld connections that cannot be shop-welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for manual shielded metal-arc welding, appearance and quality of welds, methods used in correcting welding work, and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so that no roughness shows after finishing, and so that contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

3.6 PAINTING

A. Touching Up: Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal is specified in

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.7 WARRANTY

A. The equipment supplier shall warrant for a period of 12 months that its equipment shall be free from defects in material and workmanship; and that it will replace or repair, F.O.B. its factory, any part or parts returned to it which examination shall show to have failed under normal use and service by the user. Warrantee period will commence upon completion of all project improvements.

END OF SECTION 400507

SECTION 402336 - PIPES AND PIPE FITTINGS

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.

B. This section is Division-15 Basic Materials and Methods section, and is part of each Division-15 section making reference to pipes and pipe fittings specified herein.

1.2 DESCRIPTION OF WORK:

A. Extent of pipe, tube, and fittings required by this section is indicated on drawings and/or specified in other Division-15 sections.

B. Types of pipe, tube, and fittings specified in this section include the following:

1. Steel Pipes.
2. Copper Tube.
3. Brass Pipes
4. Cast-Iron Pressure Pipes.
5. Cast-Iron Soil Pipes.
6. Clay Pipes.
7. Concrete Pipes.
8. Asbestos-Cement Pipes.
9. Corrugated Metal Pipes.
10. Plastic Pipes.
11. Plastic Tubing.
12. Acid-Resistant Pipes.
13. Drainage Tile and Pipes.
14. Grooved Piping Products.
15. Miscellaneous Piping Materials/Products.

C. Pipes and pipe fittings furnished as part of factory- fabricated equipment, are specified as part of equipment assembly in other Division-15 sections.

1.3 QUALITY ASSURANCE:

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of pipes and pipe fittings of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Codes and Standards:

1. Welding: Quality welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site welding of piping work.

a. Certify welding of piping work using Standard Procedure Specifications by, and welders tested under supervision of, the National Certified Pipe Welding Bureau (NCPWB).

2. Brazing: Certify brazing procedures, brazers, and operators in accordance with ASME Boiler and Pressure Vessel Code, Section IX, for shop and job-site brazing of piping work.
3. NSF Labels: Where plastic piping is indicated to transport potable water, provide pipe and fittings bearing approval label by National Sanitation Foundation (NSF).

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical product data, installation instructions, and dimensioned drawings for each type of pipe and pipe fitting. Submit piping schedule showing Manufacturer, pipe or tube weight, fitting type, and joint type for each piping system.

B. Welding Certifications: Submit reports as required for piping work.

C. Brazing Certifications: Submit reports as required for piping work.

D. Maintenance Data: Submit maintenance data and parts lists for each type of mechanical fitting. Include this data, product data, and certifications in maintenance manual; in accordance with requirements of Division 1.

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Except for concrete, corrugated metal, hub-and-spigot, clay, and similar units of pipe, provide factory-applied plastic end-caps on each length of pipe and tube. Maintain end-caps through shipping, storage and handling as required to prevent pipe-end damage and eliminate dirt and moisture from inside of pipe and tube.

B. Where possible, store pipe and tube inside and protected from weather. Where necessary to store outside, elevate above grade and enclose with durable, waterproof wrapping.

C. Protect flanges and fittings from moisture and dirt by inside storage and enclosure, or by packing with durable, waterproof wrapping.

PART 2 - PRODUCTS

2.1 GENERAL

A. Piping Materials: Provide pipe and tube of type, joint type, grade, size and weight (wall thickness or Class) indicated for each service. Where type, grade or class is not indicated, provide proper selection as determined by Installer for installation requirements, and comply with governing regulations and industry standards.

B. Pipe/Tube Fittings: Provide factory-fabricated fittings of type, materials, grade, class and pressure rating indicated for each service and pipe size. Provide sizes and types matching pipe, tube, valve or equipment connection in each case. Where not otherwise indicated, comply with governing regulations and industry standards for selections, and with pipe manufacturer's recommendations where applicable.

2.2 STEEL PIPES AND PIPE FITTINGS

A. Black Steel Pipe: ASTM A 53, A 106 or A 120; except comply with ASTM A 53 or A 106 where close coiling or bending is required.

B. Galvanized Steel Pipe: ASTM A 53 or A 120; except comply with ASTM A 53 where close coiling or bending is required.

C. Seamless Steel Pipe: ASTM A 53, A 106, or A 120; except comply with ASTM A 53 or A 106 where close coiling or bending is required.

D. Galvanized Seamless Steel Pipe: ASTM A 53 or A 120; except comply with ASTM A 53 where close coiling or bending is required.

E. Electric-Resistance-Welded Steel Pipe: ASTM A 135.

F. Electric-Fusion-Welded Steel Pipe: ASTM A 671, A 672, or A 691.

G. Stainless Steel Pipe: ASTM A 312; Grade TP 304.

H. Stainless Steel Sanitary Tubing: ASTM A 270; Finish No. 80.

I. Yoloy Steel Pipe: ASTM A 714; Class 4; Grade IV.

J. Steel Water Pipe: AWWA C200 for pipe 6" and larger.

K. Coal Tar Protective Coatings and Linings for Steel Water Pipe: AWWA C203 for enamel and tape, hot applied.

L. Chlorinated Rubber-Alkyd Paint System for Steel Water Pipe: AWWA C204.

M. Cement-Mortar Protective Lining and Coating for Steel Pipe: AWWA C205.

N. Cast-Iron Flanged Fittings: ANSI B16.1, including bolting.

O. Cast-Iron Threaded Fittings: ANSI B16.4.

P. Malleable-Iron Threaded Fittings: ANSI B16.3; plain or galvanized as indicated.

Q. Malleable-Iron Threaded Unions: ANSI B16.39; selected by Installer for proper piping fabrication and service requirements, including style, end connections, and metal-to-metal seats (iron, bronze or brass); plain or galvanized as indicated.

R. Threaded Pipe Plugs: ANSI B16.14.

S. Steel Flanges/Fittings: ANSI B16.5, including bolting and gasketing of the following material group, end connection and facing, except as otherwise indicated.

1. Material Group: Group 1.1.
2. End Connections: Buttwelding.
3. Facings: Raised-face.

T. Steel Pipe Flanges for Waterworks Service: AWWA C207.

U. Corrosion-Resistant Cast Flanges/Fittings: MSS SP-51, including bolting and gasketing.

V. Forged-Steel Socket-Welding and Threaded Fittings: ANSI B16.11, except MSS SP-79 for threaded reducer inserts; rated to match schedule of connected pipe.

W. Wrought-Steel Buttwelding Fittings: ANSI B16.9, except ANSI B16.28 for short-radius elbows and returns; rated to match connected pipe.

X. Yoloy-Steel Buttwelding Fittings: ASTM A 714.

Y. Stainless-Steel Buttwelding Fittings: MSS SP-43.

Z. Cast-Iron Threaded Drainage Fittings: ANSI B16.12.

AA. Forged Branch-Connection Fittings: Except as otherwise indicated, provided type as determined by Installer to comply with installation requirements.

BB. Pipe Nipples: Fabricated from same pipe as used for connected pipe; except do not use less than Schedule 80 pipe where length remaining unthreaded is less than 1-1/2", and where pipe size is less than 1-1/2", and do not thread nipples full length (no close-nipples).

2.3 COPPER TUBE AND FITTINGS

A. Copper Tube: ASTM B 88; Type (wall thickness) as indicated for each service; hard-drawn temper, except as otherwise indicated.

B. DWV Copper Tube: ASTM B 306.

C. ACR Copper Tube: ASTM B 280.

D. Cast-Copper Solder-Joint Fittings: ANSI B16.18.

E. Wrought-Copper Solder-Joint Fittings: ANSI B16.22.

F. Cast-Copper Solder-Joint Drainage Fittings: ANSI B16.23.

G. Wrought-Copper Solder-Joint Drainage Fittings: ANSI B16.29.

H. Cast-Copper Solder-Joint Drainage Fittings: For "sovent" drainage systems, ANSI B16.32.

I. Cast-Copper Flared Tube Fittings: ANSI B16.26.

J. Bronze Pipe Flanges/Fittings: ANSI B16.24.

K. Copper-Tube Unions: Provide standard products recommended by manufacturer for use in service indicated.

2.4 BRASS PIPE AND FITTINGS

A. Red Brass Pipe: ASTM B 43.

B. Cast-Bronze Threaded Fittings: ANSI B16.15.

C. Cast-Bronze Threadless Fittings: ASTM B 61 or B 62.

2.5 CAST IRON PRESSURE PIPES AND PIPE FITTINGS

A. Ductile-Iron Pipe: ANSI A21.51; AWWA C151.

B. Cement-Mortar Lining for Ductile-Iron and Gray-Iron Pipe and Fittings for Water: ANSI A21.4; AWWA C104.

C. Polyethylene Encasement for Gray and Ductile Cast-Iron Piping: ANSI A21.5; AWWA C105.

D. Cast-Iron Fittings: AWWA C110.

E. Gray-Iron Fittings: AWWA C110.

F. Ductile-Iron Fittings: AWWA C110.

G. Rubber-Gasket Joints: AWWA C111.

2.6 CAST-IRON SOIL PIPES AND PIPE FITTINGS

A. Hubless Cast-Iron Soil Pipe: FS WW-P-401.

B. Cast-Iron Hub-and-Spigot Soil Pipe: ASTM A 74.

C. Hubless Cast-Iron Soil Pipe Fittings: Neoprene gasket complying with ASTM C 564 and stainless steel clamp holding band.

D. Cast-Iron Hub-and-Spigot Soil Pipe Fittings: Match soil pipe units; complying with same standards (ASTM A 74).

E. Compression Gaskets: ASTM C 564.

F. Lead/Oakum Joint Materials: Provide products complying with governing regulations for use in service indicated.

2.7 CLAY PIPES AND PIPE FITTINGS

A. Vitrified Clay Pipe: ASTM C 700, Standard Strength (SS) except where Extra Strength (XS) indicated, with resilient gasket joints complying with ASTM C 425.

B. Fittings for Clay Pipe: Match clay pipe; provide units produced by same manufacturer, complying with same standards.

2.8 CONCRETE PIPES AND PIPE FITTINGS

A. Reinforced Concrete Pipe: ASTM C 76, Class as indicated, with modified tongue-and-groove compression gasket joints complying with ASTM C 443.

B. Concrete Pipe: ASTM C 14, Class 2, unless otherwise indicated.

C. Fittings for Concrete Pipe: Match concrete pipe; provide units produced by same manufacturer, complying with same standards.

2.9 CORRUGATED METAL PIPES AND PIPE FITTINGS

A. Corrugated Metal Pipe: AASHTO M36, helically or circumferentially corrugated, mill-galvanized steel, size and gage as indicated.

1. Furnish bituminous coated conduit complying with AASHTO M190, as follows:

    a. Type A, full bituminous coating.
    b. Type B, half bituminous coating.
    c. Type C, full bituminous coating and paved.

B. Fittings for Corrugated Metal Pipe: Match corrugated metal pipe; provide units produced by same manufacturer, complying with same standards.

2.10 PLASTIC PIPES AND PIPE FITTINGS

A. Acrylonitrile-Butadiene-Styrene Pipe (ABS): ASTM D 1527.

B. Acrylonitrile-Butadiene-Styrene Sewer Pipe (ABS): ASTM D 2751.

C. Cellulose Acetate Butyrate Pipe (CAB): ASTM D 1503.

D. Fiberglass Reinforced Epoxy Pipe (FRE): ASTM D 2310 and D 2996.

E. Polybutylene Pipe (PB): ASTM D 2662.

F. Polybutylene Hot- and Cold-Water Pipe (PB): ASTM D 3309.

G. Polyethylene Pipe (PE): ASTM D 2104.

H. Polyvinyl Chloride Pipe (PVC): ASTM D 1785.

I. Polyvinyl Chloride Water Pipe (PVC): AWWA C900.

J. Polyvinyl Chloride Sewer Pipe (PVC): ASTM D 2729.

K. Polyvinyl Chloride Drain, Waste, and Vent Pipe (PVC): ASTM D 2665.

L. Chlorinated Polyvinyl Chloride Pipe (CPVC): ASTM F 441.

M. ABS Pipe Fittings:

1. Schedule 40 Socket: ASTM D 2468.
2. Schedule 80 Socket: ASTM D 2469.
3. Schedule 80 Threaded: ASTM D 2465.
4. Solvent Cement: ASTM D 2235.
5. Solvent Cement (To Join ABS To PVC): ASTM D 3138.

N. CAB Pipe Fittings: Provide fittings of same material by same pipe manufacturer for same pressure rating.

1. Solvent Cement: ASTM D 2560.

O. FRE Pipe Fittings: Mechanically fastened union-type non-threaded couplings with "O" ring seals.

P. PB Fittings:

1. SDR 11 Socket: ASTM D 3309.

Q. PE Fittings:

1. Butt Heat Fusion: ASTM D 3261.
2. Insert Fusion: ASTM D 3197.
3. Socket Type: ASTM D 2683.
4. Insert: ASTM D 2609.

R. PVC Fittings:

1. Schedule 40 Socket: ASTM D 2466.
2. Schedule 80 Socket: ASTM D 2467.
3. Schedule 80 Threaded: ASTM D 2464.
4. DWV Socket: ASTM D 2665.
5. Sewer Socket: ASTM D 2729.
6. Solvent Cement: ASTM D 2564.

7. Solvent Cement (To Join PVC To ABS): ASTM D 3138.

S. CPVC Fittings:

1. Schedule 40 Socket: ASTM F 438.
2. Solvent Cement: ASTM D 2564.

T. PLASTIC TUBING AND TUBE FITTINGS:

U. Polybutylene Tubing (PB): ASTM D 2666.

V. Polybutylene Hot- and Cold-Water Tubing (PB): ASTM D 3309.

W. Polyethylene Tubing (PE): ASTM D 2737.

X. Polyvinyl Chloride Tubing (PVC): ASTM D 2740.

Y. PB Fittings:

1. Socket Fusion: ASTM D 3309.
2. Compression: As recommended by manufacturer.
3. Crimp-Type: As recommended by manufacturer.

Z. PE Fittings:

1. Insert: ASTM D 2609.

AA. PVC Fittings:

1. Insert: ASTM D 2609.

2.11 ACID-RESISTANT PIPES AND PIPE FITTINGS

A. Cast-Iron Pipe; Acid-Resistant: High-silicon cast-iron pipe of type indicated, complying with ASTM A 518.

B. Lead Pipe: Acid-resistant chemically-pure hard lead, with 7% antimony.

C. Glass Pipe: ASTM C 599.

D. Fittings for Acid-Resistant Pipe: Provide fittings matching pipe, and with equal-or-better acid resistance; comply with same standards where applicable. Unless otherwise indicated, provide fittings produced by manufacturer of pipe, and recommended for service indicated.

2.12 DRAINAGE TILE AND PIPE, FITTINGS, AND ACCESSORIES

A. Clay Drain Tile: ASTM C 4; Standard Class, unless otherwise indicated; lengths as indicated.

B. Concrete Drain Tile: ASTM C 412; Standard Quality, unless otherwise indicated; lengths as indicated.

C. Porous Concrete Pipe: ASTM C 654; Standard Strength, unless otherwise indicated.

D. Perforated Asbestos-Cement Pipe: ASTM C 508; Type III, unless otherwise indicated.

E. Perforated Polyvinyl Chloride Pipe (PVC): ASTM D 2729; perforated except where standard sections of pipe are indicated.

F. Perforated Clay Pipe: ASTM C 700; Standard Strength, unless otherwise indicated.

G. Perforated Concrete Pipe: ASTM C 444, Type 1; and also ASTM C 14, Class 2.

H. Perforated Bituminized Fiber Pipe: ASTM D 2311.

I. Fittings and Accessories for Drainage Tile and Pipe: Unless otherwise indicated, provide fittings matching and of same material as pipe units; comply with same standards, where applicable, except fittings need not be perforated where pipe is required to be perforated.

J. Tile Joint Accessories: Where open-joint drainage tile is indicated, provide joint accessory units as follows:

1. Heavy-mesh burlap joint covers, with copper wire ties.
2. Coal-tar saturated felt covers, with copper wire ties.
3. Copper screen covers, 18-14 mesh, with copper wire ties.
4. Corrosion-resistant metal spacer-band covers.

2.13 GROOVED PIPING PRODUCTS

A. General: As Installer's option, mechanical grooved pipe couplings and fittings may be used for piping systems having operating conditions not exceeding 230 deg F (110 deg C), excluding steam piping and any other service not recommended by manufacturer, in lieu of welded, flanged, or threaded methods, and may also be used as unions, seismic joints, flexible connections, expansion joints, expansion compensators, or vibration reducers.

B. Coupling Housings: Malleable iron conforming to ASTM A 47.

C. Coupling Housings: Ductile iron conforming to ASTM A 536.

D. Coupling Housings Description: Grooved mechanical type, which engages grooved or shouldered pipe ends, encasing an elastomeric gasket which bridges pipe ends to create seal. Cast in two or more parts, secure together during assembly with nuts and bolts. Permit degree of contraction and expansion as specified in manufacturer's latest published literature.

E. Gaskets: Mechanical grooved coupling design, pressure responsive so that internal pressure serves to increase seal's tightness, constructed of elastomers having properties as designated by ASTM D 2000.

1. Water Services: EDPM Grade E, with green color code identification.
2. Other Services: As recommended by Manufacturer.

F. Bolts and Nuts: Heat-treated carbon steel, ASTM A 183, minimum tensile 110,000 psi.

1. Exposed Locations: Tamper resistant nuts.

G. Branch Stub-Ins: Upper housing with full locating collar for rigid positioning engaging machine-cut hole in pipe, encasing elastomeric gasket conforming to pipe outside diameter around hole, and lower housing with positioning lugs, secured together during assembly with nuts and bolts.

H. Fittings: Grooved or shouldered end design to accept grooved mechanical couplings.

1. Malleable Iron: ASTM A 47.
2. Ductile Iron: ASTM A 536.
3. Fabricated Steel: ASTM A 53, Type F for 3/4" to 1-1/2"; Type E or S, Grade B for 2" to 20".
4. Steel: ASTM A 234.

I. Flanges: Conform to Class 125 cast iron and Class 150 steel bolt hole alignment.

1. Malleable Iron: ASTM A 47.
2. Ductile Iron: ASTM A 536.

J. Grooves: Conform to the following:

1. Standard Steel: Square cut.
2. Lightweight Steel: Roll grooved.
3. Cast Iron: Radius cut grooved, AWWA C606.

K. Manufacturer: Subject to compliance with requirements, provide grooved piping products of one of the following:

1. ITT Grinnell Corp.
2. Stockham Valves & Fittings, Inc.
3. Victaulic Co. of America.

2.14 MISCELLANEOUS PIPING MATERIALS/PRODUCTS:

A. Welding Materials: Except as otherwise indicated, provide welding materials as determined by Installer to comply with installation requirements.

1. Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials.

B. Soldering Materials: Except as otherwise indicated, provide soldering materials as determined by Installer to comply with installation requirements.

1. Tin-Lead Solder: ASTM B 32, Grade 50A.

2. Tin-Antimony Solder: ASTM B 32, Grade 95TA.
3. Silver-Lead Solder: ASTM B 32, Grade 96TS.

C. Brazing Materials: Except as otherwise indicated, provide brazing materials as determined by Installer to comply with installation requirements.

1. Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials.

D. Gaskets for Flanged Joints: ANSI B16.21; full-faced for cast- iron flanges; raised-face for steel flanges, unless otherwise indicated.

E. Piping Connectors for Dissimilar Non-Pressure Pipe: Elastomeric annular ring insert, or elastomeric flexible coupling secured at each end with stainless steel clamps, sized for exact fit to pipe ends and subject to approval by plumbing code.

1. Manufacturer: Subject to compliance with requirements, provide piping connectors of the following:

a. Fernco, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently- leakproof piping systems, capable of performing each indicated service without piping failure. Install each run with minimum joints and couplings, but with adequate and accessible unions for disassembly and maintenance/replacement of valves and equipment. Reduce sizes (where indicated) by use of reducing fittings. Align piping accurately at connections, within 1/16" misalignment tolerance.

1. Comply with ANSI B31 Code for Pressure Piping.

B. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations or, if not otherwise indicated, run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosure elements of building; limit clearance to 1/2" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation. Wherever possible in finished and occupied spaces, conceal piping from view, by locating in column enclosures, in hollow wall construction or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated.

C. Electrical Equipment Spaces: Do not run piping through transformer vaults and other electrical or electronic equipment spaces and enclosures unless unavoidable. Install drip pan under piping that must be run through electrical spaces.

3.2 PIPING SYSTEM JOINTS

A. General: Provide joints of type indicated in each piping system.

B. Thread pipe in accordance with ANSI B2.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, or pipe joint tape (Teflon) where recommended by pipe/fitting manufacturer, on male threads at each joint and tighten joint to leave not more than 3 threads exposed.

C. Braze copper tube-and-fitting joints where indicated, in accordance with ANSI B31.

D. Solder copper tube-and-fitting joints where indicated, in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner which will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.

E. Mechanically Formed Tee Connections: In lieu of providing tee fittings in copper tubing, Installer may, as option, provide mechanically formed tee connections, providing they are in accordance with the following:

1. Size and wall thickness of both run tube and branch tube are listed by Manufacturer of forming equipment as "Acceptable Application".
2. Height of drawn collar is not less than 3 times wall thickness of run tubing.
3. End of branch tube is notched to conform to inner curve of run tube, and dimpled to set exact penetration depth into collar.
4. Resulting joint is minimum of 3 times as long as thickness of thinner joint member, and brazed using B-CuP series filler metal.

F. Mechanically Formed Couplings: In lieu of providing couplings in copper tubing, Installer may, as option, provide mechanically formed couplings, provided they are in accordance with the following:

1. Form couplings by first annealing area at end of tube where expansion will occur. Insert tube expander to die size required and expand tube end to accept tubing of same size.
2. Resulting joint is minimum of 3 times as long as thickness of tube, and brazed using B-CuP series filler metal.

G. Weld pipe joints in accordance with ASME Code for Pressure Piping, B31.

H. Weld pipe joints in accordance with recognized industry practice and as follows:

1. Weld pipe joints only when ambient temperature is above 0 deg F (-18 deg C) where possible.

2. Bevel pipe ends at a 37.5 deg angle where possible, smooth rough cuts, and clean to remove slag, metal particles and dirt.
3. Use pipe clamps or tack-weld joints with 1" long welds; 4 welds for pipe sizes to 10", 8 welds for pipe sizes 12" to 20".
4. Build up welds with stringer-bead pass, followed by hot pass, followed by cover or filler pass. Eliminate valleys at center and edges of each weld. Weld by procedures which will ensure elimination of unsound or unfused metal, cracks, oxidation, blow-holes and non-metallic inclusions.
5. Do not weld-out piping system imperfections by tack- welding procedures; refabricate to comply with requirements.
6. At Installer's option, install forged branch-connection fittings wherever branch pipe is indicated; or install regular "T" fitting.
7. At Installer's option, install forged branch-connection fittings wherever branch pipe of size smaller than main pipe is indicated; or install regular "T" fitting.

I. Weld pipe joints of steel water pipe in accordance with AWWA C206.

J. Flanged Joints: Match flanges within piping system, and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.

K. Lead Joint Installation: Tightly pack joint with joint packing material. Do not permit packing to enter bore of finished joint. Clean joint after packing. Fill remaining joint space with one pouring of lead to indicate minimum depth measured from face of bell. After lead has cooled, calk joint tightly by use of hammer and calking iron.

L. Hubless Cast-Iron Joints: Comply with coupling manufacturer's installation instructions.

M. Clay Pipe Joints: Comply with ASTM C 12.

N. Concrete Pipe Joints: Except as otherwise indicated, comply with applicable provisions of "Concrete Pipe Field Manual" by the American Concrete Pipe Assn.

O. Corrugated Metal Pipe Joints: Comply with manufacturer's instructions and recommendations.

P. Plastic Pipe/Tube Joints: Comply with manufacturer's instructions and recommendations, and with applicable industry standards:

1. Heat Joining of Thermoplastic Pipe: ASTM D 2657.
2. Making Solvent-Cemented Joints: ASTM D 2235, and ASTM F 402.

Q. Glass Pipe Joints: Comply with manufacturer's instructions and recommendations.

R. Open Drain-Tile Joints: Except as otherwise indicated, provide 1/4" open joint, with top 2/3 of annular space covered by joint accessory material.

S. Grooved Pipe Joints: Comply with fitting manufacturer's instructions for making grooves in pipe ends. Remove burrs and ream pipe ends. Assemble joints in accordance with manufacturer's instructions.

3.3 PIPING INSTALLATION

A. Install drainage piping (perforated, porous or tile) from lowest end of slope to highest, solidly bedded in filtering or drainage fill. Shape bed for bells of piping (if any). Place bells/hubbs and grooved ends of units up-stream. Lay perforated pipe with perforations down.

B. Install gray and ductile cast-iron water mains and appurtenances in accordance with AWWA C600.

C. Install asbestos-cement pressure pipe in accordance with AWWA C603.

3.4 CLEANING, FLUSHING, INSPECTING

A. General: Clean exterior surfaces of installed piping systems of superfluous materials and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.

1. Inspect pressure piping in accordance with procedures of ASME B31.

B. Disinfect water mains and water service piping in accordance with AWWA C601.

3.5 PIPING TESTS

A. Test pressure piping in accordance with ASME B31.

B. General: Provide temporary equipment for testing, including pump and gages. Test piping system before insulation is installed wherever feasible, and remove control devices before testing. Test each natural section of each piping system independently but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with water and pressurize for indicated pressure and time.

1. Required test periods is 2 hours.
2. Test long runs of Schedule 40 pipe at 150 psi, except where fittings are a lower Class or pressure rating.
3. Test each piping system at 150% of operating pressure indicated, but not less than 25 psi test pressure.
4. Observe each test section for leakage at end of test period. Test fails if leakage is observed or if pressure drop exceeds 5% of test pressure.

C. Repair piping systems sections which fail required piping test, by disassembly and re-installation, using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.

D. Drain test water from piping systems after testing and repair work has been completed.

END OF SECTION 402336

SECTION 406300 – CONTROL SYSTEM EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

B. Related Sections include the following:

1. Division 1 – General Requirements
3. Division 26 – Electrical Specifications

1.2 DESCRIPTION OF WORK

A. This specification details the functional attributes the Pump Station control panel and requirements for the remote monitoring and alarm.

B. Pump Station Control Panel shall be provided by the pump manufacturer complete with the pump controller with Modbus TCP/IP communications and touchscreen for Operator Interface and local alarms.

C. Remote Monitoring and alarming shall be provided via SCADA panel and radio link. All necessary radio equipment for interfacing to the existing County Radio Network shall be incorporated into the SCADA panel design.

D. Integrator shall reconfigure the existing Master Terminal Unit and SCADA server programing to enable data transmission to the central location and display on the SCADA screens.

1.3 GENERAL REQUIREMENTS

A. The specifications and drawings outline certain characteristics of the monitoring and control system but do not set forth all the details of system design and the various functions and equipment required. All equipment shall be new and complete with all necessary software, accessories, and appurtenances required for a properly operating system including all items recommended by respective manufactures and not herein specified.

B. The Contractor shall assume complete system responsibility and provide all necessary coordination with any and all subcontractors, including control panel builder/ supplier and instrumentation supplier.

C. The Contractor shall coordinate the work for the installation, interconnection, testing, and calibration of the instruments. The contractor shall be responsible for

assuring that this equipment properly meets the functional intent of the specifications. Substitutions on functions specified are subject to review and approval.

1.4 EXCEPTIONS AND ALTERNATIVES

A. The manufacturer shall offer a system in accordance with this specification. No exceptions written or implied will be made and the vendor shall be capable of meeting this specification as written.

B. Should any of the specified manufacturers offer alternatives, equipment or materials, he shall do so in accordance with the specifications and he shall, through the shop drawing approval, list each alternative separately defining the advantages of the alternative and the impact on the overall system configuration. The manufacturers shall provide proof that the use of alternatives would improve control system performance and reduce operating and maintenance costs.

1.5 QUALITY ASSURANCE

A. Codes and Standards. Perform all work in compliance with applicable requirements of governing agencies having jurisdiction and in accordance with the plans and as specified herein.

1. National Electrical Manufacturers Association (NEMA) Compliance.
2. National Electric Code (NEC) Compliance.
3. Instrument Society of America (ISA).
4. Institute of General Construction and Electronic Engineers (IEEE).
5. Underwriters' Laboratories, Inc. (UL) Compliance and Labeling. Comply with provisions of UL safety standards pertaining to process controller equipment. Provide products and components which have been UL listed and labeled.

1.6 EXPANDABILITY

A. The system proposed shall be a standard (off-the-shelf) system that is configurable to provide for minor changes and additions during manufacturing, installation, and commissioning phases, and on-site by the Owner's operating personnel.

1.7 SUBMITTALS

A. Submit shop drawings in accordance with specifications.

B. Drawings of equipment to be supplied shall include, as minimum, overall dimensional details for the control panel including installation arrangements and door mounted operator devices including nameplate designations; complete internal and field wiring diagrams; specific installation wiring responsibilities shall be identified.

C. Input/output drawings shall indicate terminal numbers and signal identification name.

D. The software submittal shall cover the detailed control algorithms, process graphic displays, and register mapping for remote variable monitoring.

1.8 TESTING AND TRAINING REQUIREMENTS

A. Job Site Demonstration

1. Following final installation and calibration of the system, the Contractor shall perform a demonstration of system performance. Satisfactory performance shall require the system to perform control functions, monitoring and display functions, and alarming, for a period of not less than one (1) month of continuous operation. During this demonstration, any system failure or software-related problem shall be corrected and the demonstration resumed. Acceptance of the control system by the Owner shall require that the system operates continuously for a period of one (1) month without non-field or field repairable hardware or software interruption. Substantial completion shall not be awarded until after the Contractor has successfully completed the above required test.

B. Training

1. The Contractor shall include at the site, operator and maintenance training for the department personnel for two one-day periods, one day after initial startup and one day at a later date, after the system has been in operation. The training shall include system operation, programming procedures for the HMI, the input/output subsystem, peripheral devises, troubleshooting, and hands-on instructions.

C. System Calibration and Start-up

1. The Contractor shall provide the initial calibration and startup of the control system by providing personnel to perform the following:

a. Supervise the installation and verify the final connections of all signal and power wiring to and from the control system.
b. Perform all hardware calibration and diagnostic tests, and make all necessary equipment connections.
c. Perform all configuration system tests, including diagnostics.
d. Perform the acceptance test as described in the “Job Site Demonstration” section of this specification.
e. Test the operation of the Communications Control System and Input/Output Subsystem.

1.9 OPERATION AND MAINTENANCE MANUALS

A. The Contractor shall furnish, clear, typewritten, easy-to-understand, instruction manuals for daily operation and maintenance of system. Specifically, the manuals shall contain explicit instructions and well-diagrammed procedures for process operations, loop tuning, and systems maintenance. The instruction manuals shall include as a minimum the following information.

1. Photographs and data sheets of major system components.
2. Input/Output terminal diagrams.
3. Logic and block diagrams.
4. Manufacturer published operation and maintenance instructions on all equipment.
5. Description of systems operation.
6. Configuration language description.
7. Names, addresses, and telephone numbers of local equipment manufacturer representatives for each device in the system.

1.10 FUNCTIONAL DESCRIPTION – PUMP STATION OPERATION

A. Pumps: The pumps are controlled by Variable Frequency Drives located in the Motor Control Center. Each pump will have a Hand-Off-Auto switch to enable local control in Hand mode. In Auto mode the Drives will receive run commands and speed reference from the Pump Station Control Panel in regular or emergency modes of operation.

1. In regular mode of operation the pump station control panel shall use the input from the level sensor to initiate pump start/stop and adjust the drive speeds:
   a. Automatic and adjustable alternation of Lead – Lag- Lag2 pump assignment shall allow for equalization of pump run times.
   b. It shall be possible to manually toggle the “Out of Service” status within the controller system for any of the pumps, to temporarily exclude it from rotation.

2. Should the level sensor or the primary pump station controller fail, the back-up control circuit will be activated, once the High-High Level Alarm Float is triggered.

   a. Under the emergency back-up control, adjustable timers will be used to start and stop pumps.

B. Flow Monitoring: Three magnetic flow meters shall be provided, one for each of the pump discharge pipes. Flow transmitters shall be located in the control building adjacent to the Pump Station control panel and interfaced to the controller via 4-20mA signaling. The Pump Station Control panel shall monitor the flow signals and initiate an alarm, should the flow through the meter be outside of the expected range.

C. Wet Well Level Monitoring: An analog level sensor for the wet-well and back-up High Level Float shall be provided for monitoring of the water level in the wet-well. The control panel shall use the inputs from the sensor and switch for alarming and automatic control in accordance with the primary and back-up sequences described above.

D. Miscellaneous: SCADA panel shall receive inputs from the generator controller and automatic transfer switch for monitoring of the following signals:

a. Generator running
b. Generator failure
c. Transfer switch position

1.11 REMOTE MONITORING AND ALARMING

A. Remote monitoring of the pump station shall be performed by adding a node into the existing County radio network.

B. Integrator shall coordinate with the radio supplier and install all radio components in the SCADA panel enclosure.

C. Pump station operational data (real time and historical) shall be available to the operator at the central location through the existing SCADA interface. The following parameters shall be available for monitoring and trending (trending graphs for multiple parameters shall be able to be combined on a single graph):

a. Pump Run Status (3 pumps)
b. Pump Fault Status (3 pumps)
c. Pump Flow (individual and totalized)
d. Totalized Pump Run Times (3 pumps)
e. Wet Well Level
f. High High Level Float Status
g. Abnormal pump flow alarm (“Pump Stead”)
h. Normal Power Availability
i. Duration of Time on Emergency Power
j. Generator Alarms
k. Position of the Transfer Switch
l. Daily and Monthly flow tracking

D. Coordinate list of alarms for callout with the operator.

PART 2 - PRODUCTS

2.1 SYSTEM HARDWARE

A. General Panel Requirements

1. Panel shall be completely fabricated, equipment installed, and wired in the manufacturer's factory. All wiring shall be completed and tested prior to shipment. All external connections shall be by way of numbered terminal blocks. Panels shall be UL listed, standard construction, as manufactured by Hoffman or approved equal.
2. In addition to all NEMA standards, the panel shall conform to NEC Article 409 and to the following requirements:

    a. Minimum metal thickness shall be 14-gauge.
    b. All doors shall be rubber-gasketed with continuous hinge.

B. Power Distribution Within Panel

1. Panel will be provided with a 120V ac, 60-Hz feeder circuit from the associated circuit breaker distribution panel provided under Electrical. Make provisions for feeder circuit conduit entry and provide a terminal board for termination of the wires. Panel shall have a surge protection device.
2. Provide master circuit breaker and a circuit breaker on each individual circuit distributed from the panel as shown. The circuit breakers shall be grouped on a single subpanel. Provide subpanel placement so that there is a clear view of and access to the breakers when the door is open. Opening the main breaker will interrupt all 120 VAC circuits (there shall be no 120 VAC on terminal blocks from remote devices).

C. Wiring

1. All electrical wiring shall be in accordance with the applicable requirements of the NEC. Wires shall be 600-volt class, PVC insulated stranded copper and shall be of the sizes required for the current to be carried, but not below 12 AWG enclosed in either sheet metal raceway or plastic wiring duct. Wiring for 4 to 20 mA signal circuits shall be twisted shielded pairs not smaller than No. 18 AWG, and be separated at least 6 inches from any power wiring.
2. All interconnecting wires between panel mounted equipment and external equipment shall be terminated at numbered terminal blocks.
3. All panel wiring shall be routed in plastic raceway as manufactured by Carlon or equal.

D. Terminal Blocks

1. Terminal blocks shall be one-piece molded plastic blocks with screw type terminals and barriers rated for 300 volts. Terminals shall be double sided and supplied with removable covers to prevent accidental contact with live circuits. Terminals shall have permanent, legible identification, clearly visible with the protective cover removed.

2. Wires shall be terminated at the terminal blocks with crimp type, preinsulated, ring-tongue lugs. Lugs shall be of the appropriate size for the terminal block screws and for the number and size of the wires terminated.
3. Terminal blocks shall be Allen-Bradely Bulletin 1492, Style CD-3 or approved equal.

E. PLC

1. The PLC shall include memory and software to allow customer configurable programming in the field.
2. The PLC shall perform all on-line local control functions by means of a control program maintained within the unit's memory.
3. Supply sufficient number of I/O modules per the approved I/O schedule plus 10% spare capacity. All analog inputs shall be fully isolated differential types, capable of rejecting General Construction interference normally associated with industrial equipment including, but not limited to, transformers, motor starters contactors, and General Construction heaters. The analog outputs shall be configured for current loop operation (4-20 mA).

F. Operator Interface:

1. Provide panel mounted display and controls capable of displaying alarm list and process parameters and allowing the operator to adjust operation.

G. Battery Charger / DC UPS module

1. Max ratings: 30Vdc Input Voltage; 10A at 14 VDC load current
2. Diode protected for reverse and overvoltage conditions
3. As manufactured by Transtronics (BVUPS24) or equal

H. Sealed Lead-Acid Battery

1. Rating: 12VDC; 7AH
2. Float Voltage: 13.8 VDC
3. As manufactured by Transtronics (BAT12V7AH) or equal

I. Power Supply

1. 120 VAC Input; 24VDC Output
2. Transient Surge Protection via Varistor
3. As manufactured by Phoenix Contact (MACX) or equal

J. Radio and Antennas

1. Radio and antenna specifications shall be confirmed by the radio system supplier and shall match the existing radio network equipment currently utilized by the County.

2. Contractor to provide metal lattice tower for antenna mounting. Coordinate tower height and design with the radio system supplier to ensure adequate signal integrity.
3. Sample Radio Equipment Specifications (to be verified by the supplier):

    a) The radios shall be G.E. Model MP I (UHF) connected to the backup power source.
    b) AntennaS shall be directional base - Antenna Specialist, UHF Broad Band Yagis ASPR760. The antenna shall be mounted at the top of the lattice tower.
    c) Cable between the radio and antenna shall be standard 52 ohm, RG8 A/U shielded cable with PL connectors.
    d) Lighting Protectors SS-3906 shall be installed on the antenna side of the RTU.

2.2 APPROVED SUPPLIERS

A. SCADA Panel Provider/Integrator –
The Rovisys Company
Aurora, OH – Colleen Wolfgang

B. Radio System Supplier -
VASU Communications
Mansfield, OH – Mike Vasu

C. MCC Panel/Pump Station Control Panel
Xylem Flygt

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prior to all work of this section, carefully inspect the existing facilities and install work of all other trades and verify that all such work is complete to the point where installation may properly commence.

B. The equipment shall be installed in accordance with the control panel supplier's instruction and located as shown on the drawings, or as approved by the Engineer. Local General Construction shutoffs for power supplies to equipment shall be provided.

C. Discrepancies:

1. In the event of a discrepancy, immediately notify the Engineer.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 EXECUTION

A. The contractor shall furnish the services of the serviceman, all special tools, calibration equipment and labor required for the following:

1. Checking the installation of all components before power is applied.
2. Placing the software and hardware into operation and making necessary adjustments.

B. Should the equipment fail to operate in accordance with the specifications and manufacturer's data, corrective measures shall be taken by the contractor or the defective equipment shall be removed and replaced with equipment which will satisfy the specified conditions.

C. When all required approvals of this portion of the work have been obtained, and at a time designated by the Owner, thoroughly demonstrate to the Owner's personnel the operation and maintenance of all items installed under the work of this section.

3.3 INSPECTION

A. A. Installation: Supervision and assistance to ensure that proper procedures are following during installation of the system.

B. B. Start-up: Energize and verify correct and satisfactory operation of all components of the system. This operation shall include verification of the accuracy of all inter-equipment wiring.

C. Cystem Commissioning: Calibrate and place into operation the complete system. The validity of all data base information in the system shall be checked and corrected as part of this operation. Calibration of all process control loops external to the equipment being supplied by other equipment suppliers will be the responsibility of the System Integrator prior to system commissioning.

END OF SECTION 406300

SECTION 409123.34 - FLOW METER

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. This section includes furnishing and installing all required flow meters as shown on the Drawings, as specified or directed. The meter shall include a primary metering element, sensors, transmitter, and other appurtenances required for a complete installation.

B. It is the intent of this contract that the final installation shall be complete in all respects and the Contractor shall be responsible for minor details and any necessary special construction not specifically included in the Drawings or Specifications.

C. Refer to Special Provisions for the type of flow meters required.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.4 RESPONSIBILITY AND COORDINATION

A. Under this Contract, the Contractor shall be responsible for the purchase, storage, and installation of the flow meter, transmitter, and any accessories required. The device shall be completely wired, tested, and be suitable for operation. The control equipment wiring between the device and the power supply, and piping between meter and transmitter shall be the responsibility of the Contractor. The Drawings and Specifications are intended to illustrate and define the equipment installation; however, the Contractor shall be properly install, adjust, and place in operation the complete installation. The Contractor shall assume full responsibility for additional costs which may result from unauthorized deviations from the Specifications.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and application instructions.

PART 2 - PRODUCTS

2.1 VENTURI METERS (Cast Iron)

A. The meter shall include a metering tube, nonclogging, nonprotruding pressure sensors, and a transmitter.

B. Metering tube

1. The metering tube shall be of the pressure differential producing venturi type utilizing pure static pressure sensed at the inlet and throat.
2. The metering element shall have no debris collecting cavities, nor protrusions in the flow stream.
3. The venturi tube shall be constructed of ASTM Designation A-126, Class B cast iron with flanged ends. The throat shall be bronze lined in conformance with ASTM B 61.
4. The tube shall have single pressure connections at the inlet and throat on both sides; one set with corporation instrument cocks for the sensor assemblies and the other for a manometer connection. In addition, vent ports and drains shall be included on a 90 degree plane to the metering tap.
5. The manufacturer shall furnish certified data substaining tube performance with a short radius elbow, one pipe diameter upstream of the tube. Accuracy shall be plus or minus 1% of the actual rate of flow corresponding to the differential produced over the indicated flow range.
6. The venturi meter shall be as manufactured by BIF, Foxboro, or equal.

C. Sensors

1. The probe sensors shall operate on a 1:1 transfer of pressures, using a pure liquid on one side of the sensing membrane to oppose the contaminated fluid. The probes shall function on the nozzle-armature, null balance principle which maintains within the probes a liquid pressure exactly equal to the pressure changes being sensed. Static pressure and temperature differences between the two probes shall be automatically cancelled out such that the signal difference between the two probes represents the true differential pressure produced by the venturi.
2. The interface membrane shall be located at the inside diameter of the venturi tube at the two sensing points, thus no contaminated fluid shall leave the interior of the tube. The membranes shall be of Viton and the actuating liquid a hydraulic oil not susceptible to freezing.
3. The liquid for the probes shall be circulated continuously by a small gear pump requiring 117 volt, 60 Hz, 150 watt power supply.
4. The 316 stainless steel probes shall be inserted into the venturi openings through corporation cocks and the insertion depth shall be controlled by a location collar on the shank of the probes, factory set. Each pressure area of the probe assemblies shall be equipped with quick-disconnect poppet valves to permit field checking by gauge or manometer. The probes shall be submersible.

D. Transmitter

1. The pressure transmitter shall measure differential pressure across the venturi flow metering element. The pressure transmitter shall be a piezoresistive strain gauge type. It shall be a two-wire type transmitter with local indicator and valve manifold.

2. The transmitter shall have a NEMA-4 enclosure capable of being mounted on a pipe or wall within 50 ft. of the venturi meter. The transmitter shall be mounted to minimize exposure to shock and vibration. The transmitter shall include all mounting hardware.
3. The transmitter shall be capable of operation at a static pressure of 200 psi and a temperature between 30 degrees F and 130 degrees F.
4. The transmitter shall be accurate to plus or minus 0.01% of full scale over an 8 to 1 ratio.
5. The transmitter shall have a repeatability of plus or minus 0.1% of full scale and a maximum error due to temperature of 0.05% of span per degree F.
6. The transmitter shall operate on a 24 volt DC power supply and shall output a 4-20 ma DC signal proportional to the measured differential pressure.
7. The local indicator shall be integrally mounted on the transmitter. The indicator shall have a 0 to 100% maximum flow square root scale. Accuracy shall be plus or minus 2% of span.
8. Valve manifold shall be a three valve made of 316 stainless steel and teflon packing.
9. The transmitter shall be as manufactured by American Digital Systems, or equal.
10. Power to the transmitter shall be supplied by the Remote Multiplexing Terminal (RMT).

2.2 VENTURI METERS (Plastic Insert Type)

A. The meter shall include a plastic insert type Venturi Tube, pressure sensors, and a transmitter.

B. Venturi Tube

1. The venturi tube shall be of the pressure differential producing type and have a modified venturi contour which utilizes pure static pressure sensed at the inlet and throat. The venturi tube shall be of the insert design type permitting installation within any flanged pipe joint.
2. The inlet throat holding flange and outlet cones shall be fabricated from thermosetting polyester, reinforced with not less than 25% glass by weight.
3. The pressure connections shall be 1/4 in. NPT female connections, Type 316 stainless steel, located in the inlet and throat sections of the primary metering unit.
4. The seals shall be neoprene rings cemented to the flange. No gaskets shall protrude over the inlet top or into the piping causing error.
5. The manufacturer shall furnish certified data substantiating tube performance with a short radius elbow, located one pipe diameter upstream of the tube. Accuracy shall be plus or minus 1% of the actual rate of flow corresponding to the differential produced over the indicated flow range.
6. The venturi tube shall be as manufactured by BIF, Leopold, or equal.

C. Indicator

1. The indicator shall be of the direct reading differential pressure type and shall not require power supply or transmitter.
2. The unit shall be provided to be wall mounted or pipe mounted as per the Special Provisions.

3. The indicator shall be a 4-1/2 inch circular style, with units calibrated in SCFM. The scale shall indicate 0 to full scale to the maximum flow indicated at 2% increments.
4. The unit shall also include all differential pressure tubing necessary for installation and a three-way manifold valve for zeroing and shut-off purposes. The tubing shall be constructed of 1/4 inch copper material conforming to Item 170, Small Piping. Tubing shall be connected to the pressure taps on the Venturi insert.
5. Indicator shall be Series 1120 by Meriam Instruments, or equal and shall be fully compatible with the Venturi insert.
6. Unit mounting and connecting, including manifold valve shall be the Contractor's responsibility, who shall submit piping and installation drawings to the Engineer for approval.

2.3 MAGNETIC METERS

A. Each meter shall include a magnetic metering tube, removable electrode, a signal converter with local indicator, flow totalizer and listed specials.

B. Each metering system shall be accurate to less than plus or minus 1% of the actual flow rate.

C. Metering tube

1. The magnetic flow meter shall operate on DC voltage in which the voltage induced is directly proportional to the volumetric flow through the meter.
2. The metering tube shall be constructed of 304 stainless steel with 150 lb. ANSI flange for connections. The meter liner shall be Teflon.
3. By nature of its design, the meter shall feature zero stabilization with no drift, low power consumption and require no field calibration unless one of the control PC boards is replaced.
4. The meter and housing shall be capable of submergence and shall meet NEMA 6P standards, as a minimum. Refer to Special Provisions.
5. When required by the Special Provisions, especially on intermittent flows, the meter shall be provided with positive zero return.
6. Grounding of the meter shall be accomplished by the Manufacturer's standard method for use on lined or non-conductive pipe. Grounding rings shall be of Type 316 stainless steel.
7. The meter shall run on a 115 volt, 60 Hz, single phase power supply, which shall be provided by the Electrical Contractor.
8. The meter shall be accurate to plus or minus 0.5% of full scale under the specified operating conditions. Voltage or frequency fluctuations in the power supply of plus or minus 10% shall not produce an error of more than plus or minus 0.5% of full scale.
9. The meters shall be as manufactured by Brooks, Krohne, or equal.

D. Electrodes

1. The electrodes or electrode cartridge shall be Type 316 stainless steel and shall be capable of being removed in the field for cleaning with the meter on-line, under

pressure and without recalibration. This shall be accomplished by inserting the electrode through a corporation cock or valved assembly.

2. The electrode housing shall also be made of 316 stainless steel.
3. The electrode shall be screwed into the end of the valve fitting to provide a positive seal rated at the same pressure as the meter.
4. The electrode will be fastened to the valve or meter by a chain of a sufficient length that will allow cleaning, but prevent damage due to accidental dropping.

E. Signal converter - transmitter

1. The signal converter-transmitter shall be micro-processor based and shall be a product of the metering tube manufacturer. Each signal converter transmitter shall work with any of the flow meters provided. The unit shall be field scaleable and shall require no zero point adjustment. The unit shall be provided with self-diagnostics PC card, automatic data checking and data retention for a minimum of 10 years.
2. The signal converter-transmitter shall be wall mounted within 50 ft. of the flow meter. The signal converter-transmitter enclosure shall have a NEMA 4 minimum.
3. The signal converter-transmitter shall amplify and convert the DC input signal from the flow meter into a 4-20 ma DC signal proportional to the volumetric flow through the meter.
4. The DC signal shall drive an integral flow indicator.
5. The local flow indicator shall indicate flow in gallons per minute (GPM) and totalize.
6. The signal converter-transmitter shall run on a 115 volt, 60 Hz, single phase power supply, which shall be provided by the Electrical Contractor.
7. The signal converter-transmitter shall be accurate to plus or minus 0.5% of full scale under the specified operating conditions. Voltage of frequency fluctuations in the power supply of plus or minus 10% shall not produce an error of more than plus or minus 0.5% of full scale.

2.4 ULTRASONIC METERS

A. Ultrasonic flowmeter shall consist of flow tube and transmitter and in accordance with the flowmeter schedule.

B. Where specified in the meter schedule, the ultrasonic transducers will be 1-3/4" diameter (minimum) and 0.5 mega hertz in frequency.

C. The flowmetering system, flow tube and transmitter, shall be flow laboratory calibrated to an accuracy better than plus or minus 1% of actual volumetric flow for velocities above 1 foot per second. The accuracy of the flow calibration facility shall be plus or minus 0.25% or better and shall be a primary standard traceable to the National Bureau of Standards. The use of a secondary standard will not be permitted. A flow calibration test record will be provided to the engineer, showing test points at 0%, 1 FPS, and 3 additional upscale flow points. An NBS traceability certificate, to prove the use of a primary standard, will be provided when requested. Accuracy shall not be affected by changes in percent solids (up to the limit shown in the flowmeter schedule) or changes in fluid density or viscosity. Repeatability shall be plus or minus 0.3% of actual flow above 1 foot per second.

D. The flow tube shall offer no more obstruction to flow than an equivalent length of straight pipe. The flow tube end connections shall be 150 lb. ANSI Flanges.

The flow tube shall be carbon steel coated with a fused epoxy coating on all internal and external surfaces, or shall be fabricated of 316 stainless steel.

E. Acoustic pulses will be transmitted between the two transducers alternately in the upstream and downstream directions. The meter shall be capable of operation on as few as 2% of the attempted acoustic transmissions without degrading the stated accuracy.

F. For protection, the acoustic transducers will be mounted in weldments located on opposite sides of the flow tube. These weldments will be filled with an acoustically transparent material. Transducers mounted on the outside of the flow tube, requiring the acoustic energy to penetrate a metal pipe wall, will NOT be approved. Doppler type acoustic flowmeters will NOT be approved. The acoustic transducers will be field replaceable without shutting down or depressuring the process lines.

G. The "acoustic window" shall be flush with the inside of the flow tube.

H. The electronics will determine flow rate via the frequency difference principle of operation. To minimize ambient temperature effects, all acoustic signal processing circuitry should be multiplexed to include transducer driver circuitry and any receiving amplifiers. If all these circuits are not multiplexed, the electronics box will be equipped with a thermostat and heater to insure internal temperature stability.

I. The electronics will utilize the frequency difference to directly and digitally produce an output frequency proportional to flow. Integrator circuits (analog to pulse rate converters) to achieve this pulse rate will NOT be approved. This output frequency will be digitally scaleable from 0-10 PPH to 0-200 Hz. This scalability is required for future potential range changes. The accuracy and settability of the pulse rate scaler shall be plus or minus 1% or better. The accuracy and settability of the pulse rate scaler shall be plus or minus .1% or better. This scaled pulse rate will be used to directly drive all required totalizers. The pulse output shall be equipped with fold-back current limiting to prevent damage on accidental short circuit of the output leads.

J. A simultaneous output of 4-20 mA DC proportional to 0-100% flow can be provided and used for all required indicators and recorders. This output shall be isolated and floating to prevent ground loops when used with other equipment that has an established circuit common. The span adjustments shall be field changeable with internal calibrated switches or dials and will not require special test equipment.

K. Electronic circuitry shall detect and indicate if process fluid conditions or electronic malfunction precludes accurate operation. Indication of this condition will be visible from the outside of the transmitter case. In addition, an output contact closure will be provided to allow remote indication of this condition. This contact will be available to terminals in both normally open and normally closed positions and be rated at 2 amps. This same circuitry will detect empty pipe conditions and produce 0% output during an empty pipe.

L. The zero display shall be visible from the outside of the transmitter case and adjustable from the outside of the case.

M. Recovery from an empty pipe condition to accurate flow output signal shall occur within four seconds of a return to full pipe condition. Recovery from a power outage to accurate flow output signal shall occur within one second of power-on.

N. Troubleshooting of the flowmeter to determine electronic malfunctions versus cable, flow tube and sensor malfunctions, shall be easily accomplished via test switch which allows the transmitter to be exercised despite failures external to the transmitter. The transmitter shall be capable of use with any size flow tube and interchange of transmitters will not degrade accuracy more than plus or minus 0.1%. Transmitter replacement shall be accomplished without special test equipment and without circuit board changes. Special test equipment shall be defined as anything other than an output monitor for purposes of this specification.

O. The electronics shall be all solid state. All active electronic components shall be pre-screened and aged for 72 hours minimum at 130°F minimum. All printed circuit boards shall be potted or double-dip protective coated for environmental protection. All potentiometers and switches shall be the "sealed" variety for environmental protection. All enclosures, both flow sensor and electronics, shall be rated NEMA 4 and shall have capability of submergence in 30 feet of water for 48 hours. All conduit connections shall be the water-tight threaded type.

P. The flowmeter shall be capable of operating with 117V AC RMS, 60 hertz with no effect on accuracy from power supply fluctuations of plus or minus 12V AC RMS and plus or minus 6 hertz. Power consumption shall not exceed 40 watts.

Q. Lightning spike protectors to 600 milliwatt seconds shall be provided across the output signal leads, across signal lead common to ground and one (1) watt second across the power leads and from power common to case ground.

R. Should the ultrasonic flowmeter fail to function on the intended application as a result of application limitations of the ultrasonic flowmeter product, a magnetic flowmeter will be supplied as a replacement at the expense of the flowmeter manufacturer and/or responsible contractor. A letter signed by an officer of the flowmeter manufacturer or responsible contractor agreeing to these terms must accompany the submittals.

S. The flowmeter shall be a SPARLING Series 500 or approved equal.

T. Power to the transmitter shall be supplied by the Electrical Contractor.

2.5 TUBE METERS

A. Tube meters shall be accurate to within +/- 2% of actual flow for the specified meter range. Accuracy shall not be affected by pressure variations.

B. Meters shall be designed such that the normal flow range may be safely exceeded by 50% for intermittent use without loss of accuracy.

C. Meter shall be supplied with a totalizer of 6-digit, straight-reading type.

D. Meter shall be supplied with flanged ends for 150 psi service.

E. Housing and meter head shall be of close-grain fabricated steel neoprene coated. Drop pipe and gear box shall be cast bronze. The shafts, worm, worm gear and ball bearings shall be stainless steel.

F. Propeller shall be molded high-density plastic. Fabricated steel liners with coating and straightening vanes polyurethane or neoprene shall be furnished.

G. Meter shall be factory wet flow laboratory calibrated by the manufacturer with a copy of certified accuracy test data available upon request.

H. Meter shall be supplied with FT 193 transmitter by Sparling, or equal, to provide true two-wire, 4-20 mA output for remote instrumentation. Transmitter shall receive 24 V DC power supply from receiving source.

I. Meter shall be Series FM 102 by Sparling/Instruments Co., Inc., Model MLFT by Badger Meter, Inc., or equal.

2.6 TERMINAL POINTS

A. Flow meter units shall be provided with terminal points to facilitate the exchange of the central control functions between the units and the process control system as indicated on the Electrical Drawings.

2.7 SHOP PAINTING

A. The exterior surfaces of the metering tube shall be thoroughly cleaned of dirt, grease, oil, rust, scale, or other injurious substances. Exterior metal surfaces shall be sandblasted in accordance with SSPC-SP10, Near White Blast Cleaning.

B. All non-galvanized ferrous surface shall then receive a shop coat of a universally compatible primer.

PART 3 - EXECUTION

3.1 ERECTION

A. The equipment shall be erected in accordance with the manufacturer's recommendations.

3.2 INSPECTION, STARTUP, AND TESTING

A. The manufacturer of the flow meters shall provide a representative to check the installation, make final adjustments, supervise initial startup of each system, and prepare a written report thereof for the Owner.

B. The representative shall also instruct the Owner's personnel in the operation and maintenance of the equipment.

3.3 OPERATION AND MAINTENANCE MANUALS

A. Prior to or with the delivery of equipment, the manufacturer shall provide copies of an operation and maintenance manual including storage, installation, start-up, operating and maintenance instructions, and a complete parts list and recommended spare parts list. The O & M Manuals shall be in compliance with General Requirements.

3.4 SPECIAL PROVISIONS

A. Meters:

Meter	6-inch Magnetic Flow Meter
Pipe Size	DIP, 6 inches
Liquid	Return Sludge
Solids	1 - 2%
Flow Rate	0 to 500 GPM
Mounting	Wall
Housing	Nema 4X, Wall Mounting
Number Required	One (1)

Meter	3-inch Magnetic Flow Meter
Pipe Size	DIP, 3 inches
Liquid	Waste Sludge
Solids	1 - 2%
Flow Rate	0 to 25 GPM
Mounting	Wall
Housing	Nema 4X, Wall Mounting
Number Required	One (1)

B. Venturi Meters

No.	No. Req'd	Flow Size	Type	Indicator	Location	Service	Range
1	1	4"	Insert	Wall Mounted	Grit Building	Air Aerated Grit Tank	90-200 SCFM
2	1	4"	Insert	Pipe Mounted	Operations Building	Air Aerobic Digester	350-800 SCFM
3	1	4"	Insert	Pipe Mounted	Operations Building	Air Final Settling Tanks	0-75 SCFM

END OF SECTION 409123.34

SECTION 6
STANDARD SPECIFICATIONS

STANDARD SPECIFICATIONS

1. The "Construction and Material Specifications" of the State of Ohio Department of Transportation (ODOT), 2023 edition, current ODOT supplemental specifications, and current ODOT standard drawings shall govern work and materials which are not specified or modified herein or on the project Contract Drawings. All references to "the Department" shall be changed to "the Owner or his Representative." The project Contract Drawings and Specifications, in the event of a discrepancy, shall supersede the ODOT Specifications.

   The absence of an “As Per Plan” designation on some item descriptions in the proposal for which there are clear and controlling plan notes, specifications, or other requirements does not relieve the Contractor of the responsibility to read, bid and construct those particular items in accordance with the governing plan notes, specifications, or other requirements and the Contractor shall have no basis of claim based upon an “order of precedence”.

   ODOT 104.02 D., 611.04, 611.12, and 611.13 shall not apply to this project.

SECTION 7
SPECIFIC PROJECT REQUIREMENTS

SPECIFIC PROJECT REQUIREMENTS

1 - CONTACT DURING BIDDING

1.1 All questions during bidding should be addressed to Tim McLaughlin, P.E., at Verdantas LLC, 8150 Sterling Court, Mentor, OH 44060, at V232478@verdantas.com.

1 - MSDS SHEETS

1.1 Contractors or suppliers shall furnish MSDS sheets for any hazardous substance brought onto county property or a county job site.

3 - GEOTECHNICAL REPORT

3.1 A geotechnical report dated July 1, 2026 by CT Consultants A Verdantas Company was relied upon by the Engineer in the preparation of drawings and specifications. Copies of the report are provided along with each bid set but are not considered to be part of the contract documents.

4 - CORRECTION PERIOD

4.1 The Correction Period in Section 13.07 of the General Conditions shall be changed from a one (1) year to a two (2) year period.

5 - INSURANCE

5.1 Section SC-5.04(D) of the Supplementary Conditions shall be deleted and no "all risk builders risk" or "installation floater" insurance need be purchased by the Contractor.

5.2 See the following Bid Set Sections for Insurance Requirements:

A. Section 1, Instructions to Bidders, Part 10 Insurance
B. Section 3, General Conditions, Article 5 Bonds and Insurance (EJCDC) or Article 11 Insurance and Bonds (AIA), whichever is used in the Bid Set
C. Section 4, Supplemental Conditions

6 - WORKING HOURS

6.1 No work shall be performed between the hours of 7:30 p.m. and 7:30 a.m. nor on Saturday, Sunday, or legal Holidays, without written permission of the Owner.

7 - PROJECT COMPLETION

7.1 All work including restoration and clean-up shall be completed no later than the contract completion date. Failure to complete all work within the allotted time will result in assessment of liquidated damages. Upon completion of all work and written notification of same by the Contractor, the Engineer and Owner will compile a punch list. The punch list will be sent to the Contractor. All punch list work shall be completed to the satisfaction of the Engineer and the Owner within 14 days after receipt of the punch list. Failure to

complete the punch list work within the allotted time will result in assessment of liquidated damages.

8- SUBSTANCE USE PREVENTION AND RECOVERY (SUPR) PROGRAM

8.1 Formerly known as the Drug-Free Safety Program, is BWC's voluntary safety program developed to address workplace use and misuse of alcohol and other drugs. During the life of this project, the Contractor and all its Subcontractors that provide labor on the Project site must be enrolled in and remain in good standing in the Ohio Bureau of Worker's Compensation ("OBWC") Substance Use Prevention and Recovery (SUPR) or a comparable program approved by the OBWC.

9 - OHIO ETHICS LAW

9.1 Contractor agrees that it is currently in compliance and will continue to adhere to the requirements of Ohio Ethics law as provided by Section 102.03 and 102.04 of the Ohio Revised Code.

10 - PERIODIC PAYMENTS

10.1 This project is expected to be funded in whole or in part by the Ohio EPA WPCLF Program. The Contractor shall comply with all requirements of this program. The periodic payments to the Contractor may be made in whole or in part through the OWNER and/or OWDA. In paragraph 14.02 C.1. of the General Conditions, change "ten days" to "sixty days."

10.2 Ohio EPA must approve all change orders prior to a change order item being paid on a pay estimate.

11 - SIGNAGE

11.1 (If the recipient has decided to pick the physical sign option of the grant's Signage Term and Condition) The Contractor is required to place a physical sign displaying the EPA logo at the construction site for this project in an easily visible location that can be directly linked to the work taking place. The sign must be maintained in good condition throughout the construction period. In cases where the construction site covers a large area (e.g., lead service line replacement or septic tank repair/replacement projects), a sign should be placed in an easily visible location near where the work is being performed (e.g., entrance to the neighborhood, along a main road through town, etc.). Signage costs are considered an allowable grant expense, provided the costs associated with the signage are reasonable. Additionally, to increase public awareness of projects serving communities where English is not the predominant language, assistance contractors are encouraged to translate the language on signs (excluding the EPA logo or seal) into the appropriate non-English language(s). The costs of such translation are allowable grant expenses, provided the costs are reasonable.

11.2 Procuring Signs: Consistent with Section 6002 of RCRA, 42 U.S.C. 6962, and 2 C.F.R. 200.323, contractors are encouraged to use recycled or recovered materials when procuring signs.

11.3 EPA Logo: The contractor will ensure that signage displays the EPA logo. The EPA logo must not be displayed in a manner that implies that EPA itself is conducting the project. Instead, the EPA logo must be accompanied with a statement indicating that the contractor received financial assistance from EPA for the project.

11.4 The contractor will ensure compliance with the sign specifications provided by the EPA Office of Public Affairs (OPA) available at: https://www.epa.gov/grants/epa-logo-seal-specifications-signage-produced-epa-assistance-agreement-recipients. As provided in the sign specifications from OPA, the EPA logo is the preferred identifier for assistance agreement projects and use of the EPA seal requires prior approval from the EPA. To obtain the appropriate EPA logo or seal graphic file, the contractor should send a request directly to Londa Scott-Forte (scott-forte.londa@epa.gov) (202-564-1504) and Jini Ryan (ryan.jini@epa.gov) (202-564-1075). Please explain in the message that the EPA logo is to be used on signage at a construction site funded with EPA assistance and copy the EPA Project Officer on the message.

END OF SECTION

SECTION 8
SPECIAL REQUIREMENTS - EPA

Contract Document Provisions

- The following contract requirements and forms are to be included in the construction contract documents. Completed copies of the forms are to be submitted to Ohio EPA within one week after bids are received, or sooner, dependent on your individual project schedule. Bid packages for WPCLF projects should be submitted to DEFA in the central office while bid packages for WSRLA projects should be submitted to the appropriate DDAGW district office.

Equal Employment Opportunity (EEO) Requirements

The Contractor's EEO Certification Form must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.
NOTE: If the loan applicant has its own EEO requirements, local procedures and forms may be substituted for the EPA form.

Debarment

The Certification Regarding Debarment, Suspension, and Other Responsibility Matters must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

Disadvantaged Business Enterprises (DBE) Utilization

The DBE Specification language and instructions to the bidders and Forms 6100-3 and 6100-4 must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid.
NOTE: If the loan applicant has its own DBE requirements or if other funding programs with potentially competing DBE requirements are participating in the project funding, please contact Ohio EPA – DEFA for specific instructions regarding the DBE requirements.

Davis-Bacon wage rate requirements

The contract documents must include language that requires contractors and subcontractors to pay wages at rates not less than those prevailing on similar projects within the area as determined by the US Secretary of Labor. In addition, the loan recipient will be required to conduct wage interviews and monitor payroll for compliance.

Build America, Buy America (Lead Service Line, Emerging Contaminant, Equivalency Projects)

Build America Buy America Act (BABA) requirements apply to Lead Service Line, Emerging Contaminants and equivalency projects funded by a WPCLF assistance agreement and/or a WSRLA assistance agreement. Equivalency projects are those receiving funding from federal capitalization grants that support the WPCLF and WSRLA programs. The acknowledgement form must be included in the contract documents. The acknowledgement form should be signed by the contractor and submitted with the final bid package. It is recommended that the BABA guidance document and questions and answers document be included in the contract documents.

American Iron and Steel

All treatment works projects funded by a WPCLF assistance agreement and all public water system projects funded by a WSRLA assistance agreement are required to comply with American Iron and Steel (AIS) requirements. The acknowledgement form must be included in the contract documents. The acknowledgement form should be signed by the contractor and submitted with the final bid package. It is recommended that the AIS guidance document and questions and answers document be included in the contract documents.

- The following contract requirements are to be included in the construction contract documents but are not required to be submitted to Ohio EPA for contract endorsement.

Violating Facilities Clause

Language prohibiting this use of equipment or services from anyone on the EPA List of Violating Facilities must be included in the contract documents.

Small Businesses in Rural Areas (SBRA)

Language encouraging the participation of small businesses in rural areas should be included in the contract documents.

Prohibition on Telecommunications and Video Surveillance

Restrictions to loan recipients and subrecipients on certain telecommunications and video surveillance services or equipment due to Public Law 115-232.

Insurance Provisions

Section 3.5 of the WPCLF/WSRLA Loan Agreement contains specific requirements regarding insurance for all contractors and all subcontractors for the life of the contract. These insurance requirements must be reflected in the contract documents. Adjust the language as needed to meet the specifics of the construction project while still meeting the provisions of the Loan Agreement.

Materials Testing

In addition to the details included with specific equipment testing in the specifications, there should be an overall statement regarding testing for the project. Adjust the language as needed to meet the specifics of the construction project.

Continuous Treatment Provisions

It is important that construction activities not result in any temporary violations of Drinking Water or NPDES permit requirements (for permitted facilities). Construction activities should interrupt wastewater service to the individual resident as little as possible. For drinking water projects, it is important that construction activities not result in any disruption of service. The example language is intended for construction work occurring at an existing drinking water plant or a WWTP and must be adjusted to meet the specifics of the construction project.

WPCLF/WSRLA Change Order Form

All change orders for the construction project must be executed on the WPCLF/WSRLA change order form. The form must be (1) included in the contract documents and (2) the instructions referenced in the Contract Documents.

- The following contract requirements are provided in Ohio Revised Code (ORC). Some loan applicants have local requirements that supersede ORC provisions for competitive bidding, and these local requirements can be applied instead of ORC, except for those requirements specified in the WPCLF/WSRLA loan agreements.

Bid Guarantee

The requirements for a bid guarantee (which can be a bond or a certified check, cashier's check, or letter of credit) are covered in ORC 153.54.

Payment and Performance Bonds

The requirements for a Payment and Performance Bond are covered in ORC 153.54 and Section 3.4 of the WPCLF/WSRLA Loan Agreements.

Payment Retention

The requirement for payment retainage is provided in ORC153.12. Details on how the escrow account that holds the retainage are provided in ORC 153.13. Further details on how and when to pay for materials delivered and installed are provided in ORC 153.14.

Completion Time

The contract documents must state the length of the contract time per ORC 153.19. The dates for Initiation of Operation and Project Completion are specified in the WPCLF/WSRLA Loan Agreements and need to coincide with the specified contract time.

- The following are contract provisions to consider but are not required. The language provided for each are samples only and must be adjusted to reflect the specifics of the project and local needs.

Local Protest Procedure

Some statement as to when a valid protest must be filed, in what form it must be filed and who it must be filed with should be included. ORC 153.12 has some default procedures for handling disputes. If the owner wants more control than provided in ORC, a procedure needs to be spelled out in the Contract Documents.

Basis and Method for Award

The contract documents should include some language that clearly states what the Owner will consider when determining the successful bidder and to provide a clear basis for the Owner when they have a need to reject the low bidder and go with a different bidder.

Payment Methods

To minimize uncertainty and arguments that can slow down the progress of construction it is useful to provide language stating how and when the Contractor will get paid. In addition to ORC and other local requirements, the involvement of public funding Agencies such as the WPCLF, WSRLA, Ohio Public Works Commission and Community Development Block Grant impact the process and timing for payments.

Contract Documents Review (pre-advertising)

Whenever possible, all the provisions listed above must be included in the contract documents for the project prior to advertisement for bids. Ohio EPA's review for these contract provisions will occur as part of our normal detail plans and specifications review. The bidding documents are to be submitted to Ohio EPA for review regardless of whether a Permit to Install or a Plan Approval is required for the project.

After bidding has started:

In those cases when WPCLF or WSRLA funding is being requested after advertisement for bids has started, add all missing contract provisions, forms, and requirements via addendum.

After bids have been opened but before contracts have been signed:

If the bid advertisement period is over and bids have been opened, but the construction contract have not been signed yet, provide a draft contract change order which would be used to incorporate all missing contract provisions, forms, and requirements into the contract. This should be done in consultation with local legal counsel to address any potential bid protest concerns.

Construction contracts have already been signed:

If the construction contract has already been signed, a contract change order must be executed incorporating all missing contract provisions, forms, and requirements into the contract.

A Contract Documents Review checklist is provided here to help ensure that all requirements are included and to help expedite Ohio EPA's review of your documents.

Bid Package Submittals (post-advertising)

Certain documents must be submitted to Ohio EPA within one week after bids are received, or sooner dependent on your individual project schedule. Please look here for a complete list of the required submittals.

Disadvantaged Business Enterprises (DBE) Utilization

(Required Contract Provision)

USEPA has a program to encourage the participation of disadvantaged businesses in the construction activities funded by the Clean Water and Drinking Water SRF's. "DBE" is an all-inclusive term that includes Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Areas (SBRA), HUBZone Small Business, Labor Surplus Area Firms (LSAF), and other entities defined as socially and/or economically disadvantaged. While the WPCLF and WSRLA strongly encourage participation by all disadvantaged groups, specific participation goals are negotiated with USEPA only for Minority Business Enterprises and Women's Business Enterprises.

Goals

As a condition of receiving capitalization grants from U.S. EPA for the Water Pollution Control Loan Fund (WPCLF) and the Water Supply Revolving Loan Account (WSRLA), the Ohio EPA negotiates "fair share" Disadvantaged Business Enterprises (DBE) objectives with U.S. EPA. **The current negotiated goal for construction related activities is 5.4% (the total goal is based on 3.1% of MBEs and 2.3% of WBEs participation).** Recently, the USEPA issued a class exemption on some Disadvantaged Business Enterprise (DBE) requirements: https://www.epa.gov/grants/rain-2025-g02. While the exemption removes reporting and recordkeeping requirements it does not eliminate the good faith effort (GFE) requirement. As noted in this exemption, "Nothing in this class exception and waiver affects EPA's statutory obligations or agency and recipient obligations under 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, including the considerations ("GFE") listed in 2 CFR 200.321 when procuring goods and services under the EPA award." Based on the language of the exemption, the current DBE goal for Ohio EPA State Revolving Funds (SFRs) are still in place and a GFE is mandatory for all loan recipients that do not meet the DBE goal.

DBE Certification

Under the DBE program, qualified DBE's are those that have been certified as an MBE or WBE. Certifications can be obtained from a federal agency such as the Small Business Administration or the Department of Transportation or by an approved State agency. The Unified Certification Program (UCP) administered by the Ohio Department of Transportation (ODOT) can provide the necessary DBE certifications. Information on the UCP can be found at www.ohioucp.org as well as the ODOT website https://www.transportation.ohio.gov/programs/business-economic-opportunity/dbe. The Department of Development operates the Encouraging Diversity Growth and Equity Program (EDGE), the other state approved DBE certification program. Information on EDGE can be found at https://development.ohio.gov/business/minority-business/business-certifications/encouraging-diversity-growth-and-equity-program.

On September 30, 2025, USDOT issued an interim final ruling in regard to the DBE program. Changes to the DBE guidelines have affected the ODOT certification program, but it does not affect the requirement for SRFs to meet the GFE for DBE participation.

All previously certified DBEs through the ODOT DBE program are no longer effective and all DBEs will need to resubmit for certification that follows the new guidelines. DAS EDGE is unaffected by this change and can be used as part of the SRF requirements towards meeting the DBE goals of 5.4% of each loan. Because the ODOT

program currently does not include any certified DBEs, Ohio EPA will accept any certified DBEs through non-

approved certification programs that follow the ODOT program 51% ownership requirement as part of a GFE to meet the DBE goals.

DBE Qualifications

To qualify for MBE certification, businesses must be 51 percent owned and controlled by a U.S. citizen and Ohio resident belonging to an African American, Native American, Hispanic, or Asian American ethnic group. In addition, the business must be in operation for at least one year prior to submitting an application. For DBE status, a business must be at least 51 percent owned by a socially and economically disadvantaged person who participates in the daily operations of the business. This person must be a woman or of African-American, Hispanic, Native American, Asian American ethnicity.

Program Requirements

To comply with DBE program requirements the WPCLF/WSRLA loan recipient must do the following:

1. Create and maintain a bidder's list (see description below)
2. Include contract conditions applicable to the DBE program in all procurement contracts entered into by the Borrower for all WPCLF and WSRLA projects. These conditions are listed below.
3. Follow, document, and maintain documentation of good faith efforts on the part of prime contractors to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project.
4. Review the Form 6100-3 and 6100-4 submittals provided by bidders on the project for completeness and obtain any additional information necessary to verify the certification status of all proposed subcontractors.
5. Obtain documentation of the good faith efforts of the prime contractor if the prime contractor does not meet the MBE or WBE goal.
6. Obtain a written confirmation from any prime contractor states that they will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual.
7. Submit the following to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined:
    - Form 6100-3 from each subcontractor
    - Form 6100-4 from each prime contractor
    - A copy of the Good Faith Efforts documentation from any prime contractors that will not meet the MBE and WBE goals,
    - If any of the prime contractors will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual, a copy of the written confirmation from that prime contractor

NOTE: It is up to the WPCLF/WSRLA loan recipient whether or not to require completion and submission of Forms 6100-3 and 6100-4 from all bidders with the bid proposal or to accept completion and submission from the successful bidder(s) only at some time after bids are received. Regardless of whether the forms are completed and submitted with the bids or at some later time once the successful bidders are identified, completed forms are to be submitted to Ohio EPA with bid package.

To comply with DBE program requirements all prime contractors must do the following:

1. Follow, document, and maintain documentation of their good faith efforts.
2. Complete and submit Form 6100-4 DBE Subcontractor Utilization Summary as part of the bid proposal package to the loan recipient.
3. Have its Disadvantaged Business Enterprise subcontractors complete Form 6100-3 DBE Subcontractor Proposed Performance Form and submit those as part of the bid proposal package to the loan recipient.

Bidders List

The Borrower must create, maintain, and use a bidders list for purposes of soliciting both MBE/WBEs and non-MBE/WBEs during procurement of construction, equipment, supplies, and services. This list shall include:

1. Entity's name with point of contact;
2. Entity's mailing address, telephone number, and e-mail address;
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE.

Borrowers that receive less than $250,000 or less in any one fiscal year can be exempt from maintaining a Bidders List.

The Bidders List shall be maintained until the project period has expired and the Borrower is no longer receiving EPA funding. The Bidders List must include all firms that bid on the prime contracts, or bid or gave a quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs.

Required Contract Conditions

The DBE Specification language and instructions to the bidders and Forms 6100-2, 6100-3 and 6100-4 must be included in the contract documents and referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid for all WPCLF and WSRLA projects:

1. The prime contractor must pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the owner.
2. The prime contractor must notify the owner in writing prior to the termination of any Disadvantage Business Enterprise subcontractor for convenience by the prime contractor.
3. If a Disadvantage Business Enterprise contractor fails to complete work under the subcontract for any reason, the prime contractor must employ the six Good Faith Efforts (listed below) if soliciting a replacement contractor.
4. The prime contractor must employ the six Good Faith Efforts even if the prime contractor has achieved its fair share objectives.
5. An owner must ensure that each procurement contract it awards contains the following terms and conditions:

   The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Good Faith Efforts

Borrowers and their prime contractors must follow, document, and maintain documentation of their good faith efforts as listed below to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project by increasing DBE awareness of procurement efforts and outreach.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could be subcontracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in numbers 1 through 5 above.

DBE Forms

Form 6100-3 – Each prime contractor must have its DBE subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form**. This form gives the DBE subcontractor the opportunity to report the scope and cost of the subcontract and it should be forwarded to the Prime Contractor along with the DBE's quote. Each subcontractor completes one Form 6100-3. The Borrower must submit all Form 6100-3 forms to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-4 – Each prime contractor must complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the prime contractor's bid proposal package to the Borrower. This form summarizes the Prime Contractor's intended use of identified DBE(s) and the estimated dollar amount of each subcontract. Only one Form 6100-4 form is required from each Prime Contractor. The Borrower must submit this form to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Violating Facilities Clause

ViolatingFacilities:

The Contractor agrees to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

Requirement For Utilization Of Small Businesses In Rural Areas (SBRA)

This procurement is subject to the EPA policy of encouraging the participation of small businesses in rural areas. It is EPA policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practicable. The objective is to assure that such small business entities are afforded the maximum practicable opportunity to participate as subcontractors, suppliers and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

This procurement is subject to the EPA policy of encouraging the participation of small business in rural areas (SBRAs).

Local Protest Procedure

Protests

A protest based upon an alleged violation of the procurement requirement may be filed against the OWNER's procurement action by a party with an adversely affected direct financial interest. The protest shall be filed with the Mayor. The OWNER shall determine the protest. The OWNER may request additional information or a hearing in order to resolve the protest.

A protest shall be filed as early as possible during the procurement process, but must be received by the OWNER no later than one week after the basis of the protest is known or should have been known, whichever is earlier. If the protest is mailed, the protester bears the risk of nondelivery with in the required time period.

A protest must clearly present the procurement requirement being protested, the facts which support the protest, and any other information necessary to support the protest.

Continuous Treatment Provisions

It is important that construction activities not result in any temporary violations of NPDES permit requirements (for permitted facilities) and construction activities should interrupt wastewater service to the individual resident as little as possible. For drinking water projects, it is important that construction activities not result in any disruption of service. Any disruption of service must be immediately reported to the Ohio EPA, Drinking Water Section of the appropriate district office.

Continuous Treatment (wastewater projects)

Federal regulations prohibit by-passing of any sewage during construction operations. The Contractor will be responsible for providing any required temporary pumping facilities piping, etc., necessary to complete the project without any plant by-passing and continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

Continuous Treatment (drinking water projects)

The Contractor will be responsible for obtaining approval from Ohio EPA for use of temporary pumping facilities, piping and other items in order to complete the project without any plant by-passing. Continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

WPCLF/WSRLA Payments

This project is funded in whole or in part by funds from the Water Pollution Control Loan Fund (WPCLF) or the Water Supply Revolving Loan Account (WSRLA) as administered by the Ohio EPA-DEFA and the Ohio Water Development Authority (OWDA). The Contractor shall comply with all requirements of these programs. The Owner shall be responsible for the progress payments to the Contractor if the Owner becomes ineligible for further payments due to circumstances which are of no fault of the Contractor. The monthly payments to vendors may be made through the Owner, the OWDA, or both as deemed by the Owner.

The time frame for payment of pay estimates by the Owner and/or Special Funding Agency(s) may be up to 60 calendar days from date of receipt of pay estimate from Engineer to Owner. Ohio EPA/DEFA must approve all change orders before the change order may be submitted for payment on a pay estimate.

State of Ohio

WATER POLLUTION CONTROL LOAN FUND (WPCLF) /
WATER SUPPLY REVOLVING LOAN ACCOUNT (WSRLA)

CONTRACT CHANGE ORDER

RECIPIENT_____ CHANGE ORDER NBR _____

LOAN NUMBER_____ CONTRACT _____

OWDA PROJECT No. _____ DATE _____

Description of Change:

The time provided for completion in the contract for the above items is (increased/decreased) by ____ calendar days.

RECOMMENDED BY: _____ DATE: _____
(Engineer)

APPROVED BY: _____ DATE: _____
(Recipient)

ACCEPTED BY: _____ DATE: _____
(Contractor)

_____
(Company)

Original Contract Amt		
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		

OWDA APPROVAL

The above proposal is hereby accepted and I recommend that it be approved and made a part of the contract noted above. The approval does not constitute an increase in the total loan amount, but represents approval for the work.

Ohio EPA Acceptance

Date

Chief Engineer

Date

CHANGE ORDER INSTRUCTIONS:

All Change Orders for this work, regardless of costs and whether Water Pollution Control Loan Fund (WPCLF) or Water Supply Revolving Loan Account (WSRLA) funding will be used to finance the changes, must be submitted to Ohio EPA for review.

Changes Requiring Prior Approval

Any change which substantially modifies the Project Facilities as specified in the Ohio EPA approved Facilities Plan and Final Permit to Install or Final Plan Approval (when applicable) or alters the direct or indirect impact of the Project Facilities upon the environment must be incorporated into a Change Order. One copy of the Change Order prior to execution is to be submitted to Ohio EPA for review and prior approval of the acceptability of the change. "Prior to execution" means before the Change Order is signed by the Owner.

Ohio EPA will review the Change Order and inform the Owner of the technical, environmental and operational acceptability of the change, and give the Owner permission to proceed with the proposed work.

All Other Changes

Change Orders not requiring prior approval as described above must be submitted to Ohio EPA within one (1) month of the time at which they are approved by the Owner. All change orders must be submitted electronically to dedicated change order email addresses for WPCLF and WSRLA projects.

Change Order Approval Process

After the Change Order is executed, one (1) copy of the Change Order, including the supporting documentation, is to be sent electronically to Ohio EPA for final review.

> The dedicated e-mail address for the electronic submittal of WPCLF Change Orders is EPAWPCLFCO@epa.ohio.gov.
>
> The dedicated e-mail address for the electronic submittal of WSRLA Change Orders is EPAWSRLACO@epa.ohio.gov.

After the Change Order is accepted and eligible costs determined, Ohio EPA will issue a letter informing the Owner and authorizing OWDA to disburse funds from Project Contingency for the work. The OEPA letter will be sent electronically along with a PDF of the WPCLF/WSRLA Change Order form which will be signed by all parties including Ohio EPA and OWDA.

Payments for Change Order Work

The Owner is precluded from submitting to the OWDA payment requests for Eligible Project Costs associated with the Change Orders until such time as the Ohio EPA's approval of the Change Orders has been obtained.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

November 3, 2022

MEMORANDUM

SUBJECT: Build America, Buy America Act Implementation Procedures for EPA Office of Water Federal Financial Assistance Programs

FROM: Radhika Fox
Assistant Administrator



TO: EPA Regional Water Division Directors, Regions I – X
EPA Office of Water Office Directors

OVERVIEW

The Biden-Harris Administration recognized the Nation's critical need for infrastructure investment, championing the Bipartisan Infrastructure Law (BIL), which Congress passed on November 15, 2021 (also known as the Infrastructure Investment and Jobs Act (IIJA)). The BIL will provide an unprecedented level of federal investment in water and wastewater infrastructure in communities across America.

In Title IX of the IIJA, Congress passed the Build America, Buy America (BABA) Act, which establishes strong and permanent domestic sourcing requirements across all Federal financial assistance programs for infrastructure. The U.S. Environmental Protection Agency (EPA) Office of Water is honored to help lead the implementation of these provisions and is proud of its near decade of successful implementation of the American Iron and Steel (AIS) provisions for its flagship water infrastructure programs.

This is a transformational opportunity to build a resilient supply chain and manufacturing base for critical products here in the United States that will spur investment in good-paying American manufacturing jobs and businesses. EPA's efforts to implement BABA will help cultivate the domestic manufacturing base for a wide range of products commonly used across the water sector but not currently made domestically. This will take time, and flexibility will be important to ensure that EPA can leverage critical water investments on time and on budget to protect public health and improve water quality.

IMPLEMENTATION

Recognizing the opportunity and need for BABA implementation guidance, the Made in America Office (MIAO) of the Office of Management and Budget (OMB) published Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure (OMB Guidance M-22-11) on April 18, 2022. The guidance provides government-wide implementation direction for all Federal financial assistance programs for infrastructure. Despite the extensive guidance developed by MIAO, EPA's Office of Water infrastructure investment programs have received many questions that were not addressed in OMB Guidance M-22-11 or that require further clarification for EPA water infrastructure programs. The following questions and answers serve to supplement OMB Guidance M-22-11 with implementation procedures specific to EPA's relevant water infrastructure programs.

Section 70914(a) of the IIJA states when a Buy America preference under BABA applies: "Not later than… [May 14, 2022], the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, Federal financial infrastructure investments obligated on or after May 14, 2022, must comply with the BABA requirements. Absent a waiver, all iron, steel, manufactured products, and construction materials permanently incorporated into an infrastructure project subject to the BABA requirements must be produced in the United States. For many of EPA's Office of Water infrastructure investment programs, the vast majority of products permanently incorporated into construction, maintenance, or repair projects must comply with the BABA requirements, with the exception of select construction materials (cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives), which are specifically excepted by the BABA statute.

EPA's Office of Water implements many infrastructure investment programs subject to BABA requirements, including the following:

- Alaska Native Villages and Rural Communities Water Grant Program (ANV) (and any associated Interagency Agreements with the Indian Health Service)
- Clean Water and Drinking Water State Revolving Fund Programs (CW and DWSRF)
- Clean Water and Drinking Water Grants to U.S. Territories and the District of Columbia
- Clean Water Indian and Drinking Water Tribal Infrastructure Grant Set-aside (and any associated Interagency Agreements with the Indian Health Service)
- Coastal Wetlands Planning, Protection and Restoration Act, (CWPPRA) Programs
- Congressionally Directed Spending/Community Project Funding (also known as Community Grants)
- Geographic Programs[1]
- Gulf Hypoxia Program
- National Estuaries Program (CWA Section 320)

[1] Geographic Programs include: Great Lakes Restoration Initiative, Chesapeake Bay, San Francisco Bay, Puget Sound, Long Island Sound, Gulf of Mexico, South Florida, Lake Champlain, Lake Pontchartrain, Southern New England Estuaries, Columbia River Basin, Pacific Northwest

- 319 Nonpoint Source Management Program Implementation
- Reducing Lead in Drinking Water Grant Program (SDWA §1459B)
- Assistance for Small and Disadvantaged Communities Grants: Small, Underserved, and Disadvantaged Community Grant Program (SUDC), Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) and Drinking Water Infrastructure Resilience & Sustainability (SDWA §1459A)
- Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)
- USMCA Implementing Legislation (Section 821 and Title IX, USMCA Supplemental Appropriations, 2020)
- U.S.-Mexico Border Water Infrastructure Program
- Voluntary School and Child Care Program Lead Testing and Remediation Grant Program (SDWA 1464(d))
- Water Infrastructure Finance and Innovation Act (WIFIA)

The questions and answers in this document apply to the implementation of BABA requirements for the Office of Water infrastructure programs listed above unless superseded by regulation, statute, or other applicable guidance. For many of the programs listed above which did not have domestic preference requirements prior to BABA, additional implementation details are pending or may be developed after the issuance of these procedures. In addition, EPA notes that more direction will be helpful to inform the determination and definition of domestic content in manufactured goods. Supplemental guidance on these and other issues, from either OMB or EPA, may be forthcoming. These implementation procedures may also apply to additional, unlisted EPA programs which may be required to apply BABA subsequent to publication of this memorandum (e.g., future funding programs which have been authorized, but not yet appropriated).

For more information on the BABA requirements, visit the EPA Office of Water's dedicated website – https://www.epa.gov/cwsrf/build-america-buy-america-baba – or contact your funding authority (such as your grants officer, portfolio manager, or state contact). For information on approved waivers, visit https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers. You may also email questions to BABA-OW@epa.gov.

This Implementation Procedures document is organized to provide responses to questions in the following topic areas:

- Section 1: General 4
- Section 2: Product Coverage 5
- Section 3: Co-funding 9
- Section 4: Waivers 10
- Section 5: Documenting Compliance 12
- Section 6: Programs with American Iron and Steel Requirements 16
- Section 7: Program-Specific Issues 17
- Appendix 1: Example Build America, Buy America (BABA) Act Construction Contract Language 22
- Appendix 2: Example Build America, Buy America (BABA) Act Assistance Agreement Language 23

QUESTIONS AND ANSWERS

SECTION 1: GENERAL

- Q1.1: Will EPA provide documentation for BABA for bid solicitations and suggested contract language? Will EPA provide suggested language for Assistance Agreements?

    - A1.1: See Appendix 1, which includes suggested language for construction contracts which addresses the BABA requirements. In addition to the language suggested in Appendix 1, EPA also recommends that assistance recipients prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the certifications are sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

      All Federal Financial infrastructure assistance agreements subject to BABA must have a clause requiring compliance with the requirements. See Appendix 2 for example assistance agreement language.

- Q1.2: Would federally-financed infrastructure projects outside of the United States need to comply with the BABA requirements?

    - A1.2: No. According to the OMB Guidance (M-22-11), a "project" is defined as "…any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States." Therefore, the BABA requirements are not implicated for infrastructure projects occurring outside of the United States, such as projects funded through the United States-Mexico-Canada Agreement with infrastructure activities occurring in Mexico or Canada (that is, outside the United States).
    -

- Q1.3: If most of the project is BABA compliant, and a small portion is not, can an assistance recipient self-fund (i.e., paying with non-federal dollars) the non-compliant products?

    - A1.3: Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. All iron, steel, manufactured products, and construction materials used in a project must meet the BABA requirements unless waived. Absent a waiver, there is no "small portion" or product that does not need to satisfy the BABA requirements unless the requirements are waived (or specifically excluded as is the case for cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products). An assistance recipient may request a waiver or inquire as to whether a broad waiver, such as a *de minimis* waiver, might apply.

- Q1.4: How do international trade agreements affect the implementation of the BABA requirements?

    - A1.4: The BABA requirements apply in a manner consistent with United States obligations under international trade agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to these trade agreements. In general, assistance recipients are not signatories to such agreements, so these trade agreements have no impact on BABA implementation. In the few instances where such an agreement applies to a municipality, that municipality is responsible for determining its applicability and requirements and communicating with the funding authority (such as EPA and/or a state) on the actions taken to comply with BABA.

SECTION 2: PRODUCT COVERAGE

- Q2.1: For products made of iron and steel, what is the difference between predominantly and primarily iron and steel?

    - A2.1: EPA considers the terms "predominantly" and "primarily" to be interchangeable, such that a product is considered predominantly (or primarily) iron and steel if it contains greater than 50 percent iron and steel by material cost.

- Q2.2: What is the definition of construction materials (with examples)?

    - A2.2: From OMB Guidance M-22-11: "construction materials" include an article, material, or supply (other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products) that is or consists primarily of:
        - non-ferrous metals,
        - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), (including optic glass),
        - lumber, and
        - drywall.

      For example, a plate of glass would be a construction material under BABA, but a framed window that incorporates the glass into a frame would be a manufactured product. Another common construction material for water infrastructure projects would be polyvinyl chloride (PVC) pipe and fittings. However, if PVC components are incorporated into a more complex product such as instrumentation and control equipment or a water treatment unit, those items would be manufactured products.

- Q2.3: What are manufactured products (with examples)?

    - A2.3: From OMB Guidance M-22-11: "…all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of

the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation…"

The manufactured products category would cover the majority of potential water infrastructure products, including complex products made up of a variety of material types and components. For water infrastructure projects, common manufactured products would include, but not be limited to, pumps, motors, blowers, aerators, generators, instrumentation and control systems, gauges, meters, measurement equipment, treatment equipment, dewatering equipment, actuators, and many other mechanical and electrical items.

- Q2.4: Which category will valves fall under for BABA? Will it differ from the American Iron and Steel (AIS) requirements?

    - A2.4: For programs that are subject to BABA and AIS (SRF, WIFIA, and Community Project Funding), projects using valves should classify them as iron and steel products under BABA as long as their material cost is made up of more than 50 percent iron and/or steel. Valves with 50 percent or less iron and/or steel by material cost would be considered manufactured products under the BABA requirements.

      In accordance with OMB Guidance M-22-11, an article, material, or supply should be classified into only one of the three categories: iron and steel, manufactured products, or construction materials. Under the AIS requirements, all valves made primarily of iron and steel (that is, those with iron and/or steel material cost greater than 50 percent) must comply with the AIS requirements. For BABA, EPA interprets Section IV of OMB Guidance M-22-11 to mean that iron and steel products are those items that are primarily iron and steel, the same as for the AIS requirements.

- Q2.5: Does EPA have a list of products to be classified as "Iron and Steel" under BABA?

    - A2.5: Although this list is not comprehensive, the following products were classified as AIS products if made primarily (more than 50 percent) of iron and/or steel by materials cost (for programs subject to both AIS and BABA, this list would be equivalent for "iron and steel" items or products under either requirement):

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Lined and Unlined Pipe	Lined and Unlined Fittings	Tanks
Flanges	Pipe Clamps and Restraints	Structural Steel
Valves	Hydrants	Pre-Cast, Iron/Steel Reinforced Concrete (of all types, regardless of iron/steel content percentage)
Manhole Covers and other Municipal Castings	Access Hatches	Ballast Screens
Iron or Steel Benches	Bollards	Cast Bases
Cast Iron Hinged Hatches	Cast Iron Riser Rings	Catch Basin Inlets

Cleanout/Monument Boxes	Construction Covers and Frames	Curb and Corner Guards

Products likely made “primarily” of iron and steel to be classified as Iron and Steel under BABA		
Curb Boxes	Curb Openings	Curb Stops
Detectable Warning Plates	Downspout Shoes	Drainage Grates
Drainage Grate Frames and Curb Inlets	Inlets	Junction Boxes
Lampposts	Manhole Rings and Frames	Manhole Risers
Meter Boxes	Service Boxes	Steel Hinged Hatches
Steel Riser Rings	Trash Receptacles	Tree Grates
Tree Guards	Trench Grates	Valve Boxes
Valve Box Covers and Risers	Access Ramps	Aeration Pipes and Fittings (separate from aeration/blowers)
Angles	Backflow Preventers/Double Check Valves	Baffle Curtains
Iron or Steel Bar	Bathroom Stalls	Beam Clamps
Cable Hanging Systems	Clarifier Tanks	Coiled Steel
Column Piping	Concrete Reinforcing Bar, Wire, and Fibers	Condensate Sediment Traps
Corrugated Pipe	Couplings	Decking
Digestor Covers	Dome Structures	Door Hardware
Doors	Ductwork	Expansion Joints
Expansion Tanks (diaphragm, surge, and hydropneumatics)	Fasteners	Fencing and Fence Tubing
Fire Escapes	Flanged Pipe	Flap Gates
Framing	Gate Valves	Generic Hanging Brackets
Grating	Ground Testing Boxes	Ground Test Wells
Guardrails	HVAC Registers, Diffusers, and Grilles	Joists
Knife Gates	Ladders	Lifting Hooks, J-bar, Connectors within, and Anchors for Concrete
Lockers	Man Baskets and Material Platforms	Manhole Steps
Mud Valves	Municipal Casting Junctions	Non-mechanical (aka stationary) Louvers and Dampers
Overhead Rolling Doors/ Uplifting Doors (manual open, no motor)	Pipe Connectors	Pipe Hangers
Pipe Pilings (any type of steel piling)	Pipe Spool (pipe, flanges, connectors, etc.)	Pipe Supports
Pitless Adaptors	Pre-fab Steel Buildings/Sheds (simple structure, unfurnished)	Pre-stressed Concrete Cylinder Pipe (PCCP)
Railings	Reduced Pressure Zone (RPZ) Valves	Roofing
Service Saddles	Sheet Piling	Sinks (not part of eyewash systems)
Solenoid Valves	Stairs	Static Mixers
Stationary Screens	Surface Drains	Tapping Sleeves
Telescoping Valves	Tipping Buckets	Trusses
Tubing	Valve Stem Extensions	Valve Stems (excluding handwheels and actuators)

Wall Panels	Wall Sleeves/Floor Sleeves	Welding Rods
Well Casing	Well Screens	Wire
Wire Cloth	Wire Rod	Wire Rope and Cables

Q2.6: Does EPA have a list of products that could be made "primarily" of iron and steel but would be classified as "manufactured products" under BABA?

A2.6: Although this list is not comprehensive, the following products would be considered "manufactured products" under the BABA requirements, even if the item might be composed primarily of iron and steel by materials cost (Note: These items are not subject to the AIS requirements.):

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Actuator Superstructures/ Support Structures	Aeration Nozzles and Injectors	Aerators
Analytical Instrumentation	Analyzers (e.g., ozone, oxygen)	Automated Water Fill Stations
Blowers/Aeration Equipment	Boilers, Boiler Systems	Chemical Feed Systems (e.g., polymer, coagulant, treatment chemicals)
Chemical Injection Quills	Chemical Injectors	Clarifier Mechanisms/Arms
Compressors	Controls and Switches	Conveyors
Cranes	Desiccant Air Dryer Tanks	Dewatering Equipment
Dewatering Roll-offs	Disinfection Systems	Drives (e.g., variable frequency drives)
Electric/Pneumatic/Manual Accessories Used to Operate Valves (such as electric valve actuators)	Electrical Cabinetry and Housings (such as electrical boxes/enclosures)	Electrical Conduit
Electrical Junction Boxes	Electronic Door Locks	Elevator Systems (hydraulic, etc.,)
Emergency Life Systems (including eyewash stations, emergency safety showers, fire extinguishers, fire suppression systems including sprinklers /piping/valves, first aid, etc.)	Exhaust Fans	Fall Protection Anchor Points
Fiberglass Tank w/Appurtenances	Filters (and appurtenances, including underdrains, backwash systems)	Flocculators
Fluidized Bed Incinerators	Galvanized Anodes/Cathodic Protection	Gear Reducers
Generators	Geothermal Systems	Grinders
Heat Exchangers	HVAC (excluding ductwork)	HVAC Dampers (if appurtenances to aerators/blowers)
HVAC Louvers (mechanical)	Intake and Exhaust Grates (if appurtenances to aerators/blowers)	Instrumentation
Laboratory Equipment	Ladder Fall Prevention Systems	Ladder Safety Posts
Lighting Fixtures	Lightning and Grounding Rods	Mechanical or Actuated Louvers/Dampers
Membrane Bioreactor Systems	Membrane Filtration Systems	Metal Office Furniture (fixed)

Meters (including flow, wholesale, water, and service connection)	Motorized Doors (unit)	Motorized Mixers
Motorized Screens (such as traveling screens)	Motors	Pelton Wheels
Pipeline Flash Reactors (similar to injectors)	Plate Settlers	Precast Concrete without Iron/Steel Reinforcement

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Furnished Pre-fab Buildings (such as furnished with pumps, mechanics inside)	Presses (including belt presses)	Pressure Gauges
Pump Cans/Barrels and Strainers	Pumps	Mechanical Rakes
Safety Climb Cable	Sampling Stations (unless also act as hydrant)	Scrubbers
Sensors	Sequencing Batch Reactors (SBR)	Steel Shelving (fixed)
Slide and Sluice Gates	Spray Header Units	Steel Cabinets (fixed interior/furniture)
Supervisory Control and Data Acquisition (SCADA) Systems	Tracer Wire	Valve Manual Gears, Actuators, Handles
Voltage Transformer	Water Electrostatic Precipitators (WESP)	Water Heaters
Weir Gates		

- Q2.7: Is asphalt paving a covered product under BABA?

    - A2.7: No. EPA interprets Section 70917(c) of the IIJA to exclude asphalt from BABA requirements. Asphalt paving is a type of concrete composed of an aggregate material mixed with a binder (bitumen). EPA considers asphalt concrete to be excluded by section 70917(c) due to its similarities with cement and cementitious materials.

SECTION 3: CO-FUNDING

- Q3.1: If projects are co-funded with funding mechanisms that don't require BABA, must the entire project comply with BABA?

    - A3.1: Yes. Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all the contracts and assistance agreements awarded are closely related in purpose, time, and place. This precludes the intentional splitting of projects into separate and smaller contracts or assistance agreements to avoid BABA's applicability on some portions of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreements would carry separate requirements.

- Q3.2: How will project requirements be determined for co-funded projects subject to potentially different general applicability/programmatic waiver conditions (such as different adjustment period waivers)?

    - A3.2: OMB Guidance M-22-11 addresses cases with project co-funding from separate programs. EPA would apply the guidance's "cognizant" program determination to projects that are co-funded with different general applicability/programmatic waivers. For instance, if a project were co-funded between WIFIA and SRF and the majority of the Federal funding for the project is from WIFIA, then WIFIA would be the "cognizant" program for application and determination of waivers. In that case, any conditions from an applicable WIFIA waiver would apply.

SECTION 4: WAIVERS

- Q4.1: Who may apply for a waiver and how do you apply?

    - A4.1: Assistance recipients and their authorized representatives may apply for a project-specific waiver. EPA does not accept waiver requests from suppliers, distributors, or manufacturers unless the assistance recipient endorses and submits the request on its own behalf to the funding authority. In the case where multiple programs are providing federal funds to the project, the assistance recipient should submit the waiver request to the cognizant program, the one providing the greatest amount of federal funds for the project. For information on applying for cost waivers, see questions 4.4 and 4.5. For information on the SRF program roles and responsibilities, see question 7.6.

      Project-specific waiver requests should generally include: (1) a brief summary of the project, (2) a description and explanation of the need for the waiver for the product(s) in question, (3) a brief summary of the due diligence conducted in search of domestic alternatives (which could include correspondence between assistance recipient and supplier/distributors), (4) the quantity and materials of the product(s) in question, (5) all engineering specifications and project design considerations relevant to the product(s) in question, (6) the approximate unit cost of items (both foreign and domestic) in addition to an estimated cost of the materials and overall project, (7) the date any products will be needed on site in order to avoid significant project schedule disruptions, and (8) any other pertinent information relevant to EPA's consideration of the waiver (e.g., if relevant for SRF projects: whether the project is designated as an equivalency project, the date the plans and specifications were submitted to the state, the date of construction initiation, expected date of project completion, any special considerations such as local zoning and building ordinances, seismic requirements, or noise or odor control requirements).

      In the case of indirect federal assistance, such as the SRF programs, the state authority reviews and conveys the waiver request to EPA. States should submit waiver requests to the appropriate program waiver request inbox. For SRF projects, please use CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

- Q4.2: Can an assistance recipient request a waiver based on a specification written for a specific brand or model of product (that is, a specification that names a branded item or model)?

    - A4.2: In most cases, performance-based specifications are expected and required for the majority of infrastructure projects funded by EPA's financial assistance programs. In rare cases where "branded" or product-specific sourcing may be included in project specifications, it is suggested that the specifications include the item in question (that is, not simply a catalog page, but also materials of construction, sizing, quantities, and applicable engineering performance design characteristics for the project, etc.) in addition to the standard phrase "or equal." For the purposes of product alternative market research, EPA will evaluate the BABA requirements based on performance-based engineering specifications for the product(s) in question. If the project's specifications do not include performance-based specifications, or at least an "or equal" designation, EPA will base its research on an "or equal" designation using best professional judgment to the extent practicable.

- Q4.3: If a manufactured product is not readily available domestically, will EPA provide short-term "limited availability" product waivers?

    - A4.3: EPA will address the unavailability of domestic products through the waiver process, including potential national short-term waivers for specific products, if appropriate. To the extent practicable and with the intent to maximize domestic market and supply chain development, EPA intends to address issues of broad product unavailability with targeted, time-limited, and conditional waivers, as prescribed in OMB Guidance M-22-11. EPA will follow its robust and thorough product research processes (those put into place for the AIS requirements for the SRF and WIFIA programs and expanded for the new BABA requirements) to identify and determine those products for which proposed national/general applicability waivers may be appropriate.

- Q4.4: What information is needed when applying for a cost waiver under BABA?

    - A4.4: As part of the cost waiver request, the assistance recipient must demonstrate that implementation of the BABA requirements will increase the overall project cost more than 25 percent. Depending on the circumstances of the overall project cost increases, documentation to justify the cost waiver can vary but may include itemized cost estimates or bid tabulations comparing project costs with and without BABA implementation. Assistance recipients should begin assessing the potential cost impacts of the BABA requirements during the design phase of a project.

- Q4.5: Can administrative costs associated with tracking and verification of certifications be considered when determining if the cost of a project increases by 25 percent or more?

    - A4.5: Yes. Section 70914(b)(3) of the IIJA states that a waiver may be provided if the overall

cost of the project increases by more than 25 percent due to the "inclusion of iron, steel, manufactured products, or construction materials produced in the United States." EPA interprets this to mean that the "inclusion" of the BABA-covered products could encompass reasonable administrative costs associated with complying with the BABA requirements, such as staff, contractor, and technological resources to collect and track BABA compliance documentation.

- Q4.6: How can assistance recipients and construction contractors address product delivery delays?

    - A4.6: Assistance recipients should reasonably plan for material procurement to account for known potential supply chain issues or extended lead times and shall notify the funding authority well in advance of the issues so that prompt attention can be given to explore options. Where extended lead times for compliant products are impacting project schedules and may significantly impact construction progress, timely communication with the funding agency is important. For products that are unavailable within a reasonable timeframe to meet the objectives and schedule of a project, EPA may consider a non-availability waiver with adequate justification. An assistance recipient would need to apply for the waiver and contact its funding authority (such as EPA and/or a state) to initiate the waiver process.

SECTION 5: DOCUMENTING COMPLIANCE

- Q5.1: Who will be responsible for BABA enforcement?

    - A5.1: Responsibility for BABA implementation applies at all levels, from manufacturers to suppliers and distributors, construction contractors, assistance recipients, and funding authorities.

      The manufacturers have responsibility to provide adequate and accurate documentation of the products manufactured. If suppliers and distributors are involved, they are responsible for passing along compliance documentation for products supplied to projects that are subject to the BABA requirements.

      The assistance recipient and their representatives are primarily responsible for ensuring the documentation collected for products used on the project is sufficient to document compliance with the BABA requirements.

      The funding authority is responsible for providing oversight and guidance as needed to ensure the proper implementation of the requirements. The Uniform Grants Guidance (UGG) (Title 2 of the Code of Federal Regulations (CFR) Part 200) applies to many Federal financial assistance agreements that will include BABA requirements. The general provisions of 2 CFR Part 200 determine the responsible party for the grant funding authority.

      For information on SRF program roles and responsibilities, see question 7.6.At all levels, where fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888- 546-8740

or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

- Q5.2: When will the BABA requirements be assessed for compliance? Do assistance recipients need to have waivers for potential non-domestic products before assistance agreements are in place, at the time products are procured or products are incorporated into the project (i.e., used)?

    - A5.2: Compliance is assessed where the domestic product is used (or installed) at the project site. Proper compliance documentation, whether it is a BABA certification letter or a waiver, should accompany a product prior to its "use", in accordance with Section 70914(a) of IIJA. This may occur prior to assistance agreements being in place but is not necessary. Additionally, communication of BABA requirements through appropriate Terms and Conditions in financial assistance agreements and in project solicitation and contract documents is key in ensuring all parties involved are informed of the requirements for the project before construction is underway.

- Q5.3: How can product compliance with the BABA requirements be demonstrated?

    - A5.3: Assistance recipients and their representatives should ensure that the products delivered to the construction site are accompanied by proper documentation that demonstrate compliance with the law and be made available to the funding authority upon request. The documentation may be received and maintained in hard copy, electronically, or could be embedded in construction management software. The use of a signed certification letter for the project is the most direct and effective form of compliance documentation for ensuring products used on site are BABA-compliant prior to their installation; however, other forms of documentation are also acceptable as long as collectively, the following can be demonstrated:

        (1) Documentation linked to the project. For example, this can be in the form of the project name, project location, contract number, or project number.
        (2) Documentation linked to the product used on the project. For example, description of product(s) (simple explanation sufficient to identify the product(s)), or an attached (or electronic link to) purchase order, invoice, or bill of lading.
        (3) Documentation includes statement attesting that the products supplied to the assistance recipient are compliant with BABA requirement. Reference to the Infrastructure Investment and Jobs Act ("IIJA") or the Bipartisan Infrastructure Law (BIL) are also acceptable. For iron and steel items under BABA, references to the American Iron and Steel (AIS) requirements are also acceptable and reciprocal with BABA for such items.
        (4) Documentation that manufacturing occurred in the United States, which could include, for example, the location(s) of manufacturing for each manufacturing step that is being certified. It is acceptable for manufactured products to note a single point of manufacturing, documenting that the final point of manufacturing is in the United States. Note that each BABA category may require different determinations for

compliance.

(5) Signature of company representative (on company letterhead and signature can be electronic). The signatory of the certifying statement affirms their knowledge of the manufacturing processes for the referenced product(s) and attests that the product meets the BABA requirements.

In addition to compliance documentation, assistance recipients or their representatives should also conduct a visual inspection of the product when it arrives to the project site, especially for iron and steel products which are often stamped with the country of origin. (Note: A country of origin stamp alone is not sufficient verification of compliance with BABA and assistance receipts should not rely on it to ensure compliance.)

EPA may develop alternative procedures for demonstrating compliance. Additional project- or program-specific instructions may be developed on a case-by-case basis in order to meet individual circumstances.

- Q5.4: Will EPA provide a form or template for tracking and documenting compliance?

- A5.4: EPA does not require a specified format for tracking or documenting compliance. Assistance recipients are free to develop any system (from simple to complex software) for tracking items used on the project and the accompanying compliance documentation, e.g., certification letters, applicable waivers, if it helps with implementation and compliance. Elements that may help with keeping track of compliance may include: product description, quantity required/used, product category (i.e., iron and steel, manufactured product, or construction material), status of obtaining certification letter, product cost, and whether the item might qualify as *de minimis*, or qualify under another applicable waiver.

- Q5.5: If a manufacturer claims to comply with the Buy American Act, does it also comply with BABA?

    - A5.5: No. With the exception of the AIS requirements – which EPA interprets to be equivalent to the "iron and steel" requirements under BABA – EPA does not have an interpretation about the comparability of other domestic preference requirements relative to BABA. Any products that are to be certified as compliant with BABA should include a specific reference to the BABA requirements and appropriate attestation from a responsible manufacturing company official. See Question 5.3 for EPA's recommendations for BABA certification letters.

- Q5.6: How will assistance recipients manage certification letters for hundreds, possibly thousands of products?

    A5.6: EPA recognizes that the new BABA requirements will cover most products used in typical water and wastewater infrastructure projects, and that the number of items which may require certification at large and/or complex projects may reach several hundred. EPA is concerned about the potential administrative burden that this would place on assistance recipients. EPA recommends that projects with a high number of potentially covered

products meet with their funding authority about potential compliance strategies to minimize burden and streamline compliance activity. Assistance recipients should prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the documentation is sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives may assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

- Q5.7: Who is responsible for documenting the 55 percent content requirement for manufactured products under BABA? What if the final manufacturer cannot trace or verify domestic origin for all components?

    - A5.7: The manufacturer who signs a certification letter is responsible for documenting compliance with any of the three categories of products (iron and steel, manufactured products, or construction materials). For manufactured products, BABA requires that greater than 55 percent of the total cost of all components of the manufactured product be from domestic sources. EPA recommends that the certification letter for manufactured products document whether the item passes the content test in the final product along with a statement attesting to compliance with the BABA requirements for manufactured products.

- Q5.8: How do final product fabricators document compliance when the final step of manufacturing may be simply assembling components?

    - A5.8: It is acceptable, in many cases, especially for highly complex manufactured products that utilize many sub-components, for the final point of assembly to certify without using a "step certification" process. Multiple certifications (i.e., step certifications) or a singular certification can be used for a product, as long as the certifying official is willing to attest to the product's compliance with BABA requirements at all stages of manufacturing.

- Q5.9: Will Material Test Reports be acceptable in lieu of a BABA certification for iron and steel?

    - A5.9: Material Test Reports (MTRs, commonly referred to as "Mill Certifications" or "Mill Certs") provide the chemical composition of steel and iron from a mill or foundry. If an MTR accompanies the delivery of steel or iron to a project site with an invoice or bill of lading, EPA will consider it sufficient to demonstrate compliance (equivalent to a certification letter) as long as the MTR includes a manufacturer representative's signature in addition to the location (city and state) of the mill/foundry. It is common for MTRs to be the first letter in a "step certification" if the product is further fabricated or painted, etc., by another manufacturer.

- Q5.10: Can a manufacturer use a fillable certification letter for products?

- A5.10: EPA recommends that certifications be signed by representatives of the manufacturing entity. EPA does not oppose manufacturers using forms to internally develop letters within their company, thereby providing signed, non-manipulable certification letters to suppliers, distributors, and/or assistance recipients. A fillable form that can be changed by someone outside of the manufacturer after signature does not demonstrate compliance and may create compliance concerns for the manufacturer or assistance recipient.

- Q5.11: Are product certifications from suppliers and distributors allowed?

    - A5.11: EPA recommends that representatives of product manufacturers certify compliance and discourages suppliers and distributors from creating certification letters. EPA does not rule out the possibility that a third-party certification process, such as a certification by a distributor, may be viable. However, EPA is currently not aware of a system or proposed system that meets the EPA's recommendations for documentation of product certification.

- Q5.12: How long should assistance recipients keep compliance documentation?

    - A5.12: Assistance recipients should apply recordkeeping requirements for the project according to the procedures dictated by the funding authority. For most EPA grant programs, this is prescribed in the UGG at 2 CFR 200.334-200.338; e.g., the SRF programs require a minimum of three years. Other funding programs may require longer documentation retention periods.

SECTION 6: PROGRAMS WITH AMERICAN IRON AND STEEL REQUIREMENTS

- Q6.1: Does BABA supersede the American Iron and Steel (AIS) Requirements?

    - A6.1: The BABA requirements for items considered "iron and steel" are equivalent to those for covered iron and steel products under the AIS requirements in the Clean Water Act and the Safe Drinking Water Act. These requirements apply to the CWSRF, DWSRF, WIFIA, and Water infrastructure Community Grants. BABA includes a "Savings Provision" (Section 70917(b)) that states that BABA does not affect existing domestic content procurement preferences for infrastructure projects funded by Federal financial assistance programs that meet the requirements of section 70914. EPA views the AIS requirements as meeting the "iron and steel" product requirements of BABA Section 70914, as they both include the key requirement that items made of iron and steel be wholly manufactured in the United States from the point of melting and/or pouring the iron or steel components through final manufacturing step. Because of the "Savings Provision" of Section 70917, the AIS requirements satisfy the "iron and steel" requirements of BABA. For the programs that have AIS requirements, EPA intends to implement BABA requirements the same way for iron and steel items as it has done for AIS products.

- Q6.2: For iron and steel products, does a manufacturer need to demonstrate compliance from initial melting through the finished product?

    - A6.2: For iron and steel products, the BABA requirements are the same as the existing AIS requirements, in that all of the iron and steel in a covered product (that is, the product is comprised of more than 50 percent iron and steel by material cost) must be melted and poured in the United States and all subsequent manufacturing processes (such as grinding, rolling, bending, reheating, and casting) must occur in the United States.

Q6.3: Will EPA apply the same manufacturing standards for BABA iron and steel products as for the American Iron and Steel (AIS) requirements?

- A6.3: Yes. For AIS, EPA did not require raw materials used in the production of steel or iron to be domestically sourced. For BABA, EPA interprets the requirements to be the same. Hence, like AIS, raw materials in the production of iron and steel subject to BABA requirements would not need to be domestically sourced. The key step for both AIS and BABA domestic iron and/or steel production is the melting/pouring (that is, the location of the furnace), which must be in the United States.

- Q6.4: Will the certification process be similar to the process established for the American Iron and Steel requirements?

    - A6.4: EPA expects the certification process for the BABA requirements to be very similar to that established for the AIS requirements. For iron and steel products, the process should remain the same for AIS and BABA. EPA recommends for manufactured products and for construction materials that certification letters include direct reference to the product/material content requirements under BABA, in addition to an affirmative statement verifying that the product meets the BABA requirements.

- Q6.5: Will duplicate certification letters be required for AIS and BABA for iron/steel products?

    - A6.5: No. Compliance with BABA requirements will be sufficient to demonstrate compliance with AIS requirements for iron and steel products. If a project is subject to BABA, the only demonstration of compliance necessary is with the BABA requirements, of which the iron and steel requirements are equivalent to those of the AIS statutory requirements: the iron or steel in a product made primarily or predominantly of iron and steel (comprising more than 50 percent iron and steel by material cost) must be melted and/or poured in the United States and all subsequent manufacturing processes must occur in the United States.

SECTION 7: PROGRAM-SPECIFIC ISSUES

- Q7.1.: How do the BABA requirements apply to Community Grants?

    - A7.1: The Community Project Funding/Congressionally Directed Spending grants for the construction of drinking water, wastewater, and stormwater infrastructure and for water

quality protection are subject to the requirements specified in the explanatory statement accompanying the Consolidated Appropriations Act (Explanatory Statement for Division G of P.L. 117-13, the Consolidated Appropriations Act of 2022). The explanatory statement asserts: "Applicable Federal requirements that would apply to a Clean Water State Revolving Fund or Drinking Water State Revolving Fund project grant recipient shall apply to a grantee receiving a CPF grant under this section." Therefore, the federally funded Community Project Funding/Congressionally Directed Spending grants are subject to the same requirements that apply to CWSRF or DWSRF projects, including BABA and AIS requirements. See also A1.2.

- Q7.2: Should SRF projects covered by the BABA SRF Projects Design Planning Adjustment Period Waiver follow the same procedures for demonstrating compliance as outlined for American Iron and Steel requirements?

    - A7.2: Yes. The SRF Design Planning Adjustment Period waiver does not waive the iron and steel requirements under BABA. The SRF programs have existing domestic preference requirements for SRF projects under CWA Section 608 and SDWA Section 1452(a)(4) (AIS requirements) to use iron and steel products that are produced in the United States. Sections 70917(a) and (b) of BIL explain the application of BABA to existing domestic preference requirements. Specifically, the savings provision in Section 70917(b) states that existing domestic preference requirements that meet BABA requirements are not affected by BABA. The statutory AIS requirements were existing at the time BABA became law and satisfy the BABA iron and steel requirements. Therefore, the statutory AIS requirements that have previously applied to SRF-funded projects will continue to do so, and compliance with AIS requirements will satisfy the BABA iron and steel requirements. Demonstration of compliance for iron and steel products will follow the AIS implementation policies for projects subject to the waiver.

- Q7.3: For SRF programs, is BABA considered a federal cross-cutting authority? (i.e., do "equivalency" rules apply?)

    - A7.3: Yes, BABA is considered a federal cross-cutting requirement that applies to SRF assistance equivalent to the federal capitalization grant (i.e., "equivalency" projects). EPA's SRF regulations at 40 CFR 35.3145 and 35.3575 require states and recipients of SRF funds equivalent to the amount of the federal capitalization grant to comply with federal cross-cutting requirements. Section 70914 of the IIJA, which states when a Buy America preference applies, explains that "none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, BABA only applies to projects funded in an amount equivalent to the federal capitalization grant and not to those projects receiving funds in excess of the capitalization grant (i.e., "non-equivalency" projects). (Note: The AIS requirements continue to apply for all SRF projects, including non-equivalency projects, and all WIFIA and Community Grant projects, because equivalency does not apply.)

- Q7.4: Do the BABA requirements apply to Drinking Water State Revolving Fund set-asides?

    - A7.4: Due to requirements related to the deposit of funds in the DWSRF program, almost all of the funds used to conduct set-aside activities are Federal dollars. Therefore, Federal cross- cutting requirements must be applied to all set-aside activities. However, in the case of most set-aside activities, the cross-cutting requirements will not be implicated because of the nature of the activities conducted under the set-asides. Because the BABA requirements only apply to infrastructure, and infrastructure typically is not an eligible set-aside expenditure (with one potential exception being loans for incentive-based source water protection measures under the Local Assistance and Other State Programs Set-Aside), the BABA requirements will not apply to most set-aside activities.

- Q7.5: What if an SRF project is refinanced using Federal financial assistance on or after May 14, 2022?

    - A7.5: If an SRF project began construction, financed from another funding source, prior to May 14, 2022, but is refinanced through an assistance agreement executed on or after that date, BABA requirements will apply to all construction that occurs on or after May 14, 2022, through completion of construction, unless a waiver applies. There is no retroactive application of the BABA requirements where a refinancing occurs for an SRF project that has completed construction prior to May 14, 2022. (Note: If SRF funding is used for the refinancing, the AIS requirements may still apply depending on the timing of construction.)

- Q7.6: What are the roles and responsibilities for SRF programs for BABA implementation?

    - A7.6: Implementation of the BABA requirements for the State Revolving Fund programs will continue the roles and responsibilities from the successful AIS implementation process.

      As with AIS, it is both the assistance recipient's and the state's responsibility to ensure compliance with the BABA requirements. The state is the recipient of a federal capitalization grant and must comply with all grant conditions, including a condition requiring adherence to BABA requirements.

      Consequently, states are strongly advised to conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance. In EPA's experience, most states conduct periodic site visits and arrange timely meetings with funded projects. Observed best practices typically include a meeting early in the process (sometimes before bid and usually prior to commencing construction) and at least one project site visit during the construction process. Assistance recipients must maintain documentation of compliance with the BABA requirements, as explained in question 5.3. The documents must be kept by the assistance recipient and should be reviewed by the state during project reviews.

      The state's role in the waiver process is to review any waiver requests submitted to the state to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with

the assistance recipient to help obtain complete information. Question 4.1 explains the information needed by EPA to expediently review a waiver request.

In order to implement the BABA requirements, EPA has developed an approach for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow states, on behalf of the assistance recipients, to apply for waivers of the BABA requirements directly to EPA Headquarters. Only waiver requests received and/or endorsed from states will be considered. Pursuant to BABA, EPA has the responsibility to make findings as to the issuance of waivers to the BABA requirements.

Step-by-step SRF Waiver Process

The waiver process begins with the assistance recipient. To fulfill the BABA requirements, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American-made iron and steel, manufactured goods, and construction materials. It is essential that the assistance recipient include the BABA terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 2 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three statutory conditions is demonstrated to EPA and approved.

To apply for a project-specific waiver, the assistance recipient should email the request in the form of a Word document (.doc) or editable PDF (.pdf) to the funding program. It is strongly recommended that each state identify a person or persons for BABA communications. The state designee(s) will review the application for the waiver and determine whether the necessary information has been included (Note: More information may be provided in the future regarding what information is required to be included in waiver requests). Once the waiver application is complete, the designee (State) will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the BABA requirements and ensuring sufficient information was provided, EPA will publish the request on its website for 15 days and receive public comment. EPA will then determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the state designee whether a waiver request has been approved or not approved as soon as such a decision has been made. Granting such a waiver is a four-step process:

1. Research – After receiving an application for a waiver, EPA will perform market research to determine whether the iron, steel, manufactured goods, or construction materials are available domestically.

2. Posting – After research, if no domestic product has been identified, EPA is required to

publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: https://www.epa.gov/cwsrf/build-america-buy-america-baba-waivers-open-public-comment.

3. Evaluation – After receiving an application for waiver of the BABA requirements, EPA will determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver to determine whether or not to grant the waiver.

4. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program and post the signed waiver on the Agency's website. The assistance recipient should keep a copy of the signed waiver in its project files.

(Note: Additional steps may be required in the future regarding the waiver process depending on additional guidance from OBM) APPENDIX 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which

case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components

do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters,

heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to

determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed
justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or
(202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

American Iron & Steel (AIS) Requirement of the Consolidated Appropriations Act of 2014
(Public Law 113-76)

Q&A Part 2

PRODUCT QUESTIONS

1. **Q: Do all fasteners qualify for de minimis exemption?**

   A: No. There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads).

   EPA also clarifies that minor components of two listed products – valves and hydrants -- may not need to meet the AIS requirements if the minor components compromise a very small quantity of minor, low-cost fasteners that are of unknown origin.

2. **Q: Does PCCP pipe have to be domestically produced?**

   A: Yes. Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement.

3. **Q: If the iron or steel is made from recycled metals will the vendor/supplier have to provide a certification document certifying that the recycled metals are domestically produced?**

   A: No. Recycled source materials used in the production of iron and steel products do not have to come from the U.S. Iron or steel scrap, for instance, are considered raw materials that may come from anywhere. While certification is not required for the raw material, EPA does recommend that additional final processing of iron and steel be certified to have occurred in the U.S.

4. **Q: Do tanks used for filtration systems, if delivered to the construction site separately and then filled with filtration media onsite, have to be domestically produced?**

A: No. Tanks that are specifically designed to be filters, or as parts of a filtration system, do not have to be domestically produced because these parts are no longer simply tanks, even if the filter media has not been installed and will be installed at the project site, as is customary to do for shipping purposes. These parts have only one purpose which is to be housing for filters and cannot be used in another fashion.

5. **Q: Can a recipient use non-domestic flanged pipe?**

   A: No. While the Consolidated Appropriations Act of 2014 does not specifically mention flanged pipe, since it does mention both pipe and flanges, both products would need to be domestically produced. Therefore, flanged pipe would also need to be domestically produced.

6. **Q: Can a recipient use non-domestic couplings, expansion joints, and other similar pipe connectors?**

   A: No. These products would be considered specialty fittings, due to their additional functionality, but still categorized under the larger "fitting" categorization. Fittings are defined as a material that joins pipes together or connects to a pipe (AWWA, The Drinking Water Dictionary, 2000). Therefore, these products must comply with the AIS requirements and be produced domestically.

7. **Q: Can a recipient use non-domestic service saddles and tapping sleeves?**

   A: No. These products are necessary for pipe repair, to tap a water main, or to install a service or house connection. Therefore, they are included under the larger "pipe restraint" category which is a specifically identified product subject to the domestic preference in the Consolidated Appropriations Act of 2014.

8. **Q: The AIS guidance does not appear to cover reused items (i.e., existing pipe fittings, used storage tanks, reusing existing valves). How should reused items be addressed?**

   A: The AIS guidance does not address reuse of items. Reuse of items that would otherwise be covered by AIS is acceptable provided that the item(s) was originally purchased prior to January 17, 2014, the reused item(s) is not substantially altered from original form/function, and any restoration work that may be required does not include the replacement or addition of foreign iron or steel replacement parts. EPA recommends keeping a log of these reused items by including them on the assistance recipient's de minimis list, and stating therein that these items are reused products. The donation of new items (such as a manufacturer waiving cost for certain delivered items because of concerns regarding the origin of a new product) is not, however, considered reuse.

9. **Q: What does "time needed" mean in the AIS guidance, in reference to the definition of "Reasonably Available Quantity"?**

A: For considering whether a product would meet reasonably available quantity, "time needed" is based on the construction schedule. If the item is delayed and there is substantial impact on the overall construction schedule, this would not be according to the "time needed."

10. **Q: If a product is not specifically included on the list of AIS covered products, must it comply with AIS?**

    A: Possibly. The AIS requirements include a list of specifically covered products, one of which is construction materials, a broad category of potential products. For construction materials, EPA's AIS guidance includes a set of example items that it considers construction materials composed primarily of iron and steel and covered by the Act. This example list in the guidance is not an all-inclusive list of potential construction materials. However, the guidance also includes a list of items that EPA specifically does not consider construction materials, generally those of electrical or complex-mechanical nature. If a product is similar to the ones in the non-construction material list (and it is also not specifically listed by the Act), it is not a construction material. For all other items specifically included in the Act, coverage is generally self-evident.

11. **Q: If a listed iron and steel product is used as a part for an assembled product that is non-domestic, do the AIS requirements apply?**

    A: AIS requirements only apply to the final product as delivered to the work site and incorporated into the project. Other assemblies, such as a pumping assembly or a reverse osmosis package plant, are distinct products not listed and do not need to be made in the U.S. or composed of all U.S. parts. Therefore, for the case of a non-covered product used in a larger non-domestic assembly, the components, even if specifically listed in the Consolidated Appropriations Act, do not have to be domestically produced.

12. **Q: Is cast iron excluded from the AIS requirements?**

    A: No. Cast iron products that fall under the definition of iron and steel products must comply with the AIS requirements.

13. **Q: The guidance states that "construction materials" do not include mechanical equipment, but then identifies ductwork as a construction material. Please clarify.**

    A: Ductwork is not mechanical equipment, therefore it is considered a "construction material" and must comply with the AIS requirements.

14. **Q: Do "meters" mentioned in EPA's guidance as non-construction materials include both flow meters and water meters?**

    A: Yes. "Meters" includes any type of meter, including: flow meters, wholesale meters, and water meters/service connections.

15. Q: Must coiled steel be domestic?

A: Yes. Coiled steel is an intermediate product used in the production of steel pipe and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

16. Q: Are pig iron, direct reduced iron (DRI), and ingot considered raw materials?

A: No. These are considered intermediate products used in the production of iron or steel and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

17. Q: Can assistance recipients rely on a marking that reads, "Made in the USA," as evidence that all processes took place in the U.S.?

A: No. This designation is not consistent with our requirements that all manufacturing processes of iron and steel products must take place in the U.S.

18. Q: When determining what constitutes a product made "primarily" of iron or steel, who makes this determination?

A: The manufacturer will show if its product qualifies as primarily made of iron or steel. The recipient should expect the manufacturer to provide documentation/ certification that its product is AIS compliant.

19. Q: Do aerators need to be produced domestically in order to comply with AIS?

A: No. Aerators, similar to pumps, are mechanical equipment that do not need to meet the AIS requirements. "Blowers/aeration equipment, compressors" are listed in EPA's guidance as non-construction materials.

20. Q: Are Sluice and Slide Gates considered valves?

A: No. Valves are products that are generally encased / enclosed with a body, bonnet, and stem. Examples include enclosed butterfly, ball, globe, piston, check, wedge, and gate valves. Furthermore, "gates" (meaning sluice, slide or weir gates) are listed in EPA's guidance as non-construction materials.

AIS PROCESS QUESTIONS

21. Q: Will notices of waiver applications be published in the federal register?

A: No. Applications for waivers will be published on EPA's website (http://water.epa.gov/grants_funding/aisrequirement.cfm**).** EPA will provide 15 days for open public comment, as noted on the website.

22. Q: Will states be collecting the step certification paper trail, as presented in the AIS guidance?

A. No. Assistance recipients must maintain documentation of compliance with AIS. EPA recommends use of the step certification process. This process is a best practice and traces all manufacturing of iron and steel products to the U.S. If the process is used, the state does not have to collect the documentation. The documents must be kept by the assistance recipient and reviewed by the state during project reviews.

23. Q: Why is it considered a best practice for states to conduct site visits, when it is the assistance recipient's responsibility to meet the AIS requirements?

A: It is both the assistance recipient's and the state's responsibility to ensure compliance with the AIS requirements. The state is the recipient of a federal grant and must comply with all grant conditions, including a condition requiring that the AIS requirements be adhered to. Therefore, it is recommended that states conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance.

24. Q: Please further define the state's role in the waiver process.

A: The state's role in the waiver process is to review any waiver requests submitted to the state in order to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with the assistance recipient to help obtain complete information.

25. Q: How much time does EPA have to evaluate the waiver during the evaluation step?

A: At a minimum, EPA is required to provide 15 days for open public comment. There is no specific deadline or time limit for EPA to review waiver requests. Each waiver request will come with its own specific details and circumstances and may require a different amount of time for review and analysis. For example, public interest waivers in general may take longer to review than availability waivers which are typically more straightforward. However, EPA understands that construction may be delayed while waiting for a waiver and will make every effort to review and issue decisions on waiver requests in a timely manner.

PROJECT QUESTIONS

26. Q: What if a project is funded by another funding entity (i.e., United States Department of Agriculture – Rural Development) where AIS is not required and begins construction after January 17, 2014 but then applies to the SRF to refinance the project? Are they ineligible?

A: The project is not ineligible. AIS requirements will apply to any construction that occurs after the assistance agreement is signed, through the end of construction. If construction is complete, there is no retroactive application of the AIS requirements.

27. **Q: If the assistance recipient can demonstrate through market research that the AIS requirement will exceed the 25 percent cost threshold, is the entire project exempt from the AIS requirement?**

    A: If the waiver application shows that the inclusion of American iron and steel products causes the entire cost of the project to increase by more the 25 percent, a waiver may be granted for the entirety of the project.

28. **Q: Can the recipient use non-SRF funds to pay for the non-compliant item.**

    A: No. It is not an acceptable to use non-SRF funds to pay for a non-compliant item. The Consolidated Appropriations Act of 2014 requires that all iron and steel products, no matter the source of funding, must be made in the U.S. if SRF funds are used in the project.

29. **Q: What constitutes "satisfactory quality" as defined in the AIS guidance, in reference to the availability waiver process.**

    A: "Satisfactory quality" means the product meets the project design specifications. A waiver may be granted if a recipient determines that the project plans and design would be compromised because there are no American made products available that meet the project design specifications.

30. **Q: The guidance states that the AIS requirement applies to any project "funded in whole or in part" by an SRF. Where is this in the Act?**

    A: The Act states that, "None of the funds made available by a … [State SRF program] … shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States." This sentence clearly states that no SRF program may use its funds for a project unless all of the iron and steel products used in the project are made in the U.S. This is true even if only $1 of SRF funding is used in the project.

31. **Q: There is always an expectation on the part of an assistance recipient that the construction phase of a planning and/or design only loan will be funded through the SRF. If the original planning and/or design only loan was executed prior to a January 17, 2014, does this mean the entire project will be exempt from the AIS requirement?**

    A: If the original loan includes construction, and was executed prior to January 17, 2014, then the AIS provision does not apply to the project. If the original loan was only for planning and/or design, then a written commitment or documented "expectation" is needed to show exemption from the

requirements. Appearance on a priority list in an Intended Use Plan along with written reasonable assurance from the state that the recipient will receive SRF funding for project construction could provide sufficient evidence of "expectation of funding".

32. **Q: What if there has been a change order or redesign requiring new plans and specifications to be approved and they were approved after January 17, 2014: does the project now have to comply with AIS?**

    A: In most cases, no. Change orders are typically small enough changes that the original plan and specification date will still hold true. For example, if a pipe alignment has to be changed for a block or two due to unforeseen conditions, but new plans and specifications had to be submitted for this section of the project, then that could be considered a minor change. However, if there has been a major redesign, perhaps the whole project had to be redesigned starting from scratch, then the new plans and specification approval date would apply.

33. **Q: What if the bids on a project with plans and specifications approved before January 17, 2014 but the loan is signed after January 17, 2014 come in low, and there is significant funding remaining in the loan agreement, so the community designs a second project with the remaining funds: does that project have to comply with the AIS requirements?**

    A: If the second project is closely related in purpose, place and time to the first project, then the second project would be exempt from the AIS requirements. It is the assistance recipient's responsibility (with state oversight) to show that a project is closely related, or not, in purpose, place and time.

34. **Q: What if the assistance agreement was signed after January 17, 2014, state approval of plans for the first phase of the project was in place prior to January 17, 2014, but state approval of the plans for the second phase of the project was received after January 17, 2014?**

    A: In such a case, the AIS provision would not apply to the first phase of the project. If the second phase of the project is considered the same project as the first phase, due to its close relation in purpose, place and time, the entire project may be exempt. It is the assistance recipient's responsibility (with state oversight) to show that phases of a project is closely related, or not, in purpose, place and time.

35. **Q: Do products purchased through procurement-only contracts have to be comply with AIS?**

    A: Yes. For projects funded by SRF, the products procured under any form of contract must comply with AIS. A procurement-only contract generally involves the bulk purchase of common items (such as pipe, concrete, and/or pumps) of independent timing from a set of planned projects. If products which are purchased through a procurement-only contract are being installed under another contract, the procurement-only contract would probably not be considered a separate project in purpose, place and time; and therefore, would have to comply with the AIS requirements.

March 2015

American Iron & Steel Requirement for the Clean Water and Drinking Water State Revolving Funds

Q&A Part 3

*For CWSRF and DWSRF: On **January 17, 2014**, Public Law 113-76, the "Consolidated Appropriations Act, 2014," was enacted and included an American Iron and Steel requirement for the Clean Water and Drinking Water State Revolving Fund programs through the end of fiscal year 2014. Since then, the AIS requirement has continued for both programs, but through different statutes, with a few changes as described in the questions and answers provided below.*

*For CWSRF: On **June 10, 2014**, the Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS products in CWSRF assistance agreements. Section 608 of the CWA now contains requirements for AIS that repeat those of the Consolidated Appropriations Act, 2014. All CWSRF assistance agreements must comply with Section 608 of the CWA for implementation of the permanent AIS requirement.*

*For DWSRF: On **December 16, 2014**, the President signed Public Law 113- 235, the "Consolidated and Further Continuing Appropriations Act, 2015," which provides fiscal year 2015 full-year appropriations through September 30, 2015. This law continues the requirement for the use of AIS products in DWSRF assistance agreements through September 30, 2015.*

CWSRF PROGRAM

1. **Q: The Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS for CWSRF funded assistance agreements. Does the CWA include an exemption for plans and specifications approved prior to the enactment of the legislation similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?**

   A: Yes. The WRRDA amendment to the CWA, which included AIS requirements, included a similar exemption as the CAA 2014. For any CWSRF assistance agreement signed on or after October 1, 2014, if the plans and specifications were approved prior to June 10, 2014 (the enactment of WRRDA), then the project is exempt from AIS requirements. For assistance agreements signed prior to October 1, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014, AIS guidance document).

   If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of this exemption in Section 608 (f).

   The following table summarizes AIS exemptions based on the plans and specifications approval date for CWSRF funded projects.

CWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
On or after 10/1/2014	6/10/2014	• Clean Water Act Section 608

** To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014*

2. **Q: Does the AIS requirement apply to refinanced CWSRF projects?**

   A: Yes, in some cases. If a project began construction, financed from a non-CWSRF source prior to June 10, 2014, but is refinanced through a CWSRF assistance agreement executed on or after October 1, 2014, AIS requirements will apply to all construction that occurs on or after June 10, 2014, through completion of construction, unless engineering plans and specifications were approved by the responsible state agency prior to June 10, 2014. For CWSRF projects funded on or after October 1, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to June 10, 2014.

DWSRF PROGRAM

3. **Q: The Consolidated and Further Continuing Appropriations Act 2015 continues the AIS requirements for DWSRF funded assistance agreements. Does the Act include an exemption for plans and specifications approved prior to the enactment of the legislation, similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?**

   A: Yes. The Consolidated and Further Continuing Appropriations Act 2015 includes a similar exemption as the CAA 2014. For any assistance agreement signed on or after December 16, 2014 (the enactment of the Act), if the plans and specifications were approved prior to December 16, 2014, then the project is exempt from the AIS requirements. For assistance agreements signed prior to December 16, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014 AIS guidance document).

   If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of the exemption in Section 424(f).

4. **Q: Do DWSRF assistance agreements signed during the time period between September 30, 2014, and December 16, 2014, still have to comply with the AIS requirements?**

A: Yes. The Continuing Appropriations Resolution 2015 was signed on September 19, 2014, which extended funding for the DWSRF with the same conditions that were made applicable by the language in the Fiscal Year 2014 appropriations, including the requirement for the use of American Iron and Steel products in projects receiving financial assistance from the DWSRF. Therefore, all assistance agreements starting October 1, 2014, through the enactment of the Consolidated and Further Continuing Appropriations Act 2015 (signed December 16, 2014), must include the AIS requirements. However, if the plans and specifications for any of these projects were approved prior to April 15, 2014 (the date the national waiver was signed), then the project is exempt from the AIS requirements.

The following table summarizes AIS exemptions based on the plans and specifications approval date for DWSRF funded projects.

DWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
10/1/2014 through 12/15/2014	4/15/2014	• Continuing Appropriations Resolution 2015 (continued CAA 2014 requirements)** • National waiver signed 4/15/2014*
12/16/2014 through 9/30/2015	12/16/2014	• Consolidated and Further Continuing Appropriations Act 2015

** To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014*

*** Following the first continuing resolution, there were two additional CRs to fill the gap between 12/11/2014 and 12/16/2014*

5. **Q: Does the AIS requirement apply to refinanced DWSRF projects?**

A: Yes, in some cases. If a project began construction, financed from a non-DWSRF source prior to December 16, 2014, but is refinanced through a DWSRF assistance agreement executed on or after December 16, 2014, AIS requirements will apply to all construction that occurs on or after December 16, 2014, through completion of construction, unless engineering plans and

specifications were approved by the responsible state agency prior to December 16, 2014. For DWSRF projects funded on or after December 16, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to December 16, 2014.

BOTH CWSRF AND DWSRF PROGRAMS

6. **Q: If a coating is applied to the external surface of a domestic iron or steel component, and the application takes place outside of the United States, would the product be compliant under the AIS requirements?**

   A: Yes. The product would still be considered a compliant product under AIS requirements. Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the United States.

   The exemption above only applies to coatings on the *external surface* of iron and steel components. It does not apply to coatings or linings on internal surfaces of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(**1**) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed **1** percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency ...finds that- (1) applying subsection (a) would be inconsistent with the public interest" 436(b)**(1)**.

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

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Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, comer bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?

- What percentage of materials costs were consumables or incidental costs?

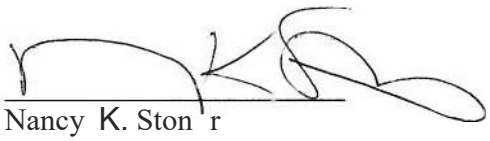
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Issued on: APR 15 2014

Approved by: 

Nancy K. Stoner
Acting Assistant Administrator

Ohio Water Pollution Control Loan Fund
Use of American Iron and Steel - De Minimis Final Utilization and Certification Form

The Consolidated Appropriations Act of 2014 (P.L. 113-76) Section 436 requires the use of American & Steel in SRF-funded projects. Under the authority of Section 436(b)(1), the EPA has issued a public interest waiver for De Minimis incidental components. The assistance recipient wishing to use this waiver should consult with their contractor(s) to maintain an itemized list of components covered under De Minimis. At the conclusion of the project, this form must be completed and retained in the assistance recipient's project files and a copy provided to DEFA. Please print clearly or type.

Project Name:_____ Loan Agrmt #: _____

NOTE: The De Minimis waiver is only applicable to the cost of materials for the entire project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials". The cost of a material must include delivery to the site and any applicable tax. Must have sufficient documentation to support all costs included in this calculation.

Funds used for de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

Total Cost of Materials: | 5% Limit: | 1% limit:

Manufacturer & Component Description	Part/Model #	Quantity (if applicable)	Cost per Unit (if applicable)	Component's Total Cost	How is Cost Documented?*

Use additional sheets as necessary

Total De Minimis Cost of Components:

If approaching the 5% or 1% limits, contact DEFA immediately

* Documentation must demonstrate confirmation of the components' actual costs (invoice, etc.).

Completed by:

Name: _____ Title: _____

Signature: _____ Date: _____

Prohibition on Telecommunications and Video Surveillance

As required by 2 CFR 200.216, EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by **Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)**. Recipients, subrecipients, and borrowers also may not use EPA funds to purchase:

a. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
b. Telecommunications or video surveillance services provided by such entities or using such equipment.
c. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:
a. Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services as described in 2 CFR 200.216 to:
(1) Procure or obtain, extend or renew a contract to procure or obtain;
(2) Enter into a contract (or extend or renew a contract) to procure; or
(3) Obtain the equipment, services, or systems.

Certain prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, are recorded in the System for Award Management exclusion list

§ 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115–232, section 889 for additional information.

(d) See also § 200.471.

Resources:

2 CRF 200.216

FAQ's: Sec. 889 of 2019 NDAA_FAQ_20201124.pdf (performance.gov)

Public Law 115-232, Section 889

§ 200.471

SECTION 9
WAGE RATES

Davis-Bacon Wage Rate Requirements

(required contract provision)

Background and Applicability

On October 30, 2009, P.L. 111-88, "Making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010, and for other purposes," was enacted. This law provides appropriations for both the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF) for Fiscal Year 2010, while adding new requirements to these already existing programs. One new requirement requires the application of Davis-Bacon Act requirements.

Application of the Davis-Bacon Act requirements extend not only to assistance agreements funded with Fiscal Year 2010 appropriations, but to all assistance agreements executed on or after October 30, 2009, whether the source of the funding is prior year's appropriations, state match, bond proceeds, interest earnings, principal repayments, or any other source of funding so long as the project is financed by an SRF assistance agreement. If a project began construction prior to October 30, 2009 but is financed or refinanced through an assistance agreement executed on or after October 30, 2009, Davis-Bacon Act requirements will apply to all construction that occurs on or after October 30, 2009, through completion of construction.

Ohio EPA Responsibilities

With respect to the Water Pollution Control Loan Fund (WPCLF) and Water Supply Revolving Loan Account (WSRLA) revolving funds, EPA provides capitalization grants to each State which in turn provides funding assistance to eligible recipients within the State. Typically, the assistance recipients are municipal or other local governmental entities that manage the funds. Occasionally, the assistance recipients may be a private for profit or not for profit entity. Although EPA and the State are responsible for ensuring assistance recipients incorporate the wage rate requirements set forth herein as part of contracts for WPCLF and WSRLA funding, the assistance recipient has the primary responsibility to maintain payroll records and for compliance with Davis-Bacon Act requirements as described below.

Municipal Or Other Local Governmental Entities
Recipient's Responsibilities

The following is intended to help assistance recipients understand and meet their obligations related to Davis-Bacon (DB). Each assistance recipients should, however, review the contract/subcontract requirements that are set forth later in this document for a more full understanding of DB obligations.

Prior to advertising for bids:

> Obtain the wage determination for the locality in which a covered activity subject to DB will take place from the Department of Labor (DOL) at www.wdol.gov.

> Incorporate these wage determinations into the request for bids.

> Include the required contract provisions (see below) into the contract documents.

> Require prime contracts to include provisions that subcontractors follow the wage determination incorporated into the prime contract.

During the advertisement period:

> Monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the request for bids remains current.

> If DOL modifies the DB wage determination more than 10 days prior to the bid opening, issue an addendum reflecting the modification.

> If DOL modifies or supersedes the DB wage determination less than 10 days prior to bid opening and you cannot issue an addendum for the change, you must request a finding from Ohio EPA that there is not reasonable time to notify interested contractors of the modification of the wage determination. The Ohio EPA will give you a report of its findings.

After opening bids:

> If the contract(s) aren't awarded within 90 days of the bid opening you must monitor www.wdol.gov on a weekly basis to ensure that wage determinations used in the bids remain current.

> If the contract(s) aren't awarded within 90 days of the bid opening, any modifications or supersedes that DOL makes to the wage determination must be incorporated into the contract unless (1) you request an extension from Ohio EPA AND (2) Ohio EPA obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv).

After contracts are signed and during construction:

> Review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

> DOL may issue a revised wage determination applicable to one or all of your contracts after the award of the contract or execution of the change order which incorporated DB requirements into the contract if DOL determines that you have failed to incorporate a wage determination or have used a wage determination that clearly does not apply to the contract. If this occurs, you shall either terminate the contract or change order and rebid the contract OR incorporate DOL's wage determination retroactive to the beginning of the contract by change order. The contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

> Periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. You must use Standard Form 1445 or equivalent documentation to memorialize the interviews.

> Establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, you must:

- conduct all interviews in confidence.
- conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract.
- conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB.
- immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements.

> Periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. You must:

- establish and follow a spot check schedule based on your assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract.
- spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract at a

minimum.

• conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB.

• during the examinations, verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

> Periodically review contractors' and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the DOL or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews.

> Immediately report potential violations of the DB prevailing wage requirements to Andrew Lausted at EPA Region V at 312-886-0189 and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/esa/contacts/whd/america2.htm.

If contracts have already been signed and DB requirements need to be incorporated:

> If contracts have already been signed prior to WPCLF/WSRLA funding being provided, you must issue a change order, task order, work assignment or similar legally binding instrument and incorporate the appropriate DOL wage determination from www.wdol.gov as well as the required contract provisions into the contract(s).

> Initiate the contractor and subcontractor review and wage interview requirements as described above and provided in the **Contract And Subcontract Provisions**.

Private For Profit Or Not For Profit (Non-Governmental) Entities Recipient's Responsibilities

The requirements, responsibilities and contract provisions for Private For Profit or Not For Profit Entities (Non-Governmental Entities) is exactly the same as for Municipal Or Other Local Governmental Entities EXCEPT for the following:

Prior to advertising for bids:

> Obtain the proposed wage determinations for specific localities from www.wdol.gov.

> Submit the wage determination to Ohio EPA for approval prior to inserting the wage determination into the solicitation unless subsequently directed otherwise by Ohio EPA.

Contract And Subcontract Provisions For Contracts In Excess Of $2,000

The following language must be included in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part with WPCLF or WSRLA funds and which is subject to the labor standards provisions of any of the acts listed in §5.1:

NOTE: Modify the first sentence to include the name of the WPCLF/WSRLA funding recipient prior to including these provisions in the contract documents.

Wage Rate Requirements

As used in these provisions "subrecipient" means_____(fill in WPCLF/WSRLA funding recipient name here).

(a) The following applies to any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.wdol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account asset for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions

or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the subgrant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional

Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees --

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S.

Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Contract Provision For Contracts In Excess Of $100,000 And Subject To The Overtime Provisions Of The Contract Work Hours And Safety Standards Act

The following language must be included in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These provisions are to be included in addition to the provisions for contracts in excess of $2,000. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(b) Contract Work Hours and Safety Standards Act. The following applies to any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

Contract Provision For Contracts In Excess Of $100,000 Subject ONLY To The Contract Work Hours And Safety Standards Act

In addition to the provisions for contracts in excess of $2,000, for any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, you must insert clauses requiring:

(c) The following applies to any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1.

The contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

The records shall be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Ohio EPA, EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

PREVAILING WAGE ORIENTATION MEETING

After award of contract the prime contractor and all approved subcontractors shall participate in a prevailing wage orientation meeting.

ONLINE FILLABLE WH-347 FORM

The On-line .pdf Fillable Form for Davis-Bacon and Related Acts Weekly Certified Payroll HW-347 is located at https://www.dol.gov/agencies/whd/forms/wh347

U.S. Department of Labor
Wage and Hour Division

Davis-Bacon and Related Acts Weekly Certified Payroll Form

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Unless otherwise noted, the information requested is specific to the named project below.

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division

Rev. January 2025
OMB No.: 1235-0008
Expires: 01/31/2028

☐ SUBMISSION OF FINAL DBRA CERTIFIED PAYROLL FORM ☐ PRIME CONTRACTOR ☐ SUBCONTRACTOR

PROJECT NAME	PROJECT NO. or CONTRACT NO.	CERTIFIED PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION	**WAGE DETERMINATION NO.**	**WEEK ENDING DATE**	**PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS ADDRESS**

(1A)	(1B)	(1C)	(1D)	(1E)	(2)	(3)	(4)								(5)	(6A)	(6B)	(6C)	(7A)	(7B)	(8)				(9)
WORKER ENTRY NO.	WORKER LAST NAME	WORKER FIRST NAME	WORKER MIDDLE INITIAL	WORKER IDENTIFYING NO.	(J) JOURNEYWORKER (RA) REGISTERD APPRENTICE	LABOR CLASSIFICATION	ST = STRAIGHT TIME OT = OVERTIME	(TOP) DAYS OF WORK WEEK (BOTTOM) DATES							TOTAL HOURS WORKED FOR WEEK	HOURLY WAGE RATE PAID FOR ST AND OT	TOTAL FRINGE BENEFIT CREDIT	PAYMENT IN LIEU OF FRINGE BENEFITS	GROSS AMT EARNED	GROSS AMT EARNED FOR **ALL WORK**	DEDUCTIONS FOR **ALL WORK**				NET PAY TO WORKER FOR **ALL WORK**
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While use of Form WH-347 itself is optional, covered contractors and subcontractors performing work on Federal or federally assisted construction contracts are required by the DBRA regulations and the contract clauses to submit payroll information on a weekly basis. The Copeland Act (40 U.S.C. § 3145) requires contractors and subcontractors performing work on Federal or federally financed construction contracts to, on a weekly basis, "furnish a statement on the wages paid each employee during the prior week." U.S. Department of Labor (DOL) Regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors and subcontractors to submit weekly certified payrolls to the appropriate Federal agency if the agency is a party to the contract (or, if the agency is not such a party, to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the Federal agency). Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with identical wording) indicating that the certified payrolls are accurate and complete, and that each laborer or mechanic has been paid not less than the required Davis-Bacon prevailing wage rate(s) (including any fringe benefits) for the work performed. DOL and contracting agencies receiving this information review the information to determine whether workers have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

PROJECT NAME	PROJECT NO. or CONTRACT NO.	PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION		**WEEK ENDING DATE**	**CERTIFYING OFFICIAL's NAME AND TITLE**

I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:

☐ The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.

☐ All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.

☐ The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.

☐ Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.

APPRENTICESHIP PROGRAM NAME	REGISTERED		NAME OF LABOR CLASSIFICATION
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	

☐ Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.

HOURLY CREDIT FOR FRINGE BENEFITS

If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.

NAME OF WORKER	FB NAME / FB TYPE / PLAN NO.	☐ Funded	☐ Unfunded	FB NAME / FB TYPE / PLAN NO.	☐ Funded	☐ Unfunded	FB NAME / FB TYPE / PLAN NO.	☐ Funded	☐ Unfunded	FB NAME / FB TYPE / PLAN NO.	☐ Funded	☐ Unfunded	FB NAME / FB TYPE / PLAN NO.	☐ Funded	☐ Unfunded	TOTAL HOURLY CREDIT
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$	$ 0.00
		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hourly Credit	$		Hrly Credit	$	$ 0.00

☐ All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.

ADDITIONAL REMARKS

SIGNATURE OF CERTIFYING OFFICIAL	DATE	TELEPHONE NUMBER	EMAIL ADDRESS
		(___) ___-____	

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE), AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY-ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.

DB.12

Wage and Hour Division

Instructions For Completing Davis-Bacon and Related Acts Weekly Certified Payroll Form, WH-347

- WH-347 (PDF)
  OMB Control No. 1235-0008, Expires 01/31/2028.
- WH-347 Form Annotated Guide (PDF)
- Online Fillable WH-347 Form

General: Form WH-347 is available for the convenience of contractors and subcontractors to submit certified weekly payrolls in connection with their Federal or federally assisted construction contracts and subcontracts. Properly completed, this form will satisfy the requirements of the regulations in parts 3 and 5 of Title 29 of the Code of Federal Regulations (CFR) as to certified payrolls submitted in connection with contracts subject to the Davis-Bacon and Related Acts (DBRA).

While use of Form WH-347 itself is optional, covered contractors and subcontractors performing work on Federal or federally assisted construction contracts are required by the DBRA regulations and the contract clauses to submit payroll information on a weekly basis. The Copeland Act (40 U.S.C. § 3145) requires contractors and subcontractors performing work on Federal or federally financed construction contracts to, on a weekly basis, "furnish a statement on the wages paid each employee during the prior week." U.S. Department of Labor (DOL) Regulations at 29 CFR 5.5(a)(3)(ii) require contractors and subcontractors to submit weekly certified payrolls to the appropriate Federal agency if the agency is a party to the contract (or, if the Federal agency is not party to the contract, to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the Federal agency that provided the Federal assistance). Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with *identical* wording) indicating that the certified payrolls are accurate and complete, and that each laborer or mechanic has been paid not less than the required Davis-Bacon prevailing wage rate(s) (including any fringe benefits) for the work performed. DOL and contracting agencies receiving this information review the information to help determine whether workers have received legally required wages and fringe benefits.

Under the DBRA, contractors and subcontractors are required to pay not less than the prevailing wage, including fringe benefits, as predetermined by DOL. The contractor's obligation to pay fringe benefits may be met through the contractor's contributions to or reasonably anticipated costs of bona fide benefit plans, funds, or programs, or by paying workers cash in lieu of fringe benefits.

Form WH-347 provides fields for contractors and subcontractors to document all wages paid to each worker, whether paid entirely as cash wages or by a combination of cash wages and employer-provided bona fide fringe benefits, and provides for the contractor or subcontractor's certification in the Statement of Compliance (as shown on page 2 of Form WH-347) that the data and payroll information on the form are accurate and complete. The Statement of Compliance also provides for the representation that the contractor or subcontractor is paying its workers, including registered apprentices, at least the required wage rates, satisfying its fringe benefits obligations, and maintaining required payroll records.

Detailed instructions for completing the first page of Form WH-347 follow:

"Check Box" for Submission of Final DBRA Certified Payroll Form: Mark the box to indicate that this submission is for the final week of work on the project for the contractor or subcontractor.

"Check Box" for Prime Contractor or Subcontractor: Mark the appropriate box to indicate whether it is the prime contractor or a subcontractor on the project for which certified payroll is being reported.

Project Name: Enter the name of the project on which you are reporting.

Project No. or Contract No.: Enter the project number or the prime contract number assigned by the relevant contracting agency (if available).

Certified Payroll No.: Beginning with the number "1", each weekly certified payroll that a contractor or subcontractor submits for a project should be given a payroll number. Enter the appropriate payroll number.

Prime Contractor's/Subcontractor's Business Name: Enter the business' legal name.

Project Location: Enter the complete address of the project, or, if there is no specific address, a description of the project location, including, at a minimum, the county or counties and state in which the project is located.

Wage Determination No.: Enter the wage determination number(s) and revision number(s) included in the covered contract and relevant to the submitted certified payroll form (e.g., if there are multiple wage determinations applicable to the project, please list all wage determinations that applied to the work performed by the workers in this pay period).

Week Ending Date: Enter the workweek ending date for this pay period.

Prime Contractor's/Subcontractor's Business Address: Enter the company's full business address.

Column 1A – Worker Entry No.: Beginning with the number "1", enter each worker's entry number (e.g., entry in row 2 may be 2, entry in row 3 may be 3, etc. If reporting more than 8 entries, row 1 on page 2 may be entry 9 and row 1 on page 3 may be entry 17, etc.). If a worker works in more than one labor classification during the course of the week, the contractor should show the number of hours the worker worked in each classification using separate rows. In such circumstances, the same worker entry number should be used on each row associated with the worker.

Column 1B – Worker Last Name: Self-explanatory.

Column 1C – Worker First Name: Self-explanatory.

Column 1D – Worker Middle Initial: Self-explanatory.

Column 1E – Worker Identifying No.: Enter each worker's individual identifying number (e.g., last four digits of the worker's social security number or any number specific to the individual worker) on each weekly certified payroll submitted. ***Note:*** *workers' full Social Security numbers must* ***not*** *be included.*

Column 2 – Journeyworker / Registered Apprentice: Enter "J" if the worker is a journeyworker or "RA" if the worker is a registered apprentice in an apprenticeship program approved by DOL's Office of Apprenticeship (OA) or a State Apprenticeship Agency (SAA). For registered apprentices, also list their level of progression within the approved program.

Column 3 – Labor Classification: List the labor classification for the work actually performed by each worker. Labor classifications are found in the applicable Davis-Bacon wage determination(s) that are included in the contract for this project. If the wage determination(s) does not include a labor classification for work that a worker has performed on this contract, contact the Contracting Officer or Agency representative immediately.

If a worker performed work in more than one labor classification during the week, the worker must be paid at least the rate specified for the appropriate labor classification for the time actually worked in that labor classification. In such circumstances, an accurate breakdown of hours worked in each labor classification must be shown on the submitted payroll by using a separate row for each labor classification in which the worker performed work. If the contractor did not maintain an accurate breakdown of hours worked by a worker in each labor classification, the worker must be paid for all hours worked using the highest applicable prevailing wage rate (basic hourly rate and fringe benefits).

Column 4 – Hours Worked Each Day: In column 4 in the table above row 1, please enter the first letter for each day of the contractor's workweek in each box on the top row and its corresponding date in each box on the second row below it. For example, if a contractor's workweek starts on Tuesday and ends on Monday, enter "T" for Tuesday in the first box of the first row and continue with the appropriate letter identifying the day of the week for each box ending with "M" on the last box of the first row. In the second row, enter the corresponding date for each day of the week. Please see example below:

T	W	T	F	S	S	M
6/16	6/17	6/18	6/19	6/20	6/21	6/22

For worker-specific entries, please enter hours worked on this project as straight time ("ST") and overtime ("OT") in the applicable boxes. On all contracts subject to the Contract Work Hours and Safety Standards Act (CWHSSA), enter hours worked on this project in excess of 40 hours total in the week as overtime ("OT") (including hours worked on and off the site of the work of the covered contract). ***Note:*** *For more information about compliance with overtime requirements on Federal and federally assisted contracts, please visit Overtime Pay on Government Contracts.*

Column 5 – Total Hours Worked for the Week: Enter the total number of the hours worked entered in column four.

Column 6A – Hourly Wage Rate Paid for ST and OT: For each worker, list the actual hourly rate paid for straight time (top row) and overtime (bottom row) worked for work in the classification indicated in column 3. If the worker was paid at a higher rate than the wage rate required on the wage determination, indicate the wage rate the worker was actually paid. ***Note:*** *do not include cash payments in lieu of fringe benefits in this column.*

Column 6B – Total Fringe Benefit Credit: Enter the total of the contractor's or subcontractor's contributions to or reasonably anticipated costs of bona fide fringe benefit plans, funds, or programs for which the contractor or subcontractor is taking a credit toward satisfying Davis-Bacon prevailing fringe benefit rates as listed on page 2 of Form WH-347 under "Hourly Credit for Fringe Benefits". This amount should equal the worker's total hours worked in this period multiplied by the hourly credit for fringe benefits as listed under the Total Hourly Credit column on page 2 of Form WH-347 under "Hourly Credit for Fringe Benefits".

Column 6C – Payment in Lieu of Fringe Benefits: Enter the total amount in cash provided in lieu of fringe benefits to the worker during the workweek. This amount should equal the worker's total hours worked in this period multiplied by the hourly rate provided to the worker as cash in lieu of fringe benefits.

Column 7A – Gross Amount Earned: Enter the worker's gross amount earned for the workweek for hours worked on this Federal or federally assisted project.

Column 7B –Gross Amount Earned for all Work: If part of a worker's weekly wage was earned on projects or work other than the project described on this payroll, including non-DBRA covered projects, enter in column 7B the total gross amount earned during the week for all work performed during the week.

Column 8 – Deductions for all Work: Enter all deductions made from worker's total gross amount earned for all work (Column 7B). Columns are provided for entering deductions made for tax withholdings, FICA, and "Other" deductions. If the amount under "Other" deductions is specific to one deduction, please describe the deduction under "Additional Remarks" on page 2 of this certified payroll form. If the amount under the "Other" deductions made from the worker's pay is a result of more than one deduction, submit an addendum that itemizes each deduction and includes a description and amount for each deduction listed on that document. Enter the total amount for all deductions actually made under the "Total Deductions" column (include the amounts listed under the Tax Withholdings, FICA and Other columns). All deductions must be in accordance with the provisions of the Copeland Act Regulations, 29 CFR part 3. If a worker worked on other jobs in addition to this project, do not pro-rate the deductions; instead, show actual deductions from the worker's weekly gross wage for all projects. ***Note:*** *Except for deductions listed in 29 CFR 3.5, all deductions must have prior approval from the Department of Labor.*

Column 9 – Net Payment to Worker for All Work: Enter the actual dollar amount paid to the worker for all hours worked across all projects (including non-DBRA covered projects) during the week.

Detailed instructions for completing the second page of Form WH-347 follow:

Project Name: Enter the name of the project on which you are reporting.

Project No. Or Contract No.: Enter the project or prime contract number associated with your contract assigned by the relevant contracting agency (if available).

Payroll No.: Beginning with the number "1", each weekly certified payroll that a contractor or subcontractor submits for a project should be given a payroll number. Enter the appropriate payroll number.

Prime Contractor's/Subcontractor's Business Name: Enter the business' legal name.

Project Location: Enter the complete address of the project, or, if there is no specific address, a description of the project location, including, at a minimum, the county or counties and state in which the project is located.

Week Ending Date: Enter the workweek ending date for this pay period.

Certifying Official's Name and Title: Print the name and official title of the contractor or subcontractor, or their agent who paid or supervised the payment of the workers under the contract during the weekly time period covered by the form.

Statement of Compliance: While the "Statement of Compliance" need not be notarized, the statement (on page 2 of this certified payroll form) is subject to the penalties provided by 18 U.S.C. § 1001, namely, a fine, possible imprisonment of not more than 5 years, or both. Accordingly, the party signing this statement should have knowledge of the facts represented as true.

If applicable, please "check" each of the 6 boxes certifying the accompanying statement as accurate. Boxes 1, 2, 3 and 6 (i.e., the first three boxes and the last box) always **must** be checked to certify that the contractor or subcontractor completing the form is in compliance with the DBRA.

If any worker is being paid as an apprentice during the period, box 4 **must** be checked and each program name in which the contractor has registered apprentices working on the project during this payroll period must be listed, with the appropriate box checked to indicate whether the apprenticeship program is registered with DOL's Office of Apprenticeship (OA) or a State Apprenticeship Agency (SAA), and the name of the labor classification entered. If more than three entries are required, please submit an addendum providing the requested information with the submission of the certified payroll. If box 4 is not applicable, do not check the box and enter "Not Applicable" or "N/A" in the entry subsection, under Apprenticeship Program Name.

If the contractor or subcontractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of bona fide fringe benefit plans, funds, or programs, box 5 must be checked and the subsections titled "Hourly Credit for Fringe Benefits" must be completed. In the first column, list each worker entry number (entered in column 1A on the first page) and name of worker for whom the contractor or subcontractor claimed an hourly fringe benefit credit (this should mirror the worker names and order found on Page 1 of the certified payroll form). In the following columns, list each fringe benefit plan name in the top row, fringe benefit plan type in the second row, fringe benefit plan number in the third row, mark whether the fringe benefit plan is funded or unfunded in the fourth row, and state the hourly amount of credit claimed for each worker under each applicable plan in the rows below. In the last column, list the total hourly cost of fringe benefit provided for each worker. Where the contractor or subcontractor is claiming a credit for the reasonably anticipated costs of fringe benefits provided directly by the contractor (commonly referred to as an "unfunded plan"), the contractor or subcontractor must have prior approval from the Department of Labor prior to claiming such credit as required in 29 CFR 5.28. If more than six bona fide fringe benefits are provided to the workers for which the contractor is claiming a credit, submit an addendum for each providing the information requested in this section.

Note: *If the contractor or subcontractor is meeting its fringe benefit obligations partially through contributions to or reasonably anticipated costs of a bona fide fringe benefit plan and partially through the payment of cash in lieu of fringe benefits, the contractor or subcontractor should enter the respective amounts in this section and in column 6C (Cash Payment in Lieu of Fringe Benefits) on page 1. If the contractor or subcontractor is meeting its fringe benefits obligations by simply paying the cash equivalent to each worker, check the box but do not complete the subsection, because those payments will be reported under column 6C (Cash Payment in Lieu of Fringe Benefits) on page 1.*

Additional Remarks: Optional space for additional information on deductions, hourly cost of fringe benefits, or explanations. If more space is needed, please continue remarks on a separate page. If the optional space or separate pages are used, please include all contractor and project information required by the form.

Signature of Certifying Official, Date, Telephone Number, and Email Address: The Statement of Compliance must be signed by the contractor or subcontractor, or their agent who paid or supervised the payment of the workers under the contract during the weekly time period covered by the form. Enter the phone number and email address of the individual who is signing the statement and the date signed. Legally valid electronic signatures are acceptable. A legally valid electronic signature includes any electronic process that indicates acceptance of the certified payroll record and includes an electronic method of verifying the signer's identity.
Note: *Photocopies or scanned copies of signatures do not satisfy this requirement.*

Public Burden Statement: We estimate that it will take an average of 55 minutes to complete this collection of information, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection of information, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W., Washington, D.C. 20210.

Note: *In order to view, fill out, and print PDF forms, you need Adobe® Acrobat® Reader® version 5 or later, which you may download for free at www.adobe.com/products/acrobat/readstep2.html.*

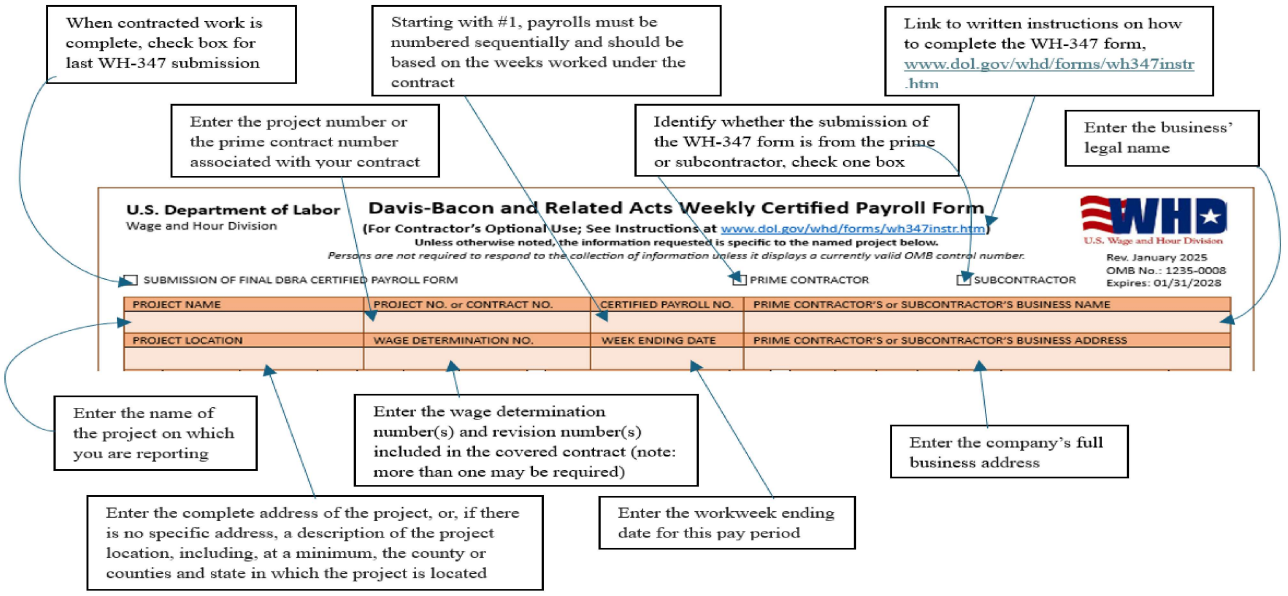
Wage and Hour Division

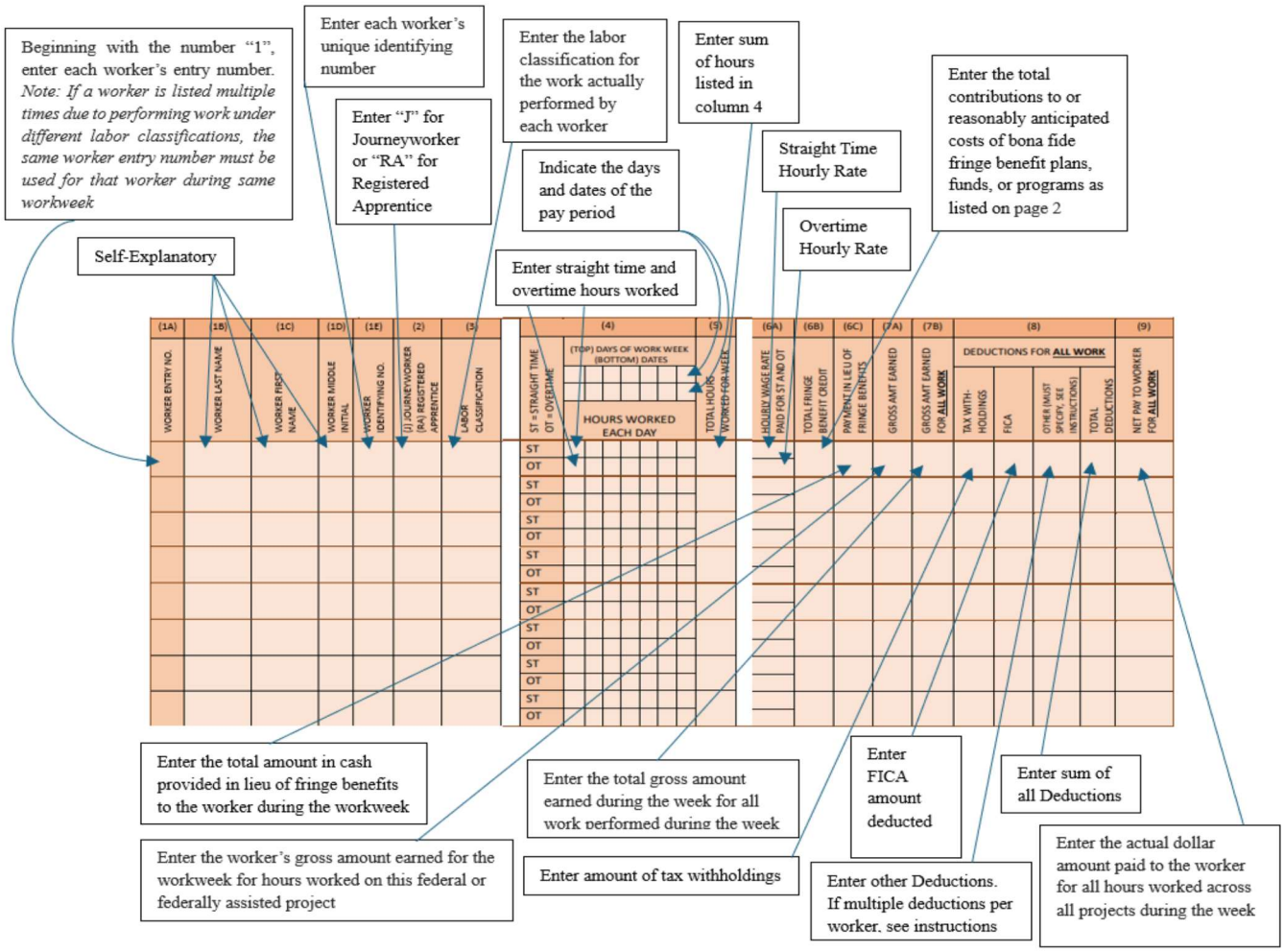
An agency within the U.S. Department of Labor

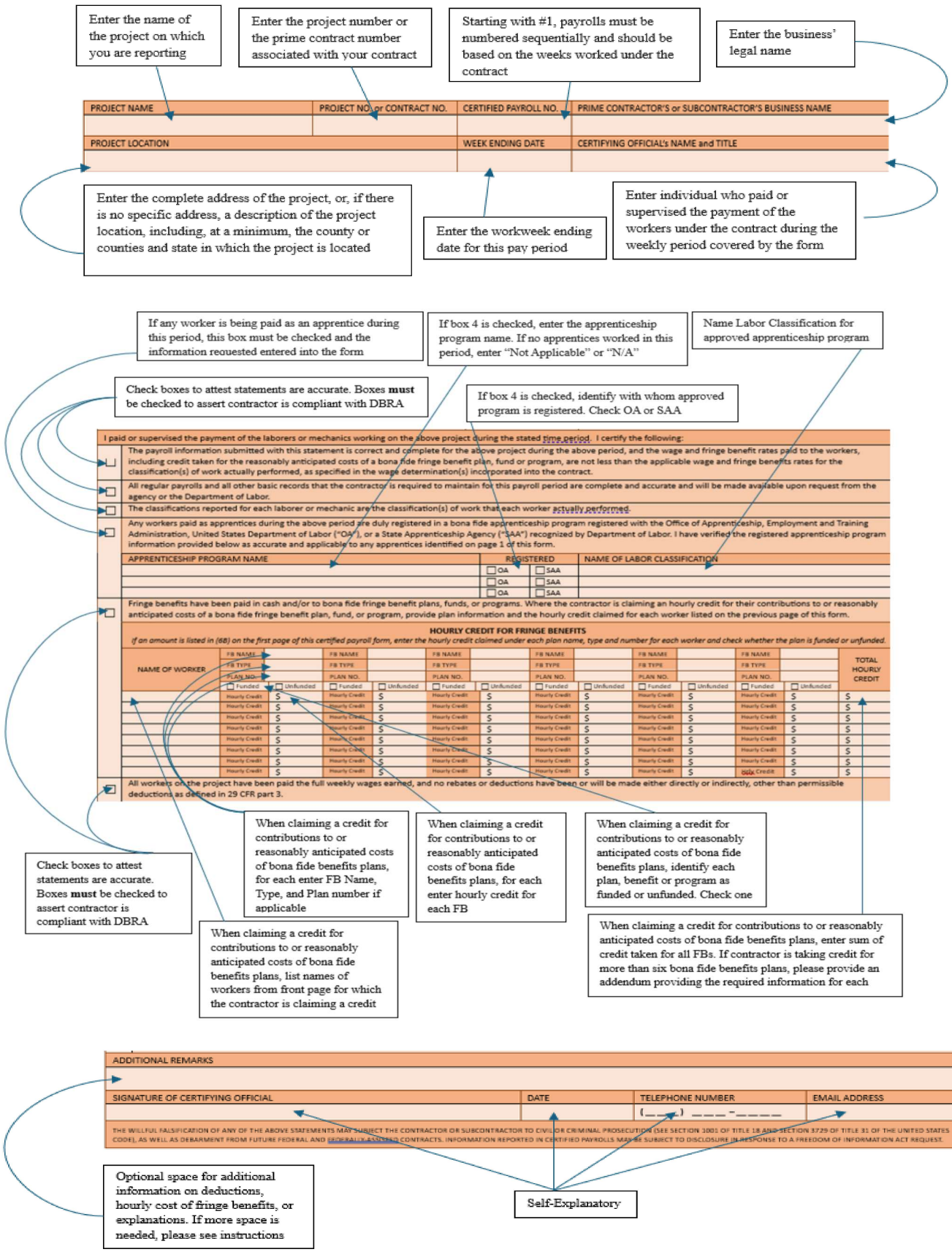
200 Constitution Ave NW
Washington, DC 20210
1-866-4-US-WAGE
1-866-487-9243
www.dol.gov

How to correctly fill out the Davis-Bacon and Related Acts Weekly Certified Payroll WH-347 Form

The completion of the WH-347 Davis Bacon and Related Acts Weekly Certified Payroll Form is optional; The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired.






Enter the name of the project on which you are reporting
Enter the project number or the prime contract number associated with your contract
Starting with #1, payrolls must be numbered sequentially and should be based on the weeks worked under the contract
Enter the business' legal name
PROJECT NAME
PROJECT NO. or CONTRACT NO.
CERTIFIED PAYROLL NO.
PRIME CONTRACTOR'S or SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION
WEEK ENDING DATE
CERTIFYING OFFICIAL's NAME and TITLE
Enter the complete address of the project, or, if there is no specific address, a description of the project location, including, at a minimum, the county or counties and state in which the project is located
Enter the workweek ending date for this pay period
Enter individual who paid or supervised the payment of the workers under the contract during the weekly period covered by the form
If any worker is being paid as an apprentice during this period, this box must be checked and the information requested entered into the form
If box 4 is checked, enter the apprenticeship program name. If no apprentices worked in this period, enter "Not Applicable" or "N/A"
Name Labor Classification for approved apprenticeship program
Check boxes to attest statements are accurate. Boxes must be checked to assert contractor is compliant with DBRA
If box 4 is checked, identify with whom approved program is registered. Check OA or SAA
I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:
The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.
All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.
The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.
Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.
APPRENTICESHIP PROGRAM NAME
REGISTERED
NAME OF LABOR CLASSIFICATION
OA
SAA
Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.
HOURLY CREDIT FOR FRINGE BENEFITS
If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.
NAME OF WORKER
FB NAME
FB TYPE
PLAN NO.
Funded
Unfunded
Hourly Credit
TOTAL HOURLY CREDIT
All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.
When claiming a credit for contributions to or reasonably anticipated costs of bona fide benefits plans, for each enter FB Name, Type, and Plan number if applicable
When claiming a credit for contributions to or reasonably anticipated costs of bona fide benefits plans, for each enter hourly credit for each FB
When claiming a credit for contributions to or reasonably anticipated costs of bona fide benefits plans, identify each plan, benefit or program as funded or unfunded. Check one
Check boxes to attest statements are accurate. Boxes must be checked to assert contractor is compliant with DBRA
When claiming a credit for contributions to or reasonably anticipated costs of bona fide benefits plans, list names of workers from front page for which the contractor is claiming a credit
When claiming a credit for contributions to or reasonably anticipated costs of bona fide benefits plans, enter sum of credit taken for all FBs. If contractor is taking credit for more than six bona fide benefits plans, please provide an addendum providing the required information for each
ADDITIONAL REMARKS
SIGNATURE OF CERTIFYING OFFICIAL
DATE
TELEPHONE NUMBER
EMAIL ADDRESS
THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE). AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.
Optional space for additional information on deductions, hourly cost of fringe benefits, or explanations. If more space is needed, please see instructions
Self-Explanatory

CONTRACTOR FRINGE BENEFIT STATEMENT

Contract # /Project Name:	Contract Location:	Today's Date:
Contractor / Subcontractor Name:	Business Address:	

In order that the proper Fringe Benefit rates can be verified when checking payrolls on the above contract, the hourly rates for fringe benefits, subsistence and/or travel allowance payment made for employees by the employer on the various classes of work are tabulated below. Please Include Apprentice Rates.

Classification:		Effective Date:	Subsistence or Travel Pay: $_____
EMPLOYER PAID FRINGE BENEFITS	Health & Welfare $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Pension $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Vacation/Holiday $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Training $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Other $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____

Classification:		Effective Date:	Subsistence or Travel Pay: $_____
EMPLOYER PAID FRINGE BENEFITS	Health & Welfare $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Pension $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Vacation/Holiday $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Training $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____
	Other $_____hr	Paid To: Name of Plan/Fund/Program: Address:	_____ _____

Supplemental statements must be submitted during the progress of the work should there be an increase or change in rates. Use additional sheets as necessary. (Attach a copy of your most recent premium transmittal (including copy of check submitted) into each of the above plans/funds/programs or a letter from the above plans/funds/programs reflecting current payment status).

I certify under penalty of perjury that fringe benefits are paid to the approved plans, funds or programs as listed above.

Name and Title	Signature and Date (Wet Signature Required)

GSLC #16 (1/09)

PREVAILING WAGE NOTIFICATION TO EMPLOYEE

Project Name:	Job Number:
Contractor:	
Project Location:	
Jobsite posting of prevailing wage rates located:	

Prevailing Wage Coordinator	Employee
Name:	Name:
Street:	Street:
City:	City:
State / Zip:	State / Zip:
Phone:	Phone:

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

Hourly fringe benefits paid on your behalf by this company.

Fringe	Amount	Fringe	Amount
Health Insurance		Vacation	
Life Insurance		Holiday	
Pension		Sick Pay	
Bonus		Training	
Other		**TOTAL HOURLY FRINGES**	

Contractor's Signature:	Date:
Employee's Signature:	Date:

whpw1512

Certified payroll Report for Non-Performing Week

Owner:

Project:

Prime Contractor:

Subcontractor (if subcontractor report):

For week beginning on:

For week ending on:

Payroll Number:

Project Number:

CERTIFICATION FOR NON-PERFORMING WEEK

I, _____ (*Name of PWC),* the undersigned, am the Prevailing Wage Coordinator with the authority to act for and on behalf of _____ *(Company Name),* do hereby certify under penalty of perjury that no work was performed for the week referenced above.

Signature

Name, Prevailing Wage Coordinator

"General Decision Number: OH20260001 09/17/2026

State: Ohio

Construction Types: Heavy and Highway

Counties: Ohio Counties of
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 and Wyandot

Heavy Construction

Highway Construction

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026
2	05/20/2026
3	06/25/2026
4	07/30/2026
5	09/17/2026

BROH0001-001 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (DEFIANCE, FULTON (EXCLUDING FULTON, AMBOY & SWAN CREEK TOWNSHIPS), HENRY (EXCLUDING MONROE, BARTLOW, LIBERTY, WASHINGTON, RICHFIELD, MARION, DAMASCUS & TOWNSHIPS & THAT PART OF HARRISON TOWNSHIP OUTSIDE CORPORATE LIMITS OF CITY OF NAPOLEON), PAULDING, PUTNAM AND WILLIAMS COUNTIES)	$ 33.39	20.06

BROH0001-004 06/01/2023

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 32.40	19.30

BROH0003-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (FULTON (TOWNSHIPS OF AMBOY, SWAN CREEK & FULTON), HENRY (TOWNSHIPS OF WASHINGTON, DAMASCUS, RICHFIELD, BARTLOW, LIBERTY, HARRISON, MONROE, & MARION), LUCAS AND WOOD (TOWNSHIPS OF PERRYSBURG, ROSS, LAKE, TROY, FREEDOM, MONTGOMERY, WEBSTER, CENTER, PORTAGE, MIDDLETON, PLAIN, LIBERTY, HENRY, WASHINGTON, WESTON, MILTON, JACKSON & GRAND RAPIDS) COUNTIES)	$ 33.39	20.06

BROH0005-003 06/01/2020

	Rates	Fringes
BRICKLAYER: BRICKLAYERS; CAULKERS; CLEANERS;		

POINTERS; & STONEMASONS (CUYAHOGA, LORAIN & MEDINA (HINCKLEY, GRANGER, BRUNSWICK, LIVERPOOL, MONTVILLE, YORK, HOMER, HARRISVILLE, CHATHAM, LITCHFIELD & SPENCER TOWNSHIPS AND THE CITY OF MEDINA))..... $ 36.64 17.13

BRICKLAYER: SANDBLASTERS (CUYAHOGA, LORAIN & MEDINA (HINCKLEY, GRANGER, BRUNSWICK, LIVERPOOL, MONTVILLE, YORK, HOMER, HARRISVILLE, CHATHAM, LITCHFIELD & SPENCER TOWNSHIPS AND THE CITY OF MEDINA))..... $ 36.39 17.13

BRICKLAYER: SEWER BRICKLAYERS & STACK BUILDERS (CUYAHOGA, LORAIN & MEDINA (HINCKLEY, GRANGER, BRUNSWICK, LIVERPOOL, MONTVILLE, YORK, HOMER, HARRISVILLE, CHATHAM, LITCHFIELD & SPENCER TOWNSHIPS AND THE CITY OF MEDINA))..... $ 36.64 17.13

BRICKLAYER: SWING SCAFFOLDS (CUYAHOGA, LORAIN & MEDINA (HINCKLEY, GRANGER, BRUNSWICK, LIVERPOOL, MONTVILLE, YORK, HOMER, HARRISVILLE, CHATHAM, LITCHFIELD & SPENCER TOWNSHIPS AND THE CITY OF MEDINA))..... $ 37.14 17.13

BROH0006-005 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (CARROLL, COLUMBIANA (KNOX, BUTLER, WEST & HANOVER TOWNSHIPS), STARK & TUSCARAWAS).....	$ 33.39	20.06

BROH0007-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (LAWRENCE).....	$ 33.39	20.06

BROH0007-005 06/01/2023

	Rates	Fringes
BRICKLAYER (PORTAGE & SUMMIT).....	$ 32.40	19.30

BROH0007-010 06/01/2024

	Rates	Fringes
MASON - STONE (PORTAGE & SUMMIT).....	$ 33.39	20.06

BROH0008-001 06/01/2024

	Rates	Fringes
BRICKLAYER (COLUMBIANA (SALEM, PERRY, FAIRFIELD, CENTER, ELK RUN, MIDDLETON, & UNITY TOWNSHIPS AND THE CITY OF NEW WATERFORD), MAHONING & TRUMBULL)....	$ 33.39	20.06

BROH0009-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (BELMONT & MONROE COUNTIES AND THE TOWNSHIPS OF WARREN & MT. PLEASANT AND THE VILLAGE OF DILLONVALE IN JEFFERSON COUNTY).....	$ 33.39	20.06
REFRACTORY (BELMONT & MONROE COUNTIES AND THE TOWNSHIPS OF WARREN & MT. PLEASANT AND THE VILLAGE OF DILLONVALE IN JEFFERSON COUNTY).....	$ 31.45	19.01

BROH0010-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (COLUMBIANA (ST. CLAIR, MADISON, WAYNE, FRANKLIN, WASHINGTON, YELLOW CREEK & LIVERPOOL TOWNSHIPS) & JEFFERSON (BRUSH CREEK & SALINE TOWNSHIPS)).....	$ 33.39	20.06

BROH0014-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (HARRISON & JEFFERSON (EXCEPT MT. PLEASANT, WARREN, BRUSH CREEK, SALINE & SALINEVILLE TOWNSHIPS & THE VILLAGE OF DILLONVALE)).	$ 33.39	20.06

BROH0016-002 06/01/2023

	Rates	Fringes
BRICKLAYER, STONEMASON (ASHTABULA, GEAUGA, AND LAKE COUNTIES).....	$ 32.40	19.30

BROH0018-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (BROWN, BUTLER, CLERMONT, HAMILTON, PREBLE (GASPER, DIXON, ISRAEL, LANIER, SOMERS & GRATIS TOWNSHIPS) & WARREN COUNTIES:)	$ 33.39	20.06

BROH0022-004 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (CHAMPAIGN, CLARK, CLINTON, DARKE, GREENE, HIGHLAND, LOGAN, MIAMI, MONTGOMERY, PREBLE (JACKSON, MONROE, HARRISON, TWIN, JEFFERSON & WASHINGTON TOWNSHIPS) AND SHELBY COUNTIES)	$ 33.39	20.06

BROH0032-001 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (GALLIA & MEIGS)	$ 33.39	20.06

BROH0035-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (ALLEN, AUGLAIZE, MERCER AND VAN WERT COUNTIES)	$ 33.39	20.06

BROH0039-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (ADAMS & SCIOTO)	$ 33.39	20.06

BROH0040-003 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (ASHLAND, CRAWFORD, HARDIN, HOLMES, MARION, MORROW, RICHLAND, WAYNE AND WYANDOT (EXCEPT CRAWFORD, RIDGE, RICHLAND & TYMOCHTEE TOWNSHIPS) COUNTIES) FOOTNOTE: LAYOUT MAN AND SAWMAN RATE: $1.00 PER HOUR ABOVE JOURNEYMAN RATE. FREE STANDING STACK WORK GROUND LEVEL TO TOP OF STACK; SANDBLASTING AND LAYING OF CARBON MASONRY MATERIAL IN SWING STAGE AND/OR SCAFFOLD; RAMMING AND SPADING OF PLASTICS AND GUNNITING: $1.50 PER HOUR ABOVE JOURNEYMAN RATE. ""HOT"" WORK: $2.50 ABOVE JOURNEYMAN RATE	$ 33.39	20.06

BROH0044-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (COSHOCTON, FAIRFIELD, GUERNSEY, HOCKING, KNOX, KICKING, MORGAN, MUSKINGUM, NOBLE (BEAVER, BUFFALO, SENECA & WAYNE TOWNSHIPS) & PERRY COUNTIES:)	$ 33.39	20.06

BROH0045-002 06/01/2023

	Rates	Fringes
BRICKLAYER, STONEMASON (FAYETTE, JACKSON, PIKE, ROSS AND VINTON COUNTIES)	$ 35.39	17.47

BROH0046-002 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (ERIE, HANCOCK, HURON, OTTAWA, SANDUSKY, SENECA, WOOD (PERRY & BLOOM TOWNSHIPS) AND WYANDOT (TYMOCHTEE, CRAWFORD, RIDGE & RICHLAND TOWNSHIPS) COUNTIES & THE ISLANDS OF LAKE ERIE NORTH OF SANDUSKY) FOOTNOTE: LAYOUT MAN AND SAWMAN RATE: $1.00 PER HOUR ABOVE JOURNEYMAN RATE. FREE STANDING STACK WORK GROUND LEVEL TO TOP OF STACK; SANDBLASTING AND LAYING OF CARBON MASONRY MATERIAL IN SWING STAGE AND/OR SCAFFOLD; RAMMING AND SPADING OF PLASTICS AND GUNNITING: $1.50 PER HOUR ABOVE JOURNEYMAN RATE. ""HOT"" WORK: $2.50 ABOVE JOURNEYMAN RATE	$ 33.39	20.06

BROH0052-001 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (ATHENS COUNTY)	$ 33.39	20.06

BROH0052-003 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (NOBLE (BROOKFIELD, NOBLE, CENTER, SHARON, OLIVE, ENOCH, STOCK, JACKSON, JEFFERSON & ELK TOWNSHIPS) AND WASHINGTON COUNTIES)	$ 33.39	20.06

BROH0055-003 06/01/2024

	Rates	Fringes
BRICKLAYER, STONEMASON (DELAWARE, FRANKLIN, MADISON, PICKAWAY AND UNION COUNTIES)	$ 33.39	20.06

CARP0002-024 05/01/2025

	Rates	Fringes
CARPENTER & PILEDRIVERMEN (BROWN, BUTLER, CHAMPAIGN, CLARK, CLERMONT, CLINTON, DARKE, GREENE, HAMILTON, LOGAN, MIAMI, MONTGOMERY, PREBLE, SHELBY & WARREN)	$ 35.94	23.59
DIVER (BROWN, BUTLER, CHAMPAIGN, CLARK, CLERMONT, CLINTON, DARKE, GREENE, HAMILTON, LOGAN, MIAMI, MONTGOMERY, PREBLE, SHELBY & WARREN)	$ 40.58	9.69

CARP0171-001 05/01/2025

	Rates	Fringes
CARPENTER (MAHONING & TRUMBULL)	$ 33.19	25.02

CARP0171-002 05/01/2025

	Rates	Fringes
CARPENTER (BELMONT, COLUMBIANA, HARRISON, JEFFERSON & MONROE)	$ 32.50	26.19

CARP0200-002 05/01/2025

	Rates	Fringes
CARPENTER (ADAMS, ATHENS, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GUERNSEY, HIGHLAND, HOCKING, JACKSON, LAWRENCE, LICKING, MADISON, MARION, MEIGS, MORGAN, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, ROSS, SCIOTO, UNION, VINTON AND WASHINGTON COUNTIES)	$ 35.94	23.59
DIVER (ADAMS, ATHENS, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GUERNSEY, HIGHLAND, HOCKING, JACKSON, LAWRENCE, LICKING, MADISON, MARION, MEIGS, MORGAN, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, ROSS, SCIOTO, UNION, VINTON AND WASHINGTON COUNTIES)	$ 39.41	10.40
PILEDRIVERMAN (ADAMS, ATHENS, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GUERNSEY, HIGHLAND, HOCKING, JACKSON, LAWRENCE, LICKING, MADISON, MARION, MEIGS, MORGAN, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, ROSS, SCIOTO, UNION, VINTON AND WASHINGTON COUNTIES)	$ 35.94	23.59

CARP0285-001 05/01/2025

	Rates	Fringes
CARPENTER (CARROLL, STARK, TUSCARAWAS AND WAYNE)	$ 34.07	24.28

CARP0285-002 05/01/2025

	Rates	Fringes
CARPENTER (COSHOCTON, HOLMES, KNOX & MORROW)	$ 33.38	24.69

CARP0285-008 05/01/2025

	Rates	Fringes
CARPENTER (MEDINA, PORTAGE & SUMMIT)	$ 37.18	25.07

CARP0351-005 05/01/2025

	Rates	Fringes
CARPENTER (LUCAS & WOOD)	$ 35.44	27.56

CARP0351-006 05/01/2025

	Rates	Fringes

CARPENTER (DEFIANCE, FULTON, HANCOCK, HENRY, PAULDING & WILLIAMS COUNTIES)	$ 32.05	26.13

CARP0372-002 05/01/2025

	Rates	Fringes
CARPENTER (ALLEN, AUGLAIZE, HARDIN, MERCER, PUTNAM & VAN WERT)	$ 31.80	26.33

CARP0435-005 05/01/2025

	Rates	Fringes
CARPENTER (ASHTABULA, CUYAHOGA, GEAUGA & LAKE)	$ 38.57	24.64

CARP0735-001 05/01/2025

	Rates	Fringes
CARPENTER (ASHLAND, HURON & RICHLAND)	$ 34.67	23.57

CARP0735-002 05/01/2025

	Rates	Fringes
CARPENTER (LORAIN)	$ 38.42	24.01

CARP0735-004 05/01/2025

	Rates	Fringes
CARPENTER (ERIE)	$ 36.71	24.14

CARP0744-001 05/01/2025

	Rates	Fringes
CARPENTER (CRAWFORD, OTTAWA, SANDUSKY, SENECA & WYANDOT)	$ 33.74	27.05

CARP1090-002 05/01/2025

	Rates	Fringes
PILEDRIVERMEN & DIVER'S TENDER (ALLEN, AUGLAIZE, HARDIN, MERCER, PUTNAM, VAN WERT & WYANDOT) DIVERS - $250.00 PER DAY	$ 35.94	28.39

CARP1090-003 05/01/2025

	Rates	Fringes
DIVER, WET (BELMONT, HARRISON, & MONROE)	$ 58.52	24.91
PILEDRIVERMEN; DIVER, DRY (BELMONT, HARRISON, & MONROE)	$ 39.01	24.91

CARP1090-004 05/01/2025

	Rates	Fringes
DIVER, WET (CARROLL, STARK, TUSCARAWAS & WAYNE)	$ 49.82	25.40
PILEDRIVERMEN; DIVER, DRY (CARROLL, STARK, TUSCARAWAS & WAYNE)	$ 33.21	25.40

CARP1090-005 05/01/2025

	Rates	Fringes
DIVER, WET (ASHLAND, ASHTABULA, CUYAHOGA, ERIE, GEAUGA, HURON, LAKE, LORAIN, MEDINA, PORTAGE, RICHLAND & SUMMIT)	$ 54.51	27.50
PILEDRIVERMEN; DIVER, DRY (ASHLAND, ASHTABULA, CUYAHOGA, ERIE, GEAUGA, HURON, LAKE, LORAIN, MEDINA, PORTAGE, RICHLAND & SUMMIT)	$ 36.34	27.50

CARP1090-006 05/01/2025

	Rates	Fringes
DIVER, WET (COSHOCTON, HOLMES, KNOX & MORROW)	$ 54.36	22.54
PILEDRIVERMEN; DIVER, DRY (COSHOCTON, HOLMES, KNOX & MORROW)	$ 36.24	22.54

CARP1090-007 05/01/2025

	Rates	Fringes
DIVER, WET (MAHONING & TRUMBULL)	$ 50.85	24.82
PILEDRIVERMEN; DIVER, DRY (MAHONING & TRUMBULL)	$ 33.90	24.82

CARP1090-008 05/01/2025

	Rates	Fringes
PILEDRIVERMAN (COLUMBIANA & JEFFERSON)	$ 39.01	24.91

CARP1090-009 05/01/2025

	Rates	Fringes
PILEDRIVERMEN & DIVER'S TENDER (CRAWFORD, DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, SANDUSKY, SENECA, WILLIAMS & WOOD) DIVERS - $250.00 PER DAY	$ 37.98	28.63

ELEC0008-002 05/27/2024

	Rates	Fringes
CABLE SPLICER (DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS & WOOD)	$ 38.98	18.96
ELECTRICIAN (DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS & WOOD)	$ 48.40	25.24

ELEC0032-003 06/01/2025

	Rates	Fringes
ELECTRICIAN (ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, SHELBY, VAN WERT & WYANDOT (CRAWFORD, JACKSON, MARSEILLES, MIFFLIN, RIDGELAND, RIDGE & SALEM TOWNSHIPS))	$ 39.17	23.60

ELEC0038-002 04/28/2025

	Rates	Fringes
ELECTRICIAN, EXCLUDING SOUND & COMMUNICATIONS WORK. FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 46.63	24.92

ELEC0038-008 04/28/2025

	Rates	Fringes
SOUND & COMMUNICATION TECHNICIAN: COMMUNICATIONS TECHNICIAN (CUYAHOGA, GEAUGA (BAINBRIDGE, CHESTER & RUSSELL TOWNSHIPS) & LORAIN (COLUMBIA TOWNSHIP)) FOOTNOTES; A. 6 PAID HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; JULY 4TH; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY B. 1 WEEK'S PAID VACATION FOR 1 YEAR'S SERVICE; 2 WEEKS' PAID VACATION FOR 2 OR MORE YEARS' SERVICE	$ 34.30	14.95
SOUND & COMMUNICATION TECHNICIAN: INSTALLER TECHNICIAN (CUYAHOGA, GEAUGA (BAINBRIDGE, CHESTER & RUSSELL TOWNSHIPS) & LORAIN (COLUMBIA TOWNSHIP)) FOOTNOTES; A. 6 PAID HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; JULY 4TH; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY B. 1 WEEK'S PAID VACATION FOR 1 YEAR'S SERVICE; 2 WEEKS' PAID VACATION FOR 2 OR MORE YEARS' SERVICE	$ 33.05	14.91

ELEC0064-003 11/30/2025

	Rates	Fringes
ELECTRICIAN (COLUMBIANA (BUTLER, FAIRFIELD, PERRY, SALEM & UNITY TOWNSHIPS) MAHONING (AUSTINTOWN, BEAVER, BERLIN, BOARDMAN, CANFIELD, ELLSWORTH, COITSVILLE, GOSHEN, GREEN, JACKSON, POLAND, SPRINGFIELD & YOUNGSTOWN TOWNSHIPS), & TRUMBULL (HUBBARD & LIBERTY TOWNSHIPS))	$ 41.49	21.81

ELEC0071-005 01/06/2025

	Rates	Fringes
LINE CONSTRUCTION: EQUIPMENT OPERATOR: DOT/TRAFFIC SIGNAL & HIGHWAY LIGHTING PROJECTS (ASHTABULA, CUYAHOGA, GEAUGA, LAKE & LORAIN)	$ 39.97	18.79
LINE CONSTRUCTION: EQUIPMENT OPERATOR: MUNICIPAL POWER/TRANSIT PROJECTS (ASHTABULA, CUYAHOGA, GEAUGA, LAKE & LORAIN)	$ 49.46	21.60
LINE CONSTRUCTION: GROUNDMAN: DOT/TRAFFIC SIGNAL & HIGHWAY LIGHTING PROJECTS (ASHTABULA, CUYAHOGA,		

GEAUGA, LAKE & LORAIN).....$ 31.10 16.40
LINE CONSTRUCTION: GROUNDMAN: MUNICIPAL
POWER/TRANSIT PROJECTS (ASHTABULA, CUYAHOGA,
GEAUGA, LAKE & LORAIN).....$ 38.47 18.64
LINE CONSTRUCTION: LINEMEN/CABLE SPLICER:
DOT/TRAFFIC SIGNAL & HIGHWAY LIGHTING PROJECTS
(ASHTABULA, CUYAHOGA, GEAUGA, LAKE & LORAIN).....$ 43.89 19.85
LINE CONSTRUCTION: LINEMEN/CABLE SPLICER:
MUNICIPAL POWER/TRANSIT PROJECTS (ASHTABULA,
CUYAHOGA, GEAUGA, LAKE & LORAIN).....$ 54.96 23.09

ELEC0071-010 01/06/2025

	Rates	Fringes
LINE CONSTRUCTION: EQUIPMENT OPERATOR (STATEWIDE)...	$ 40.44	17.71
LINE CONSTRUCTION: GROUNDMAN (STATEWIDE).....	$ 29.07	14.97
LINE CONSTRUCTION: LINEMAN & CABLE SPLICERS (STATEWIDE).....	$ 46.02	19.04

ELEC0082-002 12/02/2024

	Rates	Fringes
ELECTRICIAN (CLINTON, DARKE, GREENE, MIAMI, MONTGOMERY, PREBLE & WARREN (WAYNE, CLEAR CREEK & FRANKLIN TOWNSHIPS)).....	$ 38.00	22.49

ELEC0082-006 11/25/2024

	Rates	Fringes
SOUND & COMMUNICATION TECHNICIAN: CABLE PULLER (CLINTON, DARKE, GREENE, MIAMI, MONTGOMERY, PREBLE & WARREN (WAYNE, CLEAR CREEK & FRANKLIN TOWNSHIPS)).	$ 13.85	5.30
SOUND & COMMUNICATION TECHNICIAN: INSTALLER/TECHNICIAN (CLINTON, DARKE, GREENE, MIAMI, MONTGOMERY, PREBLE & WARREN (WAYNE, CLEAR CREEK & FRANKLIN TOWNSHIPS)).....	$ 27.70	15.71

ELEC0129-003 02/24/2025

	Rates	Fringes
ELECTRICIAN (LORAIN (EXCEPT COLUMBIA TOWNSHIP) & MEDINA (LITCHFIELD & LIVERPOOL TOWNSHIPS)).....	$ 42.95	18.81

ELEC0129-004 02/24/2025

	Rates	Fringes
ELECTRICIAN (ERIE & HURON (LYME, RIDGEFIELD, NORWALK, TOWNSEND, WAKEMAN, SHERMAN, PERU, BRONSON, HARTLAND, CLARKSFIELD, NORWICH, GREENFIELD, FAIRFIELD, FITCHVILLE & NEW LONDON TOWNSHIPS)).....	$ 42.95	18.81

ELEC0141-003 06/02/2025

	Rates	Fringes
CABLE SPLICER (BELMONT COUNTY).....	$ 42.94	27.74
ELECTRICIAN (BELMONT COUNTY).....	$ 39.25	31.23

ELEC0212-003 11/26/2018

	Rates	Fringes
SOUND & COMMUNICATION TECHNICIAN (BROWN, CLERMONT & HAMILTON).....	$ 24.35	10.99

ELEC0212-005 06/02/2025

	Rates	Fringes
ELECTRICIAN (BROWN, CLERMONT, AND HAMILTON COUNTIES).....	$ 38.05	22.97

ELEC0245-001 08/26/2024

	Rates	Fringes
LINE CONSTRUCTION: EQUIPMENT OPERATOR (ALLEN, HARDIN, VAN WERT & WYANDOT (CRAWFORD, JACKSON, MARSEILLES, MIFFLIN, RICHLAND, RIDGE & SALEM TOWNSHIPS)) FOOTNOTE: A. HALF DAY'S PAID HOLIDAY: THE LAST 4 HOURS OF THE WORKDAY PRIOR TO CHRISTMAS OR NEW YEAR'S DAY.....	$ 32.95	17.08
LINE CONSTRUCTION: GROUNDMAN TRUCK DRIVER (ALLEN, HARDIN, VAN WERT & WYANDOT (CRAWFORD, JACKSON, MARSEILLES, MIFFLIN, RICHLAND, RIDGE & SALEM		

TOWNSHIPS)): FOOTNOTE: A. HALF DAY'S PAID HOLIDAY: THE LAST 4 HOURS OF THE WORKDAY PRIOR TO CHRISTMAS OR NEW YEAR'S DAY.....$ 20.59 13.62
LINE CONSTRUCTION: LINEMAN (ALLEN, HARDIN, VAN WERT & WYANDOT (CRAWFORD, JACKSON, MARSEILLES, MIFFLIN, RICHLAND, RIDGE & SALEM TOWNSHIPS)) FOOTNOTE: A. HALF DAY'S PAID HOLIDAY: THE LAST 4 HOURS OF THE WORKDAY PRIOR TO CHRISTMAS OR NEW YEAR'S DAY.....$ 47.07 21.03

ELEC0245-003 01/01/2025

	Rates	Fringes
LINE CONSTRUCTION: CABLE SPLICER (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) : FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 53.90	23.19
LINE CONSTRUCTION: GROUNDMAN/TRUCK DRIVER (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 20.51	13.84
LINE CONSTRUCTION: HELI-ARC WELDING (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 47.17	21.31
LINE CONSTRUCTION: LINEMAN (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 46.87	21.22
LINE CONSTRUCTION: OPERATOR - CLASS 1 (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 37.50	18.60
LINE CONSTRUCTION: OPERATOR - CLASS 2 (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 32.81	17.29
LINE CONSTRUCTION: TRAFFIC SIGNAL & LIGHTING TECHNICIAN (DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, AND WOOD COUNTIES) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 42.18	19.91

ELEC0245-004 01/01/2025

	Rates	Fringes
LINE CONSTRUCTION: CABLE SPLICER (ERIE COUNTY) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 53.90	23.19
LINE CONSTRUCTION: GROUNDMAN/TRUCK DRIVER (ERIE COUNTY) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 20.51	13.84
LINE CONSTRUCTION: LINEMAN (ERIE COUNTY) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 46.87	21.22
LINE CONSTRUCTION: OPERATOR - CLASS 1 (ERIE COUNTY) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 37.50	18.60
LINE CONSTRUCTION: OPERATOR - CLASS 2 (ERIE COUNTY) FOOTNOTE: A. 6 OBSERVED HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; INDEPENDENCE DAY; LABOR DAY; THANKSGIVING DAY; & CHRISTMAS DAY. EMPLOYEES WHO WORK ON A HOLIDAY SHALL BE PAID AT A RATE OF DOUBLE THEIR APPLICABLE CLASSIFIED STRAIGHT-TIME RATES FOR THE WORK PERFORMED ON SUCH HOLIDAY	$ 32.81	17.29

ELEC0246-001 10/28/2024

	Rates	Fringes
ELECTRICIAN (CARROLL, COLUMBIANA, HARRISON AND JEFFERSON COUNTIES IN OHIO; BROOKE AND HANCOCK COUNTIES IN WEST VIRGINIA.) FOOTNOTE: A. 1 1/2 PAID HOLIDAYS: THE LAST SCHEDULED WORKDAY PRIOR TO CHRISTMAS & 4 HOURS ON GOOD FRIDAY	$ 44.00	37.68

ELEC0306-005 05/27/2024

	Rates	Fringes
CABLE SPLICER (MEDINA (BRUNSWICK, CHATHAM, GRANGER, GUILFORD, HARRISVILLE, HINCKLEY, HOMER, LAFAYETTE, MEDINA, MONTVILLE, SHARON, SPENCER, WADSWORTH, WESTFIELD & YORK TOWNSHIPS), PORTAGE (ATWATER, AURORA, BRIMFIELD, DEERFIELD, FRANKLIN, MANTUA, RANDOLPH, RAVENNA, ROOTSTOWN, SHALERSVILLE, STREETSBORO & SUFFIELD TOWNSHIPS), SUMMIT & WAYNE (BAUGHMAN, CANAAN, CHESTER, CHIPPEWA, CONGRESS, GREEN, MILTON, & WAYNE TOWNSHIPS))	$ 46.81	20.95
ELECTRICIAN (MEDINA (BRUNSWICK, CHATHAM, GRANGER, GUILFORD, HARRISVILLE, HINCKLEY, HOMER, LAFAYETTE, MEDINA, MONTVILLE, SHARON, SPENCER, WADSWORTH, WESTFIELD & YORK TOWNSHIPS), PORTAGE (ATWATER, AURORA, BRIMFIELD, DEERFIELD, FRANKLIN, MANTUA, RANDOLPH, RAVENNA, ROOTSTOWN, SHALERSVILLE, STREETSBORO & SUFFIELD TOWNSHIPS), SUMMIT & WAYNE (BAUGHMAN, CANAAN, CHESTER, CHIPPEWA, CONGRESS, GREEN, MILTON, & WAYNE TOWNSHIPS))	$ 42.55	20.95

ELEC0317-002 06/02/2025

	Rates	Fringes
CABLE SPLICER (GALLIA & LAWRENCE)	$ 32.68	18.13
ELECTRICIAN (GALLIA & LAWRENCE)	$ 41.15	29.35

ELEC0540-005 06/30/2025

	Rates	Fringes
ELECTRICIAN (CARROLL (NORTHERN HALF, INCLUDING FOX,		

HARRISON, ROSE & WASHINGTON TOWNHSHIPS), COLUMBIANA (KNOX TOWNSHIP), HOLMES, MAHONING (SMITH TOWNSHIP), STARK, TUSCARAWAS (NORTH OF AUBURN, CLAY, RUSH & YORK TOWNSHIPS), AND WAYNE (SOUTH OF BAUGHMAN, CHESTER, GREEN & WAYNE TOWNSHIPS) COUNTIES).....$ 39.86 29.19

ELEC0573-003 06/01/2025

	Rates	Fringes
ELECTRICIAN (ASHTABULA (COLEBROOK, WAYNE, WILLIAMSFIELD, ORWELL & WINDSOR TOWNSHIPS), GEAUGA (AUBURN, MIDDLEFIELD, PARKMAN & TROY TOWNSHIPS), MAHONING (MILTON TOWNSHIP), PORTAGE (CHARLESTOWN, EDINBURG, FREEDOM, HIRAM, NELSON, PALMYRA, PARIS & WINDHAM TOWNSHIPS), AND TRUMBULL (EXCEPT LIBERTY & HUBBARD TOWNSHIPS))	$ 42.20	23.37

ELEC0575-001 05/29/2023

	Rates	Fringes
ELECTRICIAN (ADAMS, FAYETTE, HIGHLAND, HOCKING, JACKSON (BLOOMFIELD, FRANKLIN, HAMILTON, JEFFERSON, LICK, MADISON, SCIOTO, COAL, JACKSON, LIBERTY, MILTON & WASHINGTON TOWNSHIPS), PICKAWAY (DEER CREEK, PERRY, PICKAWAY, SALT CREEK & WAYNE TOWNSHIPS), PIKE (BEAVER, BENTON, JACKSON, MIFFLIN, PEBBLE, PEEPEE, PERRY, SEAL, CAMP CREEK, NEWTON, SCIOTO, SUNFISH, UNION & MARION TOWNSHIPS), ROSS, SCIOTO & VINTON (CLINTON, EAGLE, ELK, HARRISON, JACKSON, RICHLAND & SWAN TOWNSHIPS))	$ 37.00	22.26

ELEC0648-001 09/01/2025

	Rates	Fringes
CABLE SPLICER (BUTLER AND WARREN COUNTIES (DEERFIELD, HAMILTON, HARLAN, MASSIE, SALEM, TURTLE CREEK, UNION & WASHINGTON TOWNSHIPS))	$ 30.50	18.23
ELECTRICIAN (BUTLER AND WARREN COUNTIES (DEERFIELD, HAMILTON, HARLAN, MASSIE, SALEM, TURTLE CREEK, UNION & WASHINGTON TOWNSHIPS))	$ 38.00	24.16

ELEC0673-004 05/26/2025

	Rates	Fringes
CABLE SPLICER (ASHTABULA (EXCLUDING ORWELL, COLEBROOK, WILLIAMSFIELD, WAYNE & WINDSOR TOWNSHIPS), GEAUGA (BURTON, CHARDON, CLARIDON, HAMBDEN, HUNTSBURG, MONTVILLE, MUNSON, NEWBURY & THOMPSON TOWNSHIPS) AND LAKE COUNTIES)	$ 33.81	21.47
ELECTRICIAN (ASHTABULA (EXCLUDING ORWELL, COLEBROOK, WILLIAMSFIELD, WAYNE & WINDSOR TOWNSHIPS), GEAUGA (BURTON, CHARDON, CLARIDON, HAMBDEN, HUNTSBURG, MONTVILLE, MUNSON, NEWBURY & THOMPSON TOWNSHIPS) AND LAKE COUNTIES)	$ 41.17	24.58

ELEC0683-002 06/02/2025

	Rates	Fringes
CABLE SPLICER (CHAMPAIGN, CLARK, DELAWARE, FAIRFIELD, FRANKLIN, MADISON, PICKAWAY (CIRCLEVILLE, DARBY, HARRISON, JACKSON, MADISON, MONROE, MUHLENBERG, SCIOTO, WALNUT & WASHINGTON TOWNSHIPS), AND UNION COUNTIES)	$ 44.00	26.40
ELECTRICIAN (CHAMPAIGN, CLARK, DELAWARE, FAIRFIELD, FRANKLIN, MADISON, PICKAWAY (CIRCLEVILLE, DARBY, HARRISON, JACKSON, MADISON, MONROE, MUHLENBERG, SCIOTO, WALNUT & WASHINGTON TOWNSHIPS), AND UNION COUNTIES)	$ 43.00	26.37

ELEC0688-003 05/30/2022

	Rates	Fringes
ELECTRICIAN (ASHLAND, CRAWFORD, HURON (RICHMOND, NEW HAVEN, RIPLEY & GREENWICH TOWNSHIPS), KNOX (LIBERTY, CLINTON, UNION, HOWARD, MONROE, MIDDLEBERRY, MORRIS, WAYNE, BERLIN, PIKE, BROWN & JEFFERSON TOWNSHIPS), MARION, MORROW, RICHLAND AND WYANDOT (SYCAMORE, CRANE, EDEN, PITT, ANTRIM & TYMOCHTEE TOWNSHIPS) COUNTIES)	$ 32.30	21.83

ELEC0972-002 06/01/2024

	Rates	Fringes
CABLE SPLICER (ATHENS, MEIGS, MONROE, MORGAN, NOBLE, VINTON (BROWN, KNOX, MADISON, VINTON & WILKESVILLE TOWNSHIPS), AND WASHINGTON COUNITES)	$ 40.25	33.33
ELECTRICIAN (ATHENS, MEIGS, MONROE, MORGAN, NOBLE, VINTON (BROWN, KNOX, MADISON, VINTON & WILKESVILLE TOWNSHIPS), AND WASHINGTON COUNITES)	$ 40.00	33.32

ELEC1105-001 05/27/2024

	Rates	Fringes
ELECTRICIAN (COSHOCTON, GUERNSEY, KNOX (JACKSON, CLAY, MORGAN, MILLER, MILFORD, HILLIAR, BUTLER, HARRISON, PLEASANT & COLLEGE TOWNSHIPS), LICKING, MUSKINGUM, PERRY, AND TUSCARAWAS (AUBURN, YORK, CLAY, JEFFERSON, RUSH, OXFORD, WASHINGTON, SALEM, PERRY & BUCKS TOWNSHIPS) COUNTIES)	$ 39.60	24.41

ENGI0018-003 05/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR: GROUP 1- AIR COMPRESSOR ON STEEL ERECTION; BARRIER MOVING MACHINE; BOILER OPERATOR ON COMPRESSOR OR GENERATOR WHEN MOUNTED ON A RIG; CABLEWAY; COMBINATION CONCRETE MIXER & TOWER; CONCRETE PLANT (OVER 4 YD. CAPACITY); CONCRETE PUMP; CRANE (ALL TYPES, INCLUDING BOOM TRUCK, CHERRY PICKER); CRANE-COMPACT, TRACK OR RUBBER OVER 4,000 LBS. CAPACITY; CRANES-SELF ERECTING, STATIONARY, TRACK OR TRUCK (ALL CONFIGURATIONS); DERRICK; DRAGLINE; DREDGE (DIPPER, CLAM OR SUCTION); ELEVATING GRADER OR EUCLID LOADER; FLOATING EQUIPMENT (ALL TYPES); GRADALL; HELICOPTER CREW (OPERATOR-HOIST OR WINCH); HOE (ALL TYPES); HOISTING ENGINE ON SHAFT OR TUNNEL WORK; HYDRAULIC GANTRY (LIFTING SYSTEM); INDUSTRIAL-TYPE TRACTOR; JET ENGINE DRYER (D8 OR D9) DIESEL TRACTOR; LOCOMOTIVE (STANDARD GAUGE); MAINTENANCE OPERATOR CLASS A; MIXER, PAVING (SINGLE OR DOUBLE DRUM); MUCKING MACHINE; MULTIPLE SCRAPER; PILEDRIVING MACHINE (ALL TYPES); POWER SHOVEL; PRENTICE LOADER; QUAD 9 (DOUBLE PUSHER); RAIL TAMPER (WITH AUTO LIFTING & ALIGNING DEVICE); REFRIGERATING MACHINE (FREEZER OPERATION); ROTARY DRILL, ON CAISSON WORK; ROUGH TERRAIN FORK LIFT WITH WINCH/HOIST; SIDE-BOOM; SLIP-FORM PAVER; TOWER DERRICK; TREE SHREDDER; TRENCH MACHINE (OVER 24"" WIDE); TRUCK MOUNTED CONCRETE PUMP; TUG BOAT; TUNNEL MACHINE AND/OR MINING MACHINE; WHEEL EXCAVATOR; AND ASPHALT PLANT ENGINEER (CLEVELAND DISTRICT ONLY). (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES)	$ 45.63	16.41
POWER EQUIPMENT OPERATOR: GROUP 2- ASPHALT PAVER; AUTOMATIC SUBGRADER MACHINE, SELF-PROPELLED (CMI TYPE); BOBCAT TYPE AND/OR SKID STEER LOADER WITH HOE ATTACHMENT GREATER THAN 7,000 LBS.; BORING MACHINE MORE THAN 48""; BULLDOZER; ENDLOADER; HORIZONTAL DIRECTIONAL DRILL (OVER 50,000 FT LBS THRUST); HYDRO MILLING MACHINE; KOLMAN-TYPE LOADER (PRODUCTION TYPE-DIRT); LEAD GREASEMAN; LIGHTING & TRAFFIC SIGNAL INSTALLATION EQUIPMENT (INCLUDES ALL GROUPS OR CLASSIFICATIONS); MATERIAL TRANSFER EQUIPMENT (SHUTTLE BUGGY) ASPHALT; PETTIBONE-RAIL EQUIPMENT; POWER GRADER; POWER SCRAPER; PUSH CAT; ROTOMILL (ALL), GRINDERS & PLANERS OF ALL TYPES; TRENCH MACHINE (24"" WIDE & UNDER); VERMEER TYPE CONCRETE SAW; AND MAINTENANCE OPERATORS (PORTAGE AND SUMMIT COUNTIES ONLY). (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES)	$ 45.53	16.41
POWER EQUIPMENT OPERATOR: GROUP 3- A-FRAME; AIR COMPRESSOR ON TUNNEL WORK (LOW PRESSURE); ASPHALT PLANT ENGINEER (PORTAGE AND SUMMIT COUNTIES ONLY); BOBCAT-TYPE AND/OR SKID STEER LOADER WITH OR WITHOUT ATTACHMENTS; HIGHWAY DRILLS (ALL TYPES); LOCOMOTIVE (NARROW GAUGE); MATERIAL HOIST/ELEVATOR; MIXER, CONCRETE (MORE THAN ONE BAG CAPACITY); MIXER, ONE BAG CAPACITY (SIDE LOADER); POWER BOILER		

(OVER 15 LBS. PRESSURE) PUMP OPERATOR INSTALLING & OPERATING WELL POINTS; PUMP (4"" & OVER DISCHARGE); ROLLER, ASPHALT; ROTOVATOR (LIME SOIL STABILIZER); SWITCH & TIE TAMPERS (WITHOUT LIFTING & ALIGNING DEVICE); UTILITY OPERATOR (SMALL EQUIPMENT); WELDING MACHINES; AND RAILROAD TIE INSERTER/REMOVER; ARTICULATING/STRAIGHT BED END DUMPS IF ASSIGNED (MINUS $4.00 PER HOUR. (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES).....$ 44.49 16.41

POWER EQUIPMENT OPERATOR: GROUP 4- BACKFILLER; BALLAST RE-LOCATOR; BARS, JOINT & MESH INSTALLING MACHINE; BATCH PLANT; BORING MACHINE OPERATOR (48"" OR LESS); BULL FLOATS; BURLAP & CURING MACHINE; CONCRETE PLANT (CAPACITY 4 YD. & UNDER); CONCRETE SAW (MULTIPLE); CONVEYOR (HIGHWAY); CRUSHER; DECKHAND; FARM-TYPE TRACTOR WITH ATTACHMENTS (HIGHWAY); FINISHING MACHINE; FIREPERSON, FLOATING EQUIPMENT (ALL TYPES); FORKLIFT; FORM TRENCHER; HYDRO HAMMER EXPECT MASONARY; HYDRO SEEDER; PAVEMENT BREAKER; PLANT MIXER; POST DRIVER; POST HOLE DIGGER (POWER AUGER); POWER BRUSH BURNER; POWER FORM HANDLING EQUIPMENT; ROAD WIDENING TRENCHER; ROLLER (BRICK, GRADE & MACADAM); SELF-PROPELLED POWER SPREADER; SELF-PROPELLED POWER SUBGRADER; STEAM FIREPERSON; TRACTOR (PULLING SHEEPFOOT, ROLLER OR GRADER); AND VIBRATORY COMPACTOR WITH INTEGRAL POWER. (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES).....$ 43.27 16.41

POWER EQUIPMENT OPERATOR: GROUP 5- COMPRESSOR (PORTABLE, SEWER, HEAVY & HIGHWAY); DRUM FIREPERSON (ASPHALT PLANT); GENERATOR; MASONRY FORK LIFT; INBOARD-OUTBOARD MOTOR BOAT LAUNCH; OIL HEATER (ASPHALT PLANT); OILER/HELPER; POWER DRIVEN HEATER; POWER SWEEPER & SCRUBBER; PUMP (UNDER 4"" DISCHARGE); SIGNALPERSON; TIRE REPAIRPERSON; VAC/ALLS; CRANES - COMPACT, TRACK OR RUBBER UNDER 4,000 POUND CAPACITY; FUELING AND GREASING; AND CHAINMEN. (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES).$ 37.98 16.41

POWER EQUIPMENT OPERATOR: GROUP 6- MASTER MECHANIC & BOOM FROM 150 TO 180. (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES).....$ 46.63 16.41

POWER EQUIPMENT OPERATOR: GROUP 7- BOOM FROM 180 AND OVER. (ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, AND SUMMIT COUNTIES).$ 46.63 16.41

ENGI0018-004 05/01/2024

	Rates	Fringes

POWER EQUIPMENT OPERATOR: GROUP 1- AIR COMPRESSOR ON STEEL ERECTION; BARRIER MOVING MACHINE; BOILER OPERATOR ON COMPRESSOR OR GENERATOR WHEN MOUNTED ON A RIG; CABLEWAY; COMBINATION CONCRETE MIXER & TOWER; CONCRETE PLANT (OVER 4 YD. CAPACITY); CONCRETE PUMP; CRANE (ALL TYPES, INCLUDING BOOM TRUCK, CHERRY PICKER); CRANE-COMPACT, TRACK OR RUBBER OVER 4,000 LBS. CAPACITY; CRANES-SELF-ERECTING, STATIONARY, TRACK OR TRUCK (ALL CONFIGURATIONS); DERRICK; DRAGLINE; DREDGE (DIPPER, CLAM OR SUCTION); ELEVATING GRADER OR EUCLID LOADER; FLOATING EQUIPMENT (ALL TYPES); GRADALL; HELICOPTER CREW (OPERATOR-HOIST OR WINCH); HOE (ALL TYPES); HOISTING ENGINE ON SHAFT OR TUNNEL WORK; HYDRAULIC GANTRY (LIFTING SYSTEM); INDUSTRIAL-TYPE TRACTOR; JET ENGINE DRYER (D8 OR D9) DIESEL TRACTOR; LOCOMOTIVE (STANDARD GAUGE); MAINTENANCE OPERATOR CLASS A; MIXER, PAVING 9SINGLE OR DOUBLE DRUM); MUCKING MACHINE; MULTIPLE SCRAPER; PILEDRIVING MACHINE (ALL TYPES); POWER SHOVEL; PRENTICE LOADER; QUAD 9 (DOUBLE PUSHER); RAIL TAMPER (WITH AUTO LIFTING & ALIGNING DEVICE); REFRIGERATING MACHINE (FREEZER OPERATORON); ROTARY DRILL, ON CAISSON WORK; ROUGH TERRAIN FORK LIFT WITH WINCH/HOIST; SIDE-BOOM; SLIP-FORM PAVER; TOWER DERRICK; TREE SHREDDER; TRENCH MACHINE (OVER 24' WIDE); TRUCK MOUNTED CONCRETE PUMP; TUG BOAT; TUNNEL MACHINE AND/OR MINING MACHINE; AND WHEEL EXCAVATOR. (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, 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, PTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, AND YANDOT COUNTIES).....$ 44.14 16.41

POWER EQUIPMENT OPERATOR: GROUP 2- ASPHALT PAVER; AUTOMATIC SUBGRADER MACHINE, SELF-PROPELLED (CMI TYPE); BOBCAT TYPE AND/OR SKID STEER LOADER WITH HOE ATTACHMENT GREATER THAN 7,000 LBS.; BORING MACHINE MRE THAN 48""; BULLDOZER; ENDLOADER; HYDRO MILLING MACHINE; HORIZONTAL DIRECTIONAL DRILL (OVER 50,000 FT. LBS. THURUST); KOLMAN-TYPE LOADER (PRODUCTION TYPE-DIRT); LEAD GREASEMAN; LIGHTING & TRAFFIC SIGNAL INSTALLATION EQUIPMENT (INCLUDES ALL GROUPS OR CLASSIFICATIONS); MATERIAL TRANSFER EQUIPMENT (SHUTTLE BUGGY); ASHPHALT; PETTIBONE-RAIL EQUIPMENT; POWER GRADER; POWER SCRAPER; PUSH CAT; ROTOMILL (ALL), GRINDERS & PLANERS OF ALL TYPES; TRENCH MACHINE (24' WIDE & UNDER); AND VERMEER TYPE CONCRETE SAW. (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, 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, PTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, AND YANDOT COUNTIES).....$ 44.02 16.41

POWER EQUIPMENT OPERATOR: GROUP 3- A-FRAME; AIR COMPRESSOR ON TUNNEL WORK (LOW PRESSURE); ASPHALT PLANT ENGINEER; BOBCAT-TYPE AND/OR SKID STEER LOADER WITH OR WITHOUT ATTACHMENTS; HIGHWAY DRILLS (ALL TYPES); LOCOMOTIVE (NARROW GAUGE); MATERIAL HOIST/ELEVATOR; MIXER, CONCRETE (MORE THAN ONE BAG CAPACITY); MIXER, ONE BAG CAPACITY (SIDE LOADER); POWER BOILER (OVER 15 LBS. PRESSURE) PUMP OPERATOR INSTALLING & OPERATING WELL POINTS; PUMP (4' & OVER DISCHARGE); RAILROAD TIE INSERTER/REMOVER; ROLLER, ASPHALT; ROTOVATOR (LIME SOIL STABILIZER); SWITCH & TIE TAMPERS (WITHOUT LIFTING & ALIGNING DEVICE); UTILITY OPERATOR (SMALL EQUIPMENT); AND WELDING MACHINES: ARTICULATING/STRAIGHT BED END DUMPS IF ASSIGNED (MINUS $4.00 PER HOUR). (ADAMS, ALLEN, ASHLAND, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAWRENCE, LICKING, LOGAN, LUCAS, MADISON, MARION, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PREBLE, PTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, AND YANDOT COUNTIES).....$ 42.98 16.41

POWER EQUIPMENT OPERATOR: GROUP 4- BACKFILLER; BALLAST RE-LOCATOR; BARS, JOINT & MESH INSTALLING MACHINE; BATCH PLANT; BORING MACHINE OPERATOR (48' OR LESS); BULL FLOATS; BURLAP & CURING MACHINE; CONCRETE PLANT (CAPACITY 4 YD. & UNDER); CONCRETE SAW (MULTIPLE); CONVEYOR (HIGHWAY); CRUSHER; DECKHAND; FARM-TYPE TRACTOR WITH ATTACHMENTS (HIGHWAY); FINISHING MACHINE; FIREPERSON, FLOATING EQUIPMENT (ALL TYPES); FORK LIFT; FORM TRENCHER;

HYDRO HAMMER EXCEPT MASONARY; HYDRO SEEDER;
PAVEMENT BREAKER; PLANT MIXER; POST DRIVER; POST
HOLE DIGGER (POWER AUGER); POWER BRUSH BURNER;
POWER FORM HANDLING EQUIPMENT; ROAD WIDENING
TRENCHER; ROLLER (BRICK, GRADE, & MACADAM);
SELF-PROPELLED POWER SPREADER; SELF-PROPELLED POWER
SUBGRADER; STEAM FIREPERSON; TRACTOR (PULLING
SHEEPFOOT, ROLLER OR GRADER); AND VIBRATORY
COMPACTOR WITH INTEGRAL POWER. (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, 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, PTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO,
SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT,
VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD,
AND YANDOT COUNTIES).....$ 41.80 16.41
POWER EQUIPMENT OPERATOR: GROUP 5- COMPRESSOR
(PORTABLE, SEWER, HEAVY & HIGHWAY); DRUM FIREPERSON
(ASPHALT PLANT); GENERATOR; MASONARY FORKLIFT;
INBOARD-OUTBOARD MOTOR BOAT LAUNCH; OIL HEATER
(ASPHALT PLANT); OILER/HELPER; POWER DRIVEN HEATER;
POWER SWEEPER & SCRUBBER; PUMP (UNDER 4'
DISCHARGE); SIGNALPERSON; TIRE REPAIRPERSON;
VAC/ALLS; CRANES-COMPACT, TRACK OR RUBBER UNDER
4,000 POUND CAPACITY; FUELING AND GREASING; AND
CHAINMEN. (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, 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, PTNAM, RICHLAND, ROSS,
SANDUSKY, SCIOTO, SENECA, SHELBY, STARK,
TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN,
WASHINGTON, WAYNE, WILLIAMS, WOOD, AND YANDOT
COUNTIES).....$ 36.34 16.41
POWER EQUIPMENT OPERATOR: GROUP 6- MASTER MECHANIC
& BOOM FROM 150 TO 180. (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, 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,
PTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA,
SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON,
WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, AND
YANDOT COUNTIES).....$ 45.14 16.41
POWER EQUIPMENT OPERATOR: GROUP 7- BOOM FROM 180
AND OVER. (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, 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, PTNAM, RICHLAND, ROSS,
SANDUSKY, SCIOTO, SENECA, SHELBY, STARK,
TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN,
WASHINGTON, WAYNE, WILLIAMS, WOOD, AND YANDOT
COUNTIES).....$ 45.14 16.41

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	Rates	Fringes
POWER EQUIPMENT OPERATOR: ALL OTHER WORK GROUP 1- RIG, PILE DRIVER OR CAISSON TYPE; & RIG, PILE HYDRAULIC UNIT ATTACHED. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES)	$ 37.19	24.30
POWER EQUIPMENT OPERATOR: ALL OTHER WORK GROUP 2 - ASPHALT HEATER PLANER; BACKFILLER WITH DRAG ATTACHMENT; BACKHOE; BACKHOE WITH SHEAR ATTACHED; BACKHOE-REAR PIVOTAL SWING; BATCH PLANT-CENTRAL MIX CONCRETE; BATCH PLANT, PORTABLE CONCRETE; BERM BUILDER-AUTOMATIC; BOAT DERRICK; BOAT-TUG; BORING MACHINE ATTACHED TO TRACTOR; BULLCLAM; VULLDOZER; C.M.I. ROAD BUILDER & SIMILAR TYPE; CABLE PLACER &LATYER; CARRIER-STRADDLE; CARRYALL-SCRAPER OR SCOPP; CHICAGO BOOM; COMPACTOR WITH BLAD ATTACHED; CONCRETE SAW (VERMEER OR SIMILAR TYPE); CONCRETE SPREADER FINISHER; COMBINATION, BIDWELL MACHINE; CRANE; CRANE-ELECTRIC OVERHEAD; CRANE-ROUGH TERRAIN; CRANE-SIDE BOOM; CRANE-TRUCK; CRANE-TOWER; DERRICK-BOOM; DERRICK-CAR; DIGGER -WHEEL (NOT TRENCHER OR ROAD WIDENER); DOUBLE NINE; DRAG LINE; DREDGE; DRILL-KENNY OR SIMILAR TYPE; EASY POUR MEDIAN BARRIER MACHINE (OR SIMILAR TYPE); ELECTROMATIC; FRANKIE PILE; GRADALL; GRADER; GURRY; SELF-PROPELLED; HEAVY EQUIPMENT ROBOTICS OPERATOR/MECHANIC; HOIST-MONORAIL; HOIST-STATIONARY & MOBILE TRACTOR; HOIST, 2 OR 3 DRUM; HORIZONTAL DIRECTIONAL DRILL OPERATOR; JACKALL; JUMBO MACHINE; KOCAL & KUHLMAN; LAND-SEAGOING VEHICLE; LOADER, ELEVATING; LOADER, FRONT END; LOADER, SKID STEER; LOCOMOTIVE; MECHANIC/WELDER; METRO CHIP HARVESTER WITH BOO; MUCKING MACHINE; PAVER-ASPHALT FINISHING MACHINE; PAVER-ROAD CONCRETE; PAVER-SLIP FORM (C.M.I. OR SIMILAR); PLACE CRETE MACHINE WITH BOOM; POST DRIVER (CARRIER MOUNTED); POWER DRIVEN HYDRAULIC PUMP & JACK (WHEN USED IN SLIP FORM OR LIFT SLAB CONSTRUCTION); PUMP CRETE MACHINE; REGULATOR-BALLAST; HYRAULIC POWER UNIT NOT ATTACHED TO RIG FOR PILE DRILLINGS; RIGS-DRILLING; ROTO MILL OR SIMILAR FULL LANE (8' WIDE & OVER); ROTO MILL OR SIMILAR TYPE (UNDER 8'); SHOVEL; SLIP FORM CURB MACHINE; SPEEDWING; SPIKEMASTER; STONECRUSHER; TIE PULLER & LOADER; TIE TAMPER; TRACTOR-DOUBLE BOOM; TRACTOR WITH ATTACHMENTS; TRUCK-BOOM; TRUCK-TIRE; TRENCH MACHINE; TUNNEL MACHINE (MARK 21 JAVA OR SIMILAR) & WHIRLEY (OR SIMILAR TYPE) (COLUMBIANA, MAHONING & TRUMBULL COUNTIES)	$ 36.92	24.30
POWER EQUIPMENT OPERATOR: ALL OTHER WORK GROUP 3 - ASPHALT PLANT; BENDING MACHINE (PIPELINE OR TYPE); BORING MACHINE, MOTOR DRIVEN; CHIP HARVESTER WITHOUT BOOM; CLEANING MACHINE, PIPELINE TYPE; COATING MACHINE, PIPELINE TYPE; COMPACTOR; CONCRETE BELT PLACER; CONCRETE FINISHER; CONCRETE PLANER OR ASPHALT; CONCRETE SPREADER; ELEVATOR; FORK LIFT (HOME BUILDING ONLY); FORK LIFT & LULLS; FORK LIFT WALK BEHIND (HOISTING OVER 1 BUCK HIGH); FORM LINE MACHINE; GREASE TRUCK OPERATOR; GROUT PUMP; GUNNITE MACHINE; HORIZONTAL DIRECTIONAL DRILL LOCATOR; SINGLE DRUM HOIST WITH OR WITHOUT TOWER; HUCK BOLTING MACHINE; HYDRAULIC SCAFFOLD (HOISTING BUILDING MATERIALS); PAVING BREAKER (SELF=PROPELLED OR RIDDEN); PIPE DREAM; POT FIREPERSON (POWER AGITATED); REFRIGERATION PLANT; ROAD WIDENER; ROLLER; SASGEN DERRICK; SEEDING MACHINE; SOIL STABILIZER (PUMP TYPE); SPRAY CURE MACHINE, SELF-PROPELLED; STRAW BLOWER MACHINE; SUB-GRADER; TUBE FINISHER OR BROOM C.M.I. OR SIMILAR TYPE; & TUGGER HOIST. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES)	$ 32.06	24.30
POWER EQUIPMENT OPERATOR: ALL OTHER WORK GROUP 4 - AIR CURTAIN DESTRUCTOR & SIMILAR TYPE; BATCH PLANT-JOB RELATED; BOILER OPERATOR; COMPRESSOR; CONVEYOR; CURB BUILDER, SELF-PROPELLED; DRILL WAGON; GENERATOR SET; GENERATOR-STEAM; HEATER-PORTABLE POWER; HYDRAULIC MANIUPLATOR CRANE; JACK-HYDRAULIC POWER DRIVEN; JACK-HYARAULIC (RAILROAD); LADAVATOR; MINOR MACHINE OPERATOR; MIXER-CONCRETE; MULCHING MACHINE; PIN PULLER; POWER BROOM; PULVERIZER; PUMP; ROAD FINISHING MAHINC (PULL TYPE); SAW-CONCRETE-SELF-PROPELLED (HIGHWAY		

WORK); SIGNAL PERSON; SPRAY CURE MACHINE-MOTOR POWERED; STUMP CUTTER; TRACTOR; TRENCHER FORM; WATER BLASTER; STEAM JENNY; SYPHON; VIBRATOR-GASOLINE; & WELDING MACHINE. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 28.77 24.30

POWER EQUIPMENT OPERATOR: ALL OTHER WORK GROUP 5 - BRAKEPERSON; FIREPERSON; & OILER. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 25.94 24.30

POWER EQUIPMENT OPERATOR: ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS GROUP 1 - A & B - RIG, PILE DRIVER OR CAISSON TYPE; & RIG, PILE HYDRAULIC UNIT ATTACHED. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 44.63 24.30

POWER EQUIPMENT OPERATOR: ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS GROUP 2 - A & B - ASPHALT HEATER PLANER; BACKFILLER WITH DRAG ATTACHMENT; BACKHOE; BACKHOE WITH SHEAR ATTACHED; BACKHOE-REAR PIVOTAL SWING; BATCH PLANT-CENTRAL MIX CONCRETE; BATCH PLANT, PORTABLE CONCRETE; BERM BUILDER-AUTOMATIC; BOAT DERRICK; BOAT-TUG; BORING MACHINE ATTACHED TO TRACTOR; BULLCLAM; VULLDOZER; C.M.I. ROAD BUILDER & SIMILAR TYPE; CABLE PLACER &LATYER; CARRIER-STRADDLE; CARRYALL-SCRAPER OR SCOPP; CHICAGO BOOM; COMPACTOR WITH BLAD ATTACHED; CONCRETE SAW (VERMEER OR SIMILAR TYPE); CONCRETE SPREADER FINISHER; COMBINATION, BIDWELL MACHINE; CRANE; CRANE-ELECTRIC OVERHEAD; CRANE-ROUGH TERRAIN; CRANE-SIDE BOOM; CRANE-TRUCK; CRANE-TOWER; DERRICK-BOOM; DERRICK-CAR; DIGGER -WHEEL (NOT TRENCHER OR ROAD WIDENER); DOUBLE NINE; DRAG LINE; DREDGE; DRILL-KENNY OR SIMILAR TYPE; EASY POUR MEDIAN BARRIER MACHINE (OR SIMILAR TYPE); ELECTROMATIC; FRANKIE PILE; GRADALL; GRADER; GURRY; SELF-PROPELLED; HEAVY EQUIPMENT ROBOTICS OPERATOR/MECHANIC; HOIST-MONORAIL; HOIST-STATIONARY & MOBILE TRACTOR; HOIST, 2 OR 3 DRUM; HORIZONTAL DIRECTIONAL DRILL OPERATOR; JACKALL; JUMBO MACHINE; KOCAL & KUHLMAN; LAND-SEAGOING VEHICLE; LOADER, ELEVATING; LOADER, FRONT END; LOADER, SKID STEER; LOCOMOTIVE; MECHANIC/WELDER; METRO CHIP HARVESTER WITH BOO; MUCKING MACHINE; PAVER-ASPHALT FINISHING MACHINE; PAVER-ROAD CONCRETE; PAVER-SLIP FORM (C.M.I. OR SIMILAR); PLACE CRETE MACHINE WITH BOOM; POST DRIVER (CARRIER MOUNTED); POWER DRIVEN HYDRAULIC PUMP & JACK (WHEN USED IN SLIP FORM OR LIFT SLAB CONSTRUCTION); PUMP CRETE MACHINE; REGULATOR-BALLAST; HYRAULIC POWER UNIT NOT ATTACHED TO RIG FOR PILE DRILLINGS; RIGS-DRILLING; ROTO MILL OR SIMILAR FULL LANE (8' WIDE & OVER); ROTO MILL OR SIMILAR TYPE (UNDER 8'); SHOVEL; SLIP FORM CURB MACHINE; SPEEDWING; SPIKEMASTER; STONECRUSHER; TIE PULLER & LOADER; TIE TAMPER; TRACTOR-DOUBLE BOOM; TRACTOR WITH ATTACHMENTS; TRUCK-BOOM; TRUCK-TIRE; TRENCH MACHINE; TUNNEL MACHINE (MARK 21 JAVA OR SIMILAR) & WHIRLEY (OR SIMILAR TYPE) (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 44.30 24.30

POWER EQUIPMENT OPERATOR: ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS GROUP 3 - A & B - ASPHALT PLANT; BENDING MACHINE (PIPELINE OR TYPE); BORING MACHINE, MOTOR DRIVEN; CHIP HARVESTER WITHOUT BOOM; CLEANING MACHINE, PIPELINE TYPE; COATING MACHINE, PIPELINE TYPE; COMPACTOR; CONCRETE BELT PLACER; CONCRETE FINISHER; CONCRETE PLANER OR ASPHALT; CONCRETE SPREADER; ELEVATOR; FORK LIFT (HOME BUILDING ONLY); FORK LIFT & LULLS; FORK LIFT WALK BEHIND (HOISTING OVER 1 BUCK HIGH); FORM LINE MACHINE; GREASE TRUCK OPERATOR; GROUT PUMP; GUNNITE MACHINE; HORIZONTAL DIRECTIONAL DRILL LOCATOR; SINGLE DRUM HOIST WITH OR WITHOUT TOWER; HUCK BOLTING MACHINE; HYDRAULIC SCAFFOLD (HOISTING BUILDING MATERIALS); PAVING BREAKER (SELF=PROPELLED OR RIDDEN); PIPE DREAM; POT FIREPERSON (POWER AGITATED); REFRIGERATION PLANT; ROAD WIDENER; ROLLER; SASGEN DERRICK; SEEDING MACHINE; SOIL STABILIZER (PUMP TYPE); SPRAY CURE MACHINE, SELF-PROPELLED; STRAW BLOWER MACHINE; SUB-GRADER; TUBE FINISHER OR BROOM C.M.I. OR SIMILAR TYPE; & TUGGER HOIST(COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 38.47 24.30

POWER EQUIPMENT OPERATOR: ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS GROUP 4 - A & B - AIR CURTAIN DESTRUCTOR & SIMILAR TYPE; BATCH PLANT-JOB RELATED;

BOILER OPERATOR; COMPRESSOR; CONVEYOR; CURB BUILDER, SELF-PROPELLED; DRILL WAGON; GENERATOR SET; GENERATOR-STEAM; HEATER-PORTABLE POWER; HYDRAULIC MANIUPLATOR CRANE; JACK-HYDRAULIC POWER DRIVEN; JACK-HYARAULIC (RAILROAD); LADAVATOR; MINOR MACHINE OPERATOR; MIXER-CONCRETE; MULCHING MACHINE; PIN PULLER; POWER BROOM; PULVERIZER; PUMP; ROAD FINISHING MAHINC (PULL TYPE); SAW-CONCRETE-SELF-PROPELLED (HIGHWAY WORK); SIGNAL PERSON; SPRAY CURE MACHINE-MOTOR POWERED; STUMP CUTTER; TRACTOR; TRENCHER FORM; WATER BLASTER; STEAM JENNY; SYPHON; VIBRATOR-GASOLINE; & WELDING MACHINE. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).$ 34.52 24.30

POWER EQUIPMENT OPERATOR: ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS GROUP 5 - A & B - BRAKEPERSON; FIREPERSON; & OILER. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 31.13 24.30

POWER EQUIPMENT OPERATOR: HAZARDOUS/TOXIC WASTE PROJECTS GROUP 1 - C & D - RIG, PILE DRIVER OR CAISSON TYPE; & RIG, PILE HYDRAULIC UNIT ATTACHED. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 40.91 24.30

POWER EQUIPMENT OPERATOR: HAZARDOUS/TOXIC WASTE PROJECTS GROUP 2 - C & D - ASPHALT HEATER PLANER; BACKFILLER WITH DRAG ATTACHMENT; BACKHOE; BACKHOE WITH SHEAR ATTACHED; BACKHOE-REAR PIVOTAL SWING; BATCH PLANT-CENTRAL MIX CONCRETE; BATCH PLANT, PORTABLE CONCRETE; BERM BUILDER-AUTOMATIC; BOAT DERRICK; BOAT-TUG; BORING MACHINE ATTACHED TO TRACTOR; BULLCLAM; VULLDOZER; C.M.I. ROAD BUILDER & SIMILAR TYPE; CABLE PLACER &LATYER; CARRIER-STRADDLE; CARRYALL-SCRAPER OR SCOPP; CHICAGO BOOM; COMPACTOR WITH BLAD ATTACHED; CONCRETE SAW (VERMEER OR SIMILAR TYPE); CONCRETE SPREADER FINISHER; COMBINATION, BIDWELL MACHINE; CRANE; CRANE-ELECTRIC OVERHEAD; CRANE-ROUGH TERRAIN; CRANE-SIDE BOOM; CRANE-TRUCK; CRANE-TOWER; DERRICK-BOOM; DERRICK-CAR; DIGGER -WHEEL (NOT TRENCHER OR ROAD WIDENER); DOUBLE NINE; DRAG LINE; DREDGE; DRILL-KENNY OR SIMILAR TYPE; EASY POUR MEDIAN BARRIER MACHINE (OR SIMILAR TYPE); ELECTROMATIC; FRANKIE PILE; GRADALL; GRADER; GURRY; SELF-PROPELLED; HEAVY EQUIPMENT ROBOTICS OPERATOR/MECHANIC; HOIST-MONORAIL; HOIST-STATIONARY & MOBILE TRACTOR; HOIST, 2 OR 3 DRUM; HORIZONTAL DIRECTIONAL DRILL OPERATOR; JACKALL; JUMBO MACHINE; KOCAL & KUHLMAN; LAND-SEAGOING VEHICLE; LOADER, ELEVATING; LOADER, FRONT END; LOADER, SKID STEER; LOCOMOTIVE; MECHANIC/WELDER; METRO CHIP HARVESTER WITH BOO; MUCKING MACHINE; PAVER-ASPHALT FINISHING MACHINE; PAVER-ROAD CONCRETE; PAVER-SLIP FORM (C.M.I. OR SIMILAR); PLACE CRETE MACHINE WITH BOOM; POST DRIVER (CARRIER MOUNTED); POWER DRIVEN HYDRAULIC PUMP & JACK (WHEN USED IN SLIP FORM OR LIFT SLAB CONSTRUCTION); PUMP CRETE MACHINE; REGULATOR-BALLAST; HYRAULIC POWER UNIT NOT ATTACHED TO RIG FOR PILE DRILLINGS; RIGS-DRILLING; ROTO MILL OR SIMILAR FULL LANE (8' WIDE & OVER); ROTO MILL OR SIMILAR TYPE (UNDER 8'); SHOVEL; SLIP FORM CURB MACHINE; SPEEDWING; SPIKEMASTER; STONECRUSHER; TIE PULLER & LOADER; TIE TAMPER; TRACTOR-DOUBLE BOOM; TRACTOR WITH ATTACHMENTS; TRUCK-BOOM; TRUCK-TIRE; TRENCH MACHINE; TUNNEL MACHINE (MARK 21 JAVA OR SIMILAR) & WHIRLEY (OR SIMILAR TYPE) (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 40.61 24.30

POWER EQUIPMENT OPERATOR: HAZARDOUS/TOXIC WASTE PROJECTS GROUP 3 - C & D - ASPHALT PLANT; BENDING MACHINE (PIPELINE OR TYPE); BORING MACHINE, MOTOR DRIVEN; CHIP HARVESTER WITHOUT BOOM; CLEANING MACHINE, PIPELINE TYPE; COATING MACHINE, PIPELINE TYPE; COMPACTOR; CONCRETE BELT PLACER; CONCRETE FINISHER; CONCRETE PLANER OR ASPHALT; CONCRETE SPREADER; ELEVATOR; FORK LIFT (HOME BUILDING ONLY); FORK LIFT & LULLS; FORK LIFT WALK BEHIND (HOISTING OVER 1 BUCK HIGH); FORM LINE MACHINE; GREASE TRUCK OPERATOR; GROUT PUMP; GUNNITE MACHINE; HORIZONTAL DIRECTIONAL DRILL LOCATOR; SINGLE DRUM HOIST WITH OR WITHOUT TOWER; HUCK BOLTING MACHINE; HYDRAULIC SCAFFOLD (HOISTING BUILDING MATERIALS); PAVING BREAKER (SELF=PROPELLED OR RIDDEN); PIPE DREAM; POT FIREPERSON (POWER AGITATED); REFRIGERATION PLANT; ROAD WIDENER; ROLLER; SASGEN DERRICK; SEEDING

MACHINE; SOIL STABILIZER (PUMP TYPE); SPRAY CURE MACHINE, SELF-PROPELLED; STRAW BLOWER MACHINE; SUB-GRADER; TUBE FINISHER OR BROOM C.M.I. OR SIMILAR TYPE; & TUGGER HOIST(COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 35.27 24.30

POWER EQUIPMENT OPERATOR: HAZARDOUS/TOXIC WASTE PROJECTS GROUP 4 - C & D - AIR CURTAIN DESTRUCTOR & SIMILAR TYPE; BATCH PLANT-JOB RELATED; BOILER OPERATOR; COMPRESSOR; CONVEYOR; CURB BUILDER, SELF-PROPELLED; DRILL WAGON; GENERATOR SET; GENERATOR-STEAM; HEATER-PORTABLE POWER; HYDRAULIC MANIUPLATOR CRANE; JACK-HYDRAULIC POWER DRIVEN; JACK-HYARAULIC (RAILROAD); LADAVATOR; MINOR MACHINE OPERATOR; MIXER-CONCRETE; MULCHING MACHINE; PIN PULLER; POWER BROOM; PULVERIZER; PUMP; ROAD FINISHING MAHINC (PULL TYPE); SAW-CONCRETE-SELF-PROPELLED (HIGHWAY WORK); SIGNAL PERSON; SPRAY CURE MACHINE-MOTOR POWERED; STUMP CUTTER; TRACTOR; TRENCHER FORM; WATER BLASTER; STEAM JENNY; SYPHON; VIBRATOR-GASOLINE; & WELDING MACHINE. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).$ 31.65 24.30

POWER EQUIPMENT OPERATOR: HAZARDOUS/TOXIC WASTE PROJECTS GROUP 5 - C & D - BRAKEPERSON; FIREPERSON; & OILER. (COLUMBIANA, MAHONING & TRUMBULL COUNTIES).....$ 28.53 24.30

IRON0017-002 05/01/2024

	Rates	Fringes
IRONWORKER: ORNAMENTAL, REINFORCING, & STRUCTURAL (ASHTABULA (NORTH OF ROUTE 6, STARTING AT THE GEAUGA COUNTY LINE, PROCEEDING EAST TO STATE ROUTE 45), CUYAHOGA, ERIE (EASTERN 2/3), GEAUGA, HURON (EAST OF A LINE DRAWN FROM THE NORTH BORDER THROUGH MONROEVILLE & WILLARD), LAKE, LORAIN, MEDINA (NORTH OF OLD RTE. #224), PORTAGE (WEST OF A LINE FROM MIDDLEFIELD TO SHALERSVILLE TO DEERFIELD), AND SUMMIT (NORTH OF OLD RTE. #224, INCLUDING CITY LIMITS OF BARBERTON) COUNTIES).....	$ 36.83	29.01

IRON0017-010 05/01/2024

	Rates	Fringes
IRONWORKER: STRUCTURAL, INCLUDING METAL BUILDING ERECTION & REINFORCING (ASHTABULA (EASTERN PART FROM LAKE ERIE ON THE NORTH TO ROUTE #322 ON THE SOUTH TO INCLUDE CONNEAUT, KINGSVILLE, SHEFFIELD, DENMARK, DORSET, CHERRY VALLEY, WAYNE, MONROE, PIERPONT, RICHMOND, ANDOVER & WILLIAMSFIELD TOWNSHIPS)).....	$ 36.83	29.01

IRON0044-001 06/01/2025

	Rates	Fringes
IRONWORKER, REINFORCING (ADAMS (WESTERN PART), BROWN, BUTLER (SOUTHERN PART), CLERMONT, CLINTON (SOUTH OF A LINE DRAWN FROM BLANCHESTER TO LYNCHBURG), HAMILTON, HIGHLAND (EXCLUDING EASTERN ONE-FIFTH & PORTION OF COUNTY INSIDE LINES DRAWN FROM MARSHALL TO LYNCHBURG FROM THE NORTHERN COUNTY LINE THROUGH E. MONROE TO MARSHALL) AND WARREN (SOUTH OF A LINE DRAWN FROM BLANCHESTER THROUGH MORROW TO THE WEST COUNTY LINE) COUNTIES).....	$ 38.27	23.90

IRON0044-002 06/01/2025

	Rates	Fringes
IRONWORKER: FENCE ERECTOR (CLINTON (SOUTH OF A LINE DRAWN FROM BLANCHESTER TO LYNCHBURG), HAMILTON, HIGHLAND (EXCLUDING EASTERN ONE-FIFTH & PORTION OF COUNTY INSIDE LINES DRAWN FROM MARSHALL TO LYNCHBURG FROM THE NORTHERN COUNTY LINE THROUGH E. MONROE TO MARSHALL) & WARREN (SOUTH OF A LINE DRAWN FROM BLANCHESTER THROUGH MORROW TO THE WEST COUNTY LINE)).....	$ 35.88	23.90

IRONWORKER: ORNAMENTAL; STRUCTURAL (CLINTON (SOUTH OF A LINE DRAWN FROM BLANCHESTER TO LYNCHBURG), HAMILTON, HIGHLAND (EXCLUDING EASTERN ONE-FIFTH & PORTION OF COUNTY INSIDE LINES DRAWN FROM MARSHALL TO LYNCHBURG FROM THE NORTHERN COUNTY LINE THROUGH E. MONROE TO MARSHALL) & WARREN (SOUTH OF A LINE

DRAWN FROM BLANCHESTER THROUGH MORROW TO THE WEST
COUNTY LINE))....................................$ 37.77 23.90

IRON0055-003 07/01/2024

	Rates	Fringes
IRONWORKER: ALL OTHER WORK (CRAWFORD (AREA BETWEEN LINES DRAWN FROM WHERE HWY #598 & #30 MEET THROUGH N. LIBERTY TO THE NORTHERN BORDER & FROM SAID HWY JUNCTION POINT DUE WEST TO THE BORDER), DEFIANCE (S. OF A LINE DRAWN FROM WHERE RTE. #66 MEETS THE NORTHERN LINE THROUGH INDEPENDENCE TO THE EASTERN COUNTY BORDER), ERIE (WESTERN 1/3), FULTON, HANCOCK, HARDIN (NORTH OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHERN LINE ON THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHEN LINE OF THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM THE NORTHERN BORDER THROUGH MONROEVILLE & WILLARD), LUCAS, OTTAWA, PUTNAM (EAST OF A LINE DRAWN FROM THE NORTHERN BORDER DOWN THROUGH MILLER CITY TO WHERE #696 MEETS THE SOURTHERN BORDER), SANDUSKY, SENECA, WILLIAMS (EAST OF A LINE DRAWN FROM PIONEER THROUGH STRYKER TO THE SOUTHERN BORDER), WOOD & WYANDOT (NORTH OF RTE. #30))	$ 29.77	21.30
IRONWORKER: FENCE ERECTOR (CRAWFORD (AREA BETWEEN LINES DRAWN FROM WHERE HWY #598 & #30 MEET THROUGH N. LIBERTY TO THE NORTHERN BORDER & FROM SAID HWY JUNCTION POINT DUE WEST TO THE BORDER), DEFIANCE (S. OF A LINE DRAWN FROM WHERE RTE. #66 MEETS THE NORTHERN LINE THROUGH INDEPENDENCE TO THE EASTERN COUNTY BORDER), ERIE (WESTERN 1/3), FULTON, HANCOCK, HARDIN (NORTH OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHERN LINE ON THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHEN LINE OF THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM THE NORTHERN BORDER THROUGH MONROEVILLE & WILLARD), LUCAS, OTTAWA, PUTNAM (EAST OF A LINE DRAWN FROM THE NORTHERN BORDER DOWN THROUGH MILLER CITY TO WHERE #696 MEETS THE SOURTHERN BORDER), SANDUSKY, SENECA, WILLIAMS (EAST OF A LINE DRAWN FROM PIONEER THROUGH STRYKER TO THE SOUTHERN BORDER), WOOD & WYANDOT (NORTH OF RTE. #30))	$ 29.77	21.30
IRONWORKER: FLAT ROAD MESH (CRAWFORD (AREA BETWEEN LINES DRAWN FROM WHERE HWY #598 & #30 MEET THROUGH N. LIBERTY TO THE NORTHERN BORDER & FROM SAID HWY JUNCTION POINT DUE WEST TO THE BORDER), DEFIANCE (S. OF A LINE DRAWN FROM WHERE RTE. #66 MEETS THE NORTHERN LINE THROUGH INDEPENDENCE TO THE EASTERN COUNTY BORDER), ERIE (WESTERN 1/3), FULTON, HANCOCK, HARDIN (NORTH OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHERN LINE ON THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHEN LINE OF THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM THE NORTHERN BORDER THROUGH MONROEVILLE & WILLARD), LUCAS, OTTAWA, PUTNAM (EAST OF A LINE DRAWN FROM THE NORTHERN BORDER DOWN THROUGH MILLER CITY TO WHERE #696 MEETS THE SOURTHERN BORDER), SANDUSKY, SENECA, WILLIAMS (EAST OF A LINE DRAWN FROM PIONEER THROUGH STRYKER TO THE SOUTHERN BORDER), WOOD & WYANDOT (NORTH OF RTE. #30))	$ 26.40	24.62
IRONWORKER: TUNNES & CAISSONS UNDER PRESSURE (CRAWFORD (AREA BETWEEN LINES DRAWN FROM WHERE HWY #598 & #30 MEET THROUGH N. LIBERTY TO THE NORTHERN BORDER & FROM SAID HWY JUNCTION POINT DUE WEST TO THE BORDER), DEFIANCE (S. OF A LINE DRAWN FROM WHERE RTE. #66 MEETS THE NORTHERN LINE THROUGH INDEPENDENCE TO THE EASTERN COUNTY BORDER), ERIE (WESTERN 1/3), FULTON, HANCOCK, HARDIN (NORTH OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHERN LINE ON THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM MAYSVILLE TO A POINT 4 MILES SOUTH OF THE NORTHEN LINE OF THE EASTERN LINE), HENRY, HURON (WEST OF A LINE DRAWN FROM THE NORTHERN BORDER THROUGH MONROEVILLE & WILLARD), LUCAS, OTTAWA, PUTNAM (EAST OF A LINE		

DRAWN FROM THE NORTHERN BORDER DOWN THROUGH MILLER CITY TO WHERE #696 MEETS THE SOURTHERN BORDER), SANDUSKY, SENECA, WILLIAMS (EAST OF A LINE DRAWN FROM PIONEER THROUGH STRYKER TO THE SOUTHERN BORDER), WOOD & WYANDOT (NORTH OF RTE. #30))........$ 35.50 29.20

IRON0147-002 06/01/2025

	Rates	Fringes
IRONWORKER (ALLEN (NORTHERN HALF), DEFIANCE (NORTHERN PART, EXCLUDING SOUTH OF A LINE DRAWN FROM WHERE RTE. #66 MEETS THE NORTHERN LINE THROUGH INDEPENDENCE TO THE EASTERN COUNTY BORDER), MERCER (NORTHERN HALF), PAULDING, PUTNAM (WESTERN PART, EXCLUDING EAST OF A LINE DRAWN FROM THE NORTHERN BORDER DOWN THROUGH MILLER CITY TO WHERE #696 MEETS THE SOUTHERN BORDER), VAN WERT, AND WILLIAMS (WESTERN PART, EXCLUDING EAST OF A LINE DRAWN FROM PIONEER THROUGH STRYKER TO THE SOUTHERN BORDER) COUNTIES).....	$ 38.00	26.39

IRON0172-002 06/01/2025

	Rates	Fringes
IRONWORKER (CHAMPAIGN (EASTERN ONE-THIRD), CLARK (EASTERN ONE-FOURTH), COSHOCTON (WEST OF A LINE BEGINNING AT THE NORTHWESTERN COUNTY LINE GOING THROUGH WALHONDING & TUNNEL HILL TO THE SOUTHERN COUNTY LINE), CRAWFORD (SOUTH OF RTE. #30), DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, HARDIN (EXCLUDING A LINE DRAWN FROM ROUNDHEAD TO MAYSVILLE), HIGHLAND (EASTERN ONE-FIFTH), HOCKING, JACKSON (NORTHERN HALF), KNOX, LICKING, LOGAN (EASTERN ONE-THIRD), MADISON, MARION, MORROW, MUSKINGUM (WEST OF A LINE.....	$ 40.87	23.15

IRON0207-004 06/01/2025

	Rates	Fringes
IRONWORKER: LAYOUT; SHEETER (ASHTABULA (SOUTHERN PART STARTING AT THE GEAUGA COUNTY LINE), COLUMBIANA (E. OF A LINE FROM DAMASCUS TO HIGHLANDTOWN), MAHONING (N. OF OLD ROUTE #224), PORTAGE (E. OF A LINE FROM MIDDLEFIELD TO SHALERSVILLE TO DEERFIELD) & TRUMBULL).....	$ 37.26	28.16
IRONWORKER: ORNAMENTAL; REINFORCING; STRUCTURAL (ASHTABULA (SOUTHERN PART STARTING AT THE GEAUGA COUNTY LINE), COLUMBIANA (E. OF A LINE FROM DAMASCUS TO HIGHLANDTOWN), MAHONING (N. OF OLD ROUTE #224), PORTAGE (E. OF A LINE FROM MIDDLEFIELD TO SHALERSVILLE TO DEERFIELD) & TRUMBULL).....	$ 36.26	28.16

IRON0290-002 06/01/2025

	Rates	Fringes
IRONWORKER (ALLEN (SOUTHERN HALF), AUGLAIZE, BUTLER (NORTH OF A LINE DRAWN FROM EAST TO THE WEST COUNTY LINE GOING THROUGH OXFORD, DARRTOWN & WOODSDALE), CHAMPAIGN (EXCLUDING EAST OF A LINE DRAWN FROM CATAWLA TO THE POINT WHERE #68 INTERSECTS THE NORTHERN COUNTY LINE), CLARK (WESTERN TWO-THIRDS), CLINTON (EXCLUDING SOUTH OF A LINE DRAWN FROM BLANCHESTER TO LYNCHBURG), DARKE, GREENE, HIGHLAND (INSIDE LINES DRAWN FROM MARSHALL TO LYNCHBURG & FROM THE NORTHERN COUNTY LINE THROUGH EAST MONROE TO MARSHALL), LOGAN (WEST OF A LINE DRAWN FROM WEST LIBERTY TO WHERE THE NORTHERN COUNTY LINE MEETS THE WESTERN COUNTY LINE OF HARDIN), MERCER (SOUTHERN HALF), MIAMI, MONTGOMERY, PREBLE, SHELBY, & WARREN (EXCLUDING SOUTH OF A LINE DRAWN FROM BLANCHESTER THROUGH MORROW TO THE WESTERN COUNTY LINE) COUNTIES).....	$ 37.39	25.35

IRON0549-003 12/01/2022

	Rates	Fringes
IRONWORKER (BELMONT, GUERNSEY, HARRISON, JEFFERSON, MONROE & MUSKINGUM (EXCLUDING PORTION WEST OF A LINE STARTING AT ADAMS MILL GOING TO ADAMSVILLE AND GOING FROM ADAMSVILLE THROUGH BLUE ROCK TO THE SOUTH BORDER)).....	$ 35.19	25.66

IRON0550-004 05/01/2024

	Rates	Fringes
IRONWORKERS: STRUCTURAL, ORNAMENTAL AND REINFORCING (ASHLAND, CARROLL, COLUMBIANA (W. OF A LINE FROM DAMASCUS TO HIGHLANDTOWN), COSHOCTON (E. OF A LINE BEGINNING AT NW CO. LINE GOING THROUGH WALHONDING & TUNNEL HILL TO THE SOUTH CO. LINE), HOLMES, HURON (S. OF OLD RTE. #224), MAHONING (S. OF OLD RTE. #224), MEDINA (S. OF OLD RTE. #224), PORTAGE (S. OF OLD RTE. #224), RICHLAND, STARK, SUMMIT (S. OF OLD RTE. #224, EXCLUDING CITY LIMITS OF BARBERTON), TUSCARAWAS, & WAYNE)	$ 34.70	22.88

IRON0769-004 06/01/2025

	Rates	Fringes
IRONWORKER (ADAMS (EASTERN HALF), GALLIA, JACKSON (SOUTHERN HALF), LAWRENCE & SCIOTO)	$ 39.70	29.59

IRON0787-003 06/01/2025

	Rates	Fringes
IRONWORKER (ATHENS, MEIGS, MORGAN, NOBLE, AND WASHINGTON COUNTIES)	$ 36.10	24.65

LABO0265-008 05/01/2024

	Rates	Fringes
LABORER GROUP 1- ASPHALT LABORER; CARPENTER TENDER; CONCRETE CURING APPLICATOR; DUMP MAN (BATCH TRUCK); GUARDRAIL AND FENCE INSTALLER; JOINT SETTER; LABORER (CONSTRUCTION); LANDSCAPE LABORER; MESH HANDLERS & PLACER; RIGHT-OF-WAY LABORER; RIPRAP LABORER & GROUTER; SCAFFOLD ERECTOR; SEAL COATING; SURFACE TREATMENT OR ROAD MIX LABORER; SIGN INSTALLER; SLURRY SEAL; UTILITY MAN; BRIDGE MAN; HANDYMAN; WATERPROOFING LABORER; FLAGPERSON; HAZARDOUS WASTE (LEVEL D); DIVER TENDER; ZONE PERSON & TRAFFIC CONTROL. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (REMAINING COUNTIES OF OHIO)	$ 35.52	14.45
LABORER GROUP 1- ASPHALT LABORER; CARPENTER TENDER; CONCRETE CURING APPLICATOR; DUMP MAN (BATCH TRUCK); GUARDRAIL AND FENCE INSTALLER; JOINT SETTER; LABORER (CONSTRUCTION); LANDSCAPE LABORER; MESH HANDLERS & PLACER; RIGHT-OF-WAY LABORER; RIPRAP LABORER & GROUTER; SCAFFOLD ERECTOR; SEAL COATING; SURFACE TREATMENT OR ROAD MIX LABORER; SIGN INSTALLER; SLURRY SEAL; UTILITY MAN; BRIDGE MAN; HANDYMAN; WATERPROOFING LABORER; FLAGPERSON; HAZARDOUS WASTE (LEVEL D); DIVER TENDER; ZONE PERSON & TRAFFIC CONTROL. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (CUYAHOGA, GEAUGA & LAKE COUNTIES)	$ 37.18	14.45
LABORER GROUP 1- ASPHALT LABORER; CARPENTER TENDER; CONCRETE CURING APPLICATOR; DUMP MAN (BATCH TRUCK); GUARDRAIL AND FENCE INSTALLER; JOINT SETTER; LABORER (CONSTRUCTION); LANDSCAPE LABORER; MESH HANDLERS & PLACER; RIGHT-OF-WAY LABORER; RIPRAP LABORER & GROUTER; SCAFFOLD ERECTOR; SEAL COATING; SURFACE TREATMENT OR ROAD MIX LABORER; SIGN INSTALLER; SLURRY SEAL; UTILITY MAN; BRIDGE MAN; HANDYMAN; WATERPROOFING LABORER; FLAGPERSON; HAZARDOUS WASTE (LEVEL D); DIVER TENDER; ZONE PERSON & TRAFFIC CONTROL. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL & WOOD COUNTIES)	$ 35.95	14.45
LABORER GROUP 2- ASPHALT RAKER; CONCRETE PUDDLER; KETTLE MAN PIPELINE); MACHINE DRIVEN TOOLS (GAS, ELECTRIC, AIR); MASON TENDER; BRICK PAVER; MORTAR MIXER; POWER BUGGY OR POWER WHEELBARROW; PAINT		

STRIPER; SHEETING & SHORING MAN; SURFACE GRINDER MAN; PLASTIC FUSING MACHINE OPERATOR; PUG MILL OPERATOR; & VACUUM DEVICES (WET OR DRY); RODDING MACHINE OPERATOR; DIVER; SCREWMAN OR PAVER; SCREED PERSON; WATER BLAST, HAND HELD WAND; PUMPS 4"" & UNDER (GAS, AIR OR ELECTRIC) & HAZARDOUS WASTE (LEVEL C); AIR TRACK AND WAGON DRILL; BOTTOM PERSON; COFFERDAM (BELOW 25 FT. DEEP); CONCRETE SAW PERSON; CUTTING WITH BURNING TORCH; FORM SETTER; HAND SPIKER (RAILROAD); PIPELAYER; TUNNEL LABORER (WITHOUT AIR) & CAISSON; UNDERGROUND PERSON (WORKING IN SEWER AND WATERLINE, CLEANING, REPAIRING & RECONDITIONING); SANDBLASTER NOZZLE PERSON; & HAZARDOUS WASTE (LEVEL B). TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (REMAINING COUNTIES OF OHIO)..$ 35.69 14.45

LABORER GROUP 2- ASPHALT RAKER; CONCRETE PUDDLER; KETTLE MAN PIPELINE); MACHINE DRIVEN TOOLS (GAS, ELECTRIC, AIR); MASON TENDER; BRICK PAVER; MORTAR MIXER; POWER BUGGY OR POWER WHEELBARROW; PAINT STRIPER; SHEETING & SHORING MAN; SURFACE GRINDER MAN; PLASTIC FUSING MACHINE OPERATOR; PUG MILL OPERATOR; & VACUUM DEVICES (WET OR DRY); RODDING MACHINE OPERATOR; DIVER; SCREWMAN OR PAVER; SCREED PERSON; WATER BLAST, HAND HELD WAND; PUMPS 4"" & UNDER (GAS, AIR OR ELECTRIC) & HAZARDOUS WASTE (LEVEL C); AIR TRACK AND WAGON DRILL; BOTTOM PERSON; COFFERDAM (BELOW 25 FT. DEEP); CONCRETE SAW PERSON; CUTTING WITH BURNING TORCH; FORM SETTER; HAND SPIKER (RAILROAD); PIPELAYER; TUNNEL LABORER (WITHOUT AIR) & CAISSON; UNDERGROUND PERSON (WORKING IN SEWER AND WATERLINE, CLEANING, REPAIRING & RECONDITIONING); SANDBLASTER NOZZLE PERSON; & HAZARDOUS WASTE (LEVEL B). TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (CUYAHOGA, GEAUGA & LAKE COUNTIES).....$ 37.35 14.45

LABORER GROUP 2- ASPHALT RAKER; CONCRETE PUDDLER; KETTLE MAN PIPELINE); MACHINE DRIVEN TOOLS (GAS, ELECTRIC, AIR); MASON TENDER; BRICK PAVER; MORTAR MIXER; POWER BUGGY OR POWER WHEELBARROW; PAINT STRIPER; SHEETING & SHORING MAN; SURFACE GRINDER MAN; PLASTIC FUSING MACHINE OPERATOR; PUG MILL OPERATOR; & VACUUM DEVICES (WET OR DRY); RODDING MACHINE OPERATOR; DIVER; SCREWMAN OR PAVER; SCREED PERSON; WATER BLAST, HAND HELD WAND; PUMPS 4"" & UNDER (GAS, AIR OR ELECTRIC) & HAZARDOUS WASTE (LEVEL C); AIR TRACK AND WAGON DRILL; BOTTOM PERSON; COFFERDAM (BELOW 25 FT. DEEP); CONCRETE SAW PERSON; CUTTING WITH BURNING TORCH; FORM SETTER; HAND SPIKER (RAILROAD); PIPELAYER; TUNNEL LABORER (WITHOUT AIR) & CAISSON; UNDERGROUND PERSON (WORKING IN SEWER AND WATERLINE, CLEANING, REPAIRING & RECONDITIONING); SANDBLASTER NOZZLE PERSON; & HAZARDOUS WASTE (LEVEL B). TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL & WOOD COUNTIES)..$ 36.12 14.45

LABORER GROUP 3- BLASTER; MUCKER; POWDER PERSON; TOP LANDER; WRENCHER (MECHANICAL JOINTS & UTILITY PIPELINE); YARNER; HAZARDOUS WASTE (LEVEL A); CONCRETE SPECIALIST; CONCRETE CREW IN TUNNELS (WITH AIR-PRESSURIZED - $1.00 PREMIUM); CURB SETTER & CUTTER; GRADE CHECKER; UTILITY PIPELINE TAPPER; WATERLINE; AND CAULKER. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (REMAINING COUNTIES OF OHIO) .....$ 36.02 14.45

LABORER GROUP 3- BLASTER; MUCKER; POWDER PERSON; TOP LANDER; WRENCHER (MECHANICAL JOINTS & UTILITY PIPELINE); YARNER; HAZARDOUS WASTE (LEVEL A); CONCRETE SPECIALIST; CONCRETE CREW IN TUNNELS (WITH AIR-PRESSURIZED - $1.00 PREMIUM); CURB SETTER &

CUTTER; GRADE CHECKER; UTILITY PIPELINE TAPPER; WATERLINE; AND CAULKER. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (CUYAHOGA, GEAUGA & LAKE COUNTIES) ....$ 37.68 14.45

LABORER GROUP 3- BLASTER; MUCKER; POWDER PERSON; TOP LANDER; WRENCHER (MECHANICAL JOINTS & UTILITY PIPELINE); YARNER; HAZARDOUS WASTE (LEVEL A); CONCRETE SPECIALIST; CONCRETE CREW IN TUNNELS (WITH AIR-PRESSURIZED - $1.00 PREMIUM); CURB SETTER & CUTTER; GRADE CHECKER; UTILITY PIPELINE TAPPER; WATERLINE; AND CAULKER. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL & WOOD COUNTIES).....$ 36.45 14.45

LABORER GROUP 4- MINER (WITH AIR-PRESSURIZED - $1.00 PREMIUM); & GUNITE NOZZLE PERSON. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL & WOOD COUNTIES)..$ 36.90 14.45

LABORER GROUP 4- MINER (WITH AIR-PRESSURIZED - $1.00 PREMIUM); & GUNITE NOZZLE PERSON. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (REMAINING COUNTIES OF OHIO) ..$ 36.47 14.45

LABORER GROUP 4- MINER (WITH AIR-PRESSURIZED - $1.00 PREMIUM); & GUNITE NOZZLE PERSON. TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING. (CUYAHOGA, GEAUGA & LAKE COUNTIES).....$ 38.13 14.45

LABORER: SEWAGE PLANTS, WASTE PLANTS, WATER TREATMENT FACILITIES, PUMPING STATIONS, & ETHANOL PLANTS CONSTRUCTION. (CUYAHOGA AND GEAUGA COUNTIES ONLY).....$ 38.56 14.45

PAIN0006-002 05/01/2023

	Rates	Fringes
PAINTER- COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS: GROUP 1- BRUSH; & ROLLER (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)).....$	30.75	18.95
PAINTER- COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS: GROUP 2- SANDBLASTING & BUFFING (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)).....$	31.15	18.95
PAINTER- COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS: GROUP 3- SPRAY PAINTING; CLOSED STEEL ABOVE 55 FEET; BRIDGES & OPEN STRUCTURAL STEEL; TANKS - WATER TOWERS; BRIDGE PAINTERS; BRIDGE RIGGERS; CONTAINMENT BUILDERS (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)).....$	31.45	18.95
PAINTER- COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS: GROUP 4- BRIDGE BLASTER (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)) .....$	37.01	18.95
PAINTER- COMMERCIAL REPAINT GROUP 1- BRUSH; & ROLLER (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)).....$	29.25	18.95
PAINTER- COMMERCIAL REPAINT GROUP 2- SANDBLASTING & BUFFING (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. OF THE EAST-WEST TURNPIKE) & SUMMIT (N. OF THE EAST-WEST TURNPIKE)).....$	29.65	18.95
PAINTER- COMMERCIAL REPAINT GROUP 3- SPRAY PAINTING.$	29.95	18.95

PAIN0007-002 07/01/2025

	Rates	Fringes
PAINTER: NEW COMMERCIAL WORK: GROUP 1- BRUSH; SPRAY & SANDBLASTING POT TENDER. (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 33.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 2- REFINERIES & REFINERY TANKS; SURFACES 30 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 3- SWING STAGE & CHAIR (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 4- LEAD ABATEMENT (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 5- ALL METHODS OF SPRAY (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 6- SOLVENT-BASED CATALIZED EPOXY MATERIALS OF 2 OR MORE COMPONENT MATERIALS, TO INCLUDE SOLVENT-BASED CONVERSION VARNISH (EXCLUDING WATER BASED) (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 7- SPRAY SOLVENT BASED MATERIAL; SAND & ABRASIVE BLASTING (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 8- TOWERS; TANKS; BRIDGES; STACKS OVER 30 FEET (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88
PAINTER: NEW COMMERCIAL WORK: GROUP 9- EPOXY SPRAY (EXCLUDING WATER BASED) (REPAINT IS 90% OF GROUP RATE) (FULTON, HENRY, LUCAS, OTTAWA (EXCLUDING ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH, & GENOVA) & WOOD COUNTIES)	$ 34.66	23.88

PAIN0012-008 05/01/2019

	Rates	Fringes
PAINTER: GROUP 1- BRIDGE EQUIPMENT TENDER; BRIDGE/CONTAINMENT BUILDER (BUTLER COUNTY)	$ 21.95	10.20
PAINTER: GROUP 2- BRUSH & ROLLER (BUTLER COUNTY)	$ 25.30	10.20
PAINTER: GROUP 3- SPRAY (BUTLER COUNTY)	$ 25.80	10.20
PAINTER: GROUP 4- SANDBLASTING; & WATERBLASTING (BUTLER COUNTY)	$ 26.05	10.20
PAINTER: GROUP 5- ELEVATED TANKS; STEEPLEJACK WORK; BRIDGE; & LEAD ABATEMENT (BUTLER COUNTY)	$ 26.30	10.20

PAIN0012-010 05/01/2019

	Rates	Fringes
PAINTER HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES- STRIPING BRIDGE EQUIPMENT TENDER AND CONTAINMENT BUILDER (BROWN, CLERMONT, HAMILTON & WARREN)	$ 21.95	10.20
PAINTER HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES- STRIPING BRIDGES WHEN HIGHEST POINT OF CLEARANCE IS 60 FEET OR MORE; & LEAD ABATEMENT PROJECTS (BROWN, CLERMONT, HAMILTON & WARREN)	$ 26.30	10.20
PAINTER HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES- STRIPING BRUSH & ROLLER (BROWN, CLERMONT, HAMILTON & WARREN)	$ 25.30	10.20
PAINTER HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES- STRIPING SANDBLASTING & HOPPER TENDER; WATER BLASTING (BROWN, CLERMONT, HAMILTON & WARREN)	$ 26.05	10.20
PAINTER HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES- STRIPING SPRAY (BROWN, CLERMONT, HAMILTON & WARREN)	$ 25.80	10.20

PAIN0093-001 12/01/2024

	Rates	Fringes
PAINTER: BRIDGES; LOCKS; DAMS; TENSION TOWERS; & ENERGIZED SUBSTATIONS (ATHENS, GUERNSEY, HOCKING, MONROE, MORGAN, NOBLE AND WASHINGTON COUNTIES)	$ 36.44	24.46
PAINTER: POWER GENERATING FACILITIES (ATHENS, GUERNSEY, HOCKING, MONROE, MORGAN, NOBLE AND WASHINGTON COUNTIES)	$ 33.29	24.46

PAIN0249-002 05/01/2025

	Rates	Fringes
PAINTER: GROUP 1: BRUSH & ROLLER (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 29.15	13.97
PAINTER: GROUP 2: SWING, SCAFFOLD BRIDGES; STRUCTURAL STEEL; OPEN ACID TANK; HIGH TENSION ELECTRICAL EQUIPMENT; & HOT PIPES (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 33.09	13.97
PAINTER: GROUP 3: SPRAY; SANDBLAST; STEAMCLEAN; LEAD ABATEMENT (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 29.90	13.97
PAINTER: GROUP 4: STEEPLEJACK WORK (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 30.10	13.97
PAINTER: GROUP 5: COAL TAR (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 30.65	13.97
PAINTER: GROUP 6: BRIDGE EQUIPMENT TENDER & OR CONTAINMENT BUILDER (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 37.86	13.97
PAINTER: GROUP 7: TANKS, STACKS & TOWERS (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 33.86	13.97
PAINTER: GROUP 8: BRIDGE BLASTER, RIGGER (CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE)	$ 40.86	13.97

PAIN0356-002 09/01/2009

	Rates	Fringes
PAINTER: BRIDGE EQUIPMENT TENDERS AND CONTAINMENT BUILDERS (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 27.93	7.25
PAINTER: BRIDGES; BLASTERS; AND RIGGERS (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 34.60	7.25
PAINTER: BRUSH AND ROLLER (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 20.93	7.25
PAINTER: SANDBLASTING; STEAM CLEANING; WATERBLASTING; AND HAZARDOUS WORK (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 25.82	7.25
PAINTER: SPRAY (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 21.40	7.25
PAINTER: STRUCTURAL STEEL AND SWING STAGE (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 25.42	7.25
PAINTER: TANKS; STACKS; AND TOWERS (KNOX, LICKING, MUSKINGUM, AND PERRY)	$ 28.63	7.25

PAIN0438-002 12/01/2023

	Rates	Fringes
PAINTER: BRIDGES, LOCKS, DAMS, TENSION TOWERS & ENERGIZED SUBSTATIONS (BELMONT, HARRISON AND JEFFERSON COUNTIES)	$ 36.09	19.49

PAINTER: POWER GENERATING FACILITIES (BELMONT, HARRISON AND JEFFERSON COUNTIES).....$ 32.94 19.49

PAIN0476-001 06/01/2025

	Rates	Fringes
PAINTER: GROUP 1- PAINTERS, BRUSH & ROLLER (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 30.64	18.36
PAINTER: GROUP 2- BRIDGES (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 40.27	18.36
PAINTER: GROUP 3- STRUCTURAL STEEL (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 40.27	18.36
PAINTER: GROUP 4- SPRAY, EXCEPT BAR JOIST/DECK (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 31.14	18.36
PAINTER: GROUP 5- EPOXY/MASTIC; SPRAY- BAR JOIST/DECK; WORKING ABOVE 50 FEET; AND SWINGSTAGES (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 31.29	18.36
PAINTER: GROUP 6- TANKS; SANDBLASTING (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 35.27	18.36
PAINTER: GROUP 7- TOWERS; STACKS (COLUMBIANA, MAHONING, AND TRUMBULL COUNITES).....	$ 32.64	18.36

PAIN0555-002 01/01/2025

	Rates	Fringes
PAINTER: GROUP 1- CONTAINMENT BUILDER (ADAMS, HIGHLAND, JACKSON, PIKE & SCIOTO).....	$ 33.32	21.54
PAINTER: GROUP 2- BRUSH; ROLLER; POWER TOOLS, UNDER 40 FEET (ADAMS, HIGHLAND, JACKSON, PIKE & SCIOTO)..	$ 35.02	21.54
PAINTER: GROUP 3- SAND BLASTING; SPRAY; STEAM CLEANING; PRESSURE WASHING; EPOXY & TWO COMPONENT MATERIALS; LEAD ABATEMENT; HAZARDOUS WASTE; TOXIC MATERIALS; BULK & STORAGE TANKS OF 25,000 GALLON CAPACITY OR MORE; ELEVATED TANKS (ADAMS, HIGHLAND, JACKSON, PIKE & SCIOTO).....	$ 36.72	21.54
PAINTER: GROUP 4- STACKS; BRIDGES (ADAMS, HIGHLAND, JACKSON, PIKE & SCIOTO).....	$ 40.03	21.54

PAIN0639-001 05/01/2011

	Rates	Fringes
SIGN PAINTER & ERECTOR FOOTNOTES: A. 7 PAID HOLIDAYS: NEW YEAR'S DAY; MEMORIAL DAY; JULY 4TH; LABOR DAY; THANKSGIVING DAY; CHRISTMAS DAY & 1 FLOATING DAY B. VACATION PAY: AFTER 1 YEAR'S SERVICE - 5 DAYS' PAID VACATION; AFTER 2, BUT LESS THAN 10 YEARS' SERVICE - 10 DAYS' PAID VACATION; AFTER 10, BUT LESS THAN 20 YEARS' SERVICE - 15 DAYS' PAID VACATION; AFTER 20 YEARS' SERVICE - 20 DAYS' PAID VACATION C. FUNERAL LEAVE UP TO 3 DAYS MAXIMUM PAID LEAVE FOR DEATH OF MOTHER, FATHER, BROTHER, SISTER, SPOUSE, CHILD, MOTHER-IN-LAW, FATHER-IN-LAW, GRANDPARENT AND INLAW PROVIDED EMPLOYEE ATTENDS FUNERAL.....	$ 20.61	3.50

PAIN0788-002 06/01/2024

	Rates	Fringes
PAINTER: BRUSH & ROLLER (ASHLAND, CRAWFORD, ERIE, HANCOCK, HURON, MARION, MORROW, OTTAWA (ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE, DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH & GENOA), RICHLAND, SANDUSKY, SENECA & WYANDOT) WINTER REPAINT: BETWEEN DECEMBER 1 TO MARCH 31 - 90%JR $.50 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK: WHILE WORKING SWINGSTAGE, BOATSWAIN CHAIR, NEEDLE BEAM AND HORIZONTAL CABLE. WHILE OPERATING SPRAYGUNS, SANDBLASTING, COBBLASTING AND HIGH PRESSURE WATERBLASTING (4000PSI). $1.00 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK: FOR THE APPLICATION OF CATALIZED EPOXY, INCLUDING LATEX EPOXY THAT IS DEEMED HAZARDOUS, LEAD ABATEMENT, OR FOR WORK OR MATERIAL WHERE SPECIAL PRECAUTIONS BEYOND NORMAL WORK DUTIES MUST BE TAKEN. FOR WORKING ON STACKS, TANKS, AND TOWERS OVER 40 FEET IN HEIGHT.....	$ 29.13	17.52
PAINTER: STRUCTURAL STEEL (ASHLAND, CRAWFORD, ERIE, HANCOCK, HURON, MARION, MORROW, OTTAWA (ALLEN, BAY, BONO, CATAWBA ISLAND, CLAY CENTER, CURTICE,		

DANBURY, EAGLE BEACH, ELLISTON, ELMORE, ERIE, FISHBACK, GEM BEACH & GENOA), RICHLAND, SANDUSKY, SENECA & WYANDOT) WINTER REPAINT: BETWEEN DECEMBER 1 TO MARCH 31 - 90%JR $.50 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK: WHILE WORKING SWINGSTAGE, BOATSWAIN CHAIR, NEEDLE BEAM AND HORIZONTAL CABLE. WHILE OPERATING SPRAYGUNS, SANDBLASTING, COBBLASTING AND HIGH PRESSURE WATERBLASTING (4000PSI). $1.00 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK: FOR THE APPLICATION OF CATALIZED EPOXY, INCLUDING LATEX EPOXY THAT IS DEEMED HAZARDOUS, LEAD ABATEMENT, OR FOR WORK OR MATERIAL WHERE SPECIAL PRECAUTIONS BEYOND NORMAL WORK DUTIES MUST BE TAKEN. FOR WORKING ON STACKS, TANKS, AND TOWERS OVER 40 FEET IN HEIGHT.....$ 30.73 17.52

PAIN0813-005 12/01/2008

	Rates	Fringes
PAINTER: BASE RATE (GALLIA, LAWRENCE, MEIGS & VINTON)	$ 24.83	10.00
PAINTER: BRIDGES, LOCKS, DAMS & TENSION TOWERS (GALLIA, LAWRENCE, MEIGS & VINTON)	$ 27.83	10.00

PAIN0841-001 07/01/2025

	Rates	Fringes
PAINTERS: GROUP 1- BRUSH, ROLLER & PAPERHANGER (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 31.93	18.15
PAINTERS: GROUP 2- EPOXY APPLICATION (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 32.58	18.15
PAINTERS: GROUP 3- SWING SCAFFOLD, BOSUM CHAIR, & WINDOW JACK (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 32.68	18.15
PAINTERS: GROUP 4- SPRAY GUN OPERATOR OF ANY & ALL COATINGS (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 32.78	18.15
PAINTERS: GROUP 5- SANDBLAST, PAINTING OF STANDPIPES, ETC. FROM SCAFFOLDS, BRIDGE WORK AND/OR OPEN STRUCTURAL STEEL, STANDPIPES AND/OR WATER TOWERS (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 33.18	18.15
PAINTERS: GROUP 6- PUBLIC & COMMERCE TRANSPORTATION, STEEL OR GALVANIZED, BRIDGES, TUNNELS & RELATED SUPPORT ITEMS (CONCRETE) (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 38.60	18.15
PAINTERS: GROUP 7- SYNTHETIC EXTERIOR, DRYWALL FINISHER AND/OR TAPER, DRYWALL FINISHER AND FOLLOW-UP MAN USING AUTOMATIC TOOLS (MEDINA, PORTAGE (SOUTH OF AND INCLUDING OHIO TURNPIKE), AND SUMMIT (SOUTH OF AND INCLUDING OHIO TURNPIKE) COUNTIES)	$ 33.18	18.15

PAIN0841-002 07/01/2025

	Rates	Fringes
PAINTER: BRIDGES; TOWERS, POLES & STACKS; SANDBLASTING STEEL; STRUCTURAL STEEL & METALIZING (CARROLL, COSHOCTON, HOLMES, STARK, TUSCARAWAS & WAYNE)	$ 33.18	18.15
PAINTER: BRUSH & ROLLER (CARROLL, COSHOCTON, HOLMES, STARK, TUSCARAWAS & WAYNE)	$ 31.93	18.15
PAINTER: SPRAY; TANK INTERIOR & EXTERIOR (CARROLL, COSHOCTON, HOLMES, STARK, TUSCARAWAS & WAYNE)	$ 32.78	18.15

PAIN1020-002 07/01/2025

	Rates	Fringes
PAINTER: BRUSH & ROLLER (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER,		

PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES) ALL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 27.59 18.54

PAINTER: DRYWALL FINISHING & TAPING (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES): LL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 28.34 18.54

PAINTER: LEAD ABATEMENT (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES) ALL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 29.34 18.54

PAINTER: SPRAY, SANDBLASTING PRESSURE CLEANING, & REFINERY (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES) ALL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 28.34 18.54

PAINTER: SWING STAGE, CHAIR, SPIDERS, & CHERRY PICKERS (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES) ALL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 27.84 18.54

PAINTER: WALLCOVERINGS (ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, AND WILLIAMS COUNTIES) ALL SURFACES 40 FT. OR OVER WHERE MATERIAL IS APPLIED TO OR LABOR PERFORMED ON, ABOVE GROUND LEVEL (EXTERIOR), FLOOR LEVEL (INTERIOR) - $.50 PREMIUM APPLYING COAL TAR PRODUCTS - $1.00 PREMIUM.....$ 28.34 18.54

PAIN1275-002 05/01/2025

	Rates	Fringes
PAINTER: BRIDGES (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 37.26	15.16
PAINTER: BRUSH; ROLLER (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 30.20	15.16
PAINTER: SANDBLASTING; STEAMCLEANING; WATERBLASTING (3500 PSI OR OVER)& HAZARDOUS WORK (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 32.35	15.16
PAINTER: SPRAY (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 32.15	15.16
PAINTER: STACKS; TANKS; & TOWERS (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 34.46	15.16
PAINTER: STRUCTURAL STEEL & SWING STAGE (DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION)	$ 30.50	15.16

PLAS0109-001 06/01/2025

	Rates	Fringes
PLASTERER (MEDINA, PORTAGE, STARK, AND SUMMIT COUNTIES)	$ 33.00	23.83

PLAS0109-003 06/01/2025

	Rates	Fringes
PLASTERER (CARROLL, HOLMES, TUSCARAWAS, AND WAYNE COUNTIES)	$ 33.00	23.83

PLAS0132-002 07/01/2025

	Rates	Fringes
PLASTERER (BROWN, BUTLER, CLERMONT, HAMILTON, HIGHLAND, WARREN COUNTIES)	$ 31.35	17.65

PLAS0404-002 05/01/2018

	Rates	Fringes
PLASTERER (ASHTABULA, CUYAHOGA, GEAUGA, AND LAKE COUNTIES)	$ 29.63	17.11

PLAS0404-003 05/01/2018

	Rates	Fringes
PLASTERER (LORAIN COUNTY)	$ 28.86	17.11

PLAS0526-022 05/01/2018

	Rates	Fringes
PLASTERER (COLUMBIANA, MAHONING, AND TRUMBULL COUNTIES)	$ 28.86	17.11

PLAS0526-023 05/01/2018

	Rates	Fringes
PLASTERER (BELMONT, HARRISON, AND JEFFERSON COUNTIES)	$ 28.21	17.11

PLAS0886-001 07/01/2025

	Rates	Fringes
PLASTERER (FULTON, HANCOCK, HENRY, LUCAS, PUTNAM, AND WOOD COUNTIES)	$ 36.65	25.60

PLAS0886-003 07/01/2025

	Rates	Fringes
PLASTERER (DEFIANCE, ERIE, HURON, OTTAWA, PAULDING, SANDUSKY, AND SENECA)	$ 36.65	25.60

PLAS0886-004 07/01/2025

	Rates	Fringes
PLASTERER (ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, AND VAN WERT)	$ 35.29	23.07

PLUM0042-002 07/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (ASHLAND, CRAWFORD, ERIE, HURON, KNOX, LORAIN, MORROW, RICHLAND & WYANDOT)	$ 43.02	26.45

PLUM0050-002 06/30/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS & WOOD)	$ 51.00	32.56

PLUM0055-003 05/05/2025

	Rates	Fringes
PLUMBER (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, MEDINA (N. OF RTE. #18 & SMITH ROAD) & SUMMIT (N. OF RTE. #303, INCLUDING THE CORPORATE LIMITS OF THE CITY OF HUDSON))	$ 44.86	30.03

PLUM0083-001 07/01/2023

	Rates	Fringes
PLUMBER AND STEAMFITTER (BELMONT & MONROE (NORTH OF RTE. #78))	$ 35.94	37.35

PLUM0094-002 05/01/2025

	Rates	Fringes
PLUMBER/PIPEFITTER (CARROLL (NORTHEN HALF), STARK, AND WAYNE COUNTIES)	$ 47.48	27.14

PLUM0120-002 05/01/2025

	Rates	Fringes
PIPEFITTER (ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN (THE C.E.I. POWER HOUSE IN AVON LAKE), MEDINA (N. OF RTE. #18) & SUMMIT (N. OF #303)).....	$ 49.17	28.55

PLUM0162-002 06/01/2024

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (CHAMPAIGN, CLARK, CLINTON, DARKE, FAYETTE, GREENE, MIAMI, MONTGOMERY & PREBLE).....	$ 43.05	27.18

PLUM0168-002 06/01/2025

	Rates	Fringes
PLUMBER/PIPEFITTER (MEIGS, MONROE (SOUTH OF RTE. #78), MORGAN (SOUTH OF RTE. #78) & WASHINGTON).....	$ 40.92	37.20

PLUM0189-002 06/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (DELAWARE, FAIRFIELD, FRANKLIN, HOCKING, LICKING, MADISON, MARION, PERRY, PICKAWAY, ROSS & UNION).....	$ 53.00	27.59

PLUM0219-002 06/01/2025

	Rates	Fringes
PLUMBER AND STEAMFITTER (MEDINA (RTE. #18 FROM EASTERN EDGE OF MEDINA CO., WEST TO EASTERN CORPORATE LIMITS OF THE CITY OF MEDINA, & ON THE COUNTY ROAD FROM THE WEST CORPORATE LIMITS OF MEDINA RUNNING DUE WEST TO AND THROUGH COMMUNITY OF RISLEY TO THE WESTERN EDGE OF MEDINA COUNTY - ALL TERRITORY SOUTH OF THIS LINE), PORTAGE, AND SUMMIT (S. OF RTE. #303) COUNTIES).....	$ 46.87	28.39

PLUM0392-002 06/01/2025

	Rates	Fringes
PLUMBER/PIPEFITTER (BROWN, BUTLER, CLERMONT, HAMILTON & WARREN).....	$ 43.30	27.40

PLUM0396-001 06/01/2025

	Rates	Fringes
PLUMBER/PIPEFITTER (COLUMBIANA (EXCLUDING WASHINGTON & YELLOW CREEK TOWNSHIPS & LIVERPOOL TWP. - SECS. 35 & 36 - WEST OF COUNTY ROAD #427), MAHONING AND TRUMBULL COUNTIES).....	$ 40.55	29.25

PLUM0495-002 06/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (CARROLL (ROSE, MONROE, UNION, LEE, ORANGE, PERRY & LOUDON TOWNSHIPS), COLUMBIANA (WASHINGTON & YELLOW CREEK TOWNSHIPS & LIVERPOOL TOWNSHIP, SECS. 35 & 36, WEST OF COUNTY RD. #427), COSHOCTON, GUERNSEY, HARRISON, HOLMES, JEFFERSON, MORGAN (SOUTH TO STATE RTE. #78 & FROM MCCONNELSVILLE WEST ON STATE RTE. #37 TO THE PERRY COUNTY LINE), MUSKINGUM, NOBLE, AND TUSCARAWAS COUNTIES).....	$ 39.32	37.60

PLUM0577-002 06/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (ADAMS, ATHENS, GALLIA, HIGHLAND, JACKSON, LAWRENCE, PIKE, SCIOTO & VINTON).....	$ 42.65	28.56

PLUM0776-002 07/01/2025

	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER (ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, SHELBY AND VAN WERT COUNTIES).....	$ 42.76	30.81

TEAM0377-003 05/01/2025

	Rates	Fringes

TRUCK DRIVER: GROUP 1- ASPHALT DISTRIBUTOR; BATCH; 4- WHEEL SERVICE; 4-WHEEL DUMP; OIL DISTRIBUTOR & TANDEM (STATEWIDE, EXCEPT CUYAHOGA, GEAUGA & LAKE).....$ 34.26 18.85

TRUCK DRIVER: GROUP 2- TRACTOR-TRAILER COMBINATION: FUEL; POLE TRAILER; READY MIX; SEMI-TRACTOR; & ASPHALT OIL SPRAYBAR MAN WHEN OPERATED FROM CAB; 5 AXLES & OVER; BELLY DUMP; END DUMP; ARTICULATED DUMP; HEAVY DUTY EQUIPMENT; LOW BOY; & TRUCK MECHANIC (STATEWIDE, EXCEPT CUYAHOGA, GEAUGA & LAKE).....$ 35.26 18.85

TEAM0436-002 05/01/2025

	Rates	Fringes
TRUCK DRIVER: GROUP 1- STRAIGHT & DUMP, STRAIGHT FUEL (CUYAHOGA, GEAUGA & LAKE)	$ 34.92	19.30
TRUCK DRIVER: GROUP 2- SEMI FUEL, SEMI TRACTOR, EUCLIDS, DARTS, TANK, ASPHALT SPREADERS, LOW BOYS, CARRY-ALL, TOURNA-ROCKERS, HI-LIFTS, EXTRA LONG TRAILERS, SEMI-POLE TRAILERS, DOUBLE HOOK-UP TRACTOR TRAILERS INCLUDING TEAM TRACK & RAILROAD SIDING, SEMI-TRACTOR & TRI-AXLE TRAILER, TANDEM TRACTOR & TANDEM TRAILER, TAG ALONG TRAILER, EXPANDABLE TRAILER OR TOWING REQUIRING ROAD PERMITS, READY-MIX (AGITATOR OR NON-AGITATOR), BULK CONCRETE DRIVER, DRY BATCH TRUCK, ARTICULATED END DUMP (CUYAHOGA, GEAUGA & LAKE)	$ 35.73	19.30

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular

rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than SU, UAVG, SA, or SC denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The SU identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

SU wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The SA identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the SA identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

SECTION 10
APPENDIX

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
478 MAIN STREET
BUFFALO, NEW YORK 14202

July 29, 2025

Regulatory Branch

SUBJECT: Department of the Army Permit No. LRB-2025-00774, Nationwide Permit No. 58, as Published in the Federal Register, Volume 86, No. 8, on Wednesday, January 13, 2021.

Doug Starkey
Ashtabula County of Environmental Services
25 W. Jefferson St.
Jefferson, Ohio 44047

Dear Mr. Starkey:

This pertains to the Ashtabula County of Environmental Services' application for a Department of the Army permit to temporarily discharge fill material into 0.54 acres of emergent wetland and below the ordinary high-water mark of 0.0035 acres of stream channel. The project is located along S Ridge Rd E and Lake Street, in the City of Kingsville, Ashtabula County, Ohio (Sheets 1-5 of 5). All temporarily placed fill material will be removed and the area restored to pre-construction conditions within 10 days of project completion.

I have evaluated the impacts associated with your proposal, and have concluded that they are authorized by the enclosed Nationwide Permit (NWP) provided that the attached conditions are satisfied.

Verification of the applicability of this NWP is valid until March 14, 2026 unless the NWP is modified, suspended, revoked, or the activity complies with any subsequent permit modification. Please note in accordance with 33 CFR part 330.6(b), that if you commence or are under contract to commence an activity in reliance of the permit prior to the date this Nationwide permit expires, is suspended or revoked, or is modified such that the activity no longer complies with the terms and conditions, you have twelve months from the date of permit modification, expiration, or revocation to complete the activity under the present terms and conditions of the permit, unless the permit has been subject to the provisions of discretionary authority.

It is your responsibility to remain informed of changes to the NWP program. A public notice announcing any changes will be issued when they occur and will be available for viewing at our website: http://www.lrb.usace.army.mil/Missions/Regulatory.aspx. Finally, note that if your activity is not undertaken within the defined period or the project specifications have changed, you must immediately notify this office to determine the need for further approval or reverification.

This affirmation is limited to the attached NWP and associated Water Quality Certification, and does not obviate the need to obtain any other project specific Federal, state, or local authorization.

Regulatory Branch

SUBJECT: Department of the Army Permit No. LRB-2025-00774, Nationwide Permit No. 58, as Published in the Federal Register, Volume 86, No. 8, on Wednesday, January 13, 2021.

A copy of this letter has been sent to the Ohio Environmental Protection Agency and to Ms. Lindsey Jakovljevic (Verdantas LLC).

Questions pertaining to this matter should be directed to me at 716-879-4339, or by e-mail at: keith.c.sendziak@usace.army.mil

Sincerely,

Keith C. Sendziak

Keith Sendziak
Biologist

Enclosures

COMPLETION FORM / COMPLIANCE CERTIFICATION

Each permittee who receives a Nationwide Permit (NWP) verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any compensatory mitigation.

APPLICANT:	POINT OF CONTACT:	File No.: 2025-00774
Ashtabula County of	Doug Starkey	File Closed: 7/29/2025
Environmental Services	(same)	NWP No.: 58
25 W. Jefferson St.		
Jefferson, Ohio 44047		

Upon completion of the activity authorized by this permit and any required compensatory mitigation sign this certification and return it to the address listed below within 30 days of project completion.

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, revocation, and/or assessment of administrative penalties.

The permittee shall certify the completion of the authorized work and mitigation:

a. The authorized work was done in accordance with the NWP authorization, including any general, regional, or activity specific conditions.

b. The implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, this certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits.

_____ _____

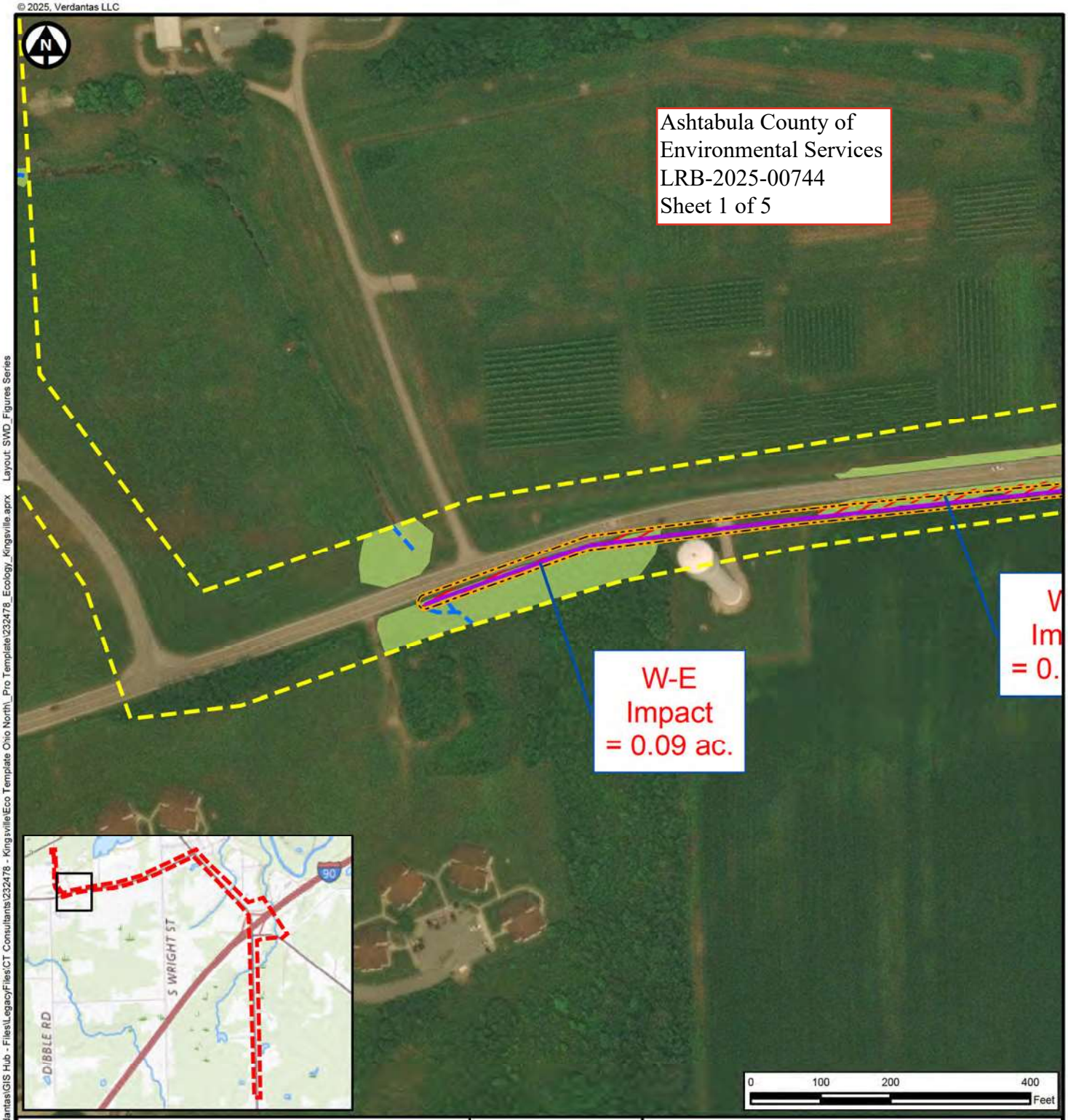
Ashtabula County of Environmental Services (Doug Starkey) Date

Permittee Telephone Number: _____

Project Description: temporarily discharge fill material into 0.54 acres of emergent wetland and below the ordinary high-water mark of 0.0035 acres of stream channel. The project is located along S Ridge Rd E and Lake Street, in the City of Kingsville, Ashtabula County, Ohio

Return completed form to: **LRB.Regulatory.PermitCompliance@usace.army.mil**

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Project Area
Alignment
Limits of Disturbance
Wetlands
Forested
Emergent
Streams
Intermittent Stream
Wetland Impact

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S Ridge Road E (84) and Lake Street (84/193)
City of Kingsville, Ashtabula County, Ohio

Impact Map

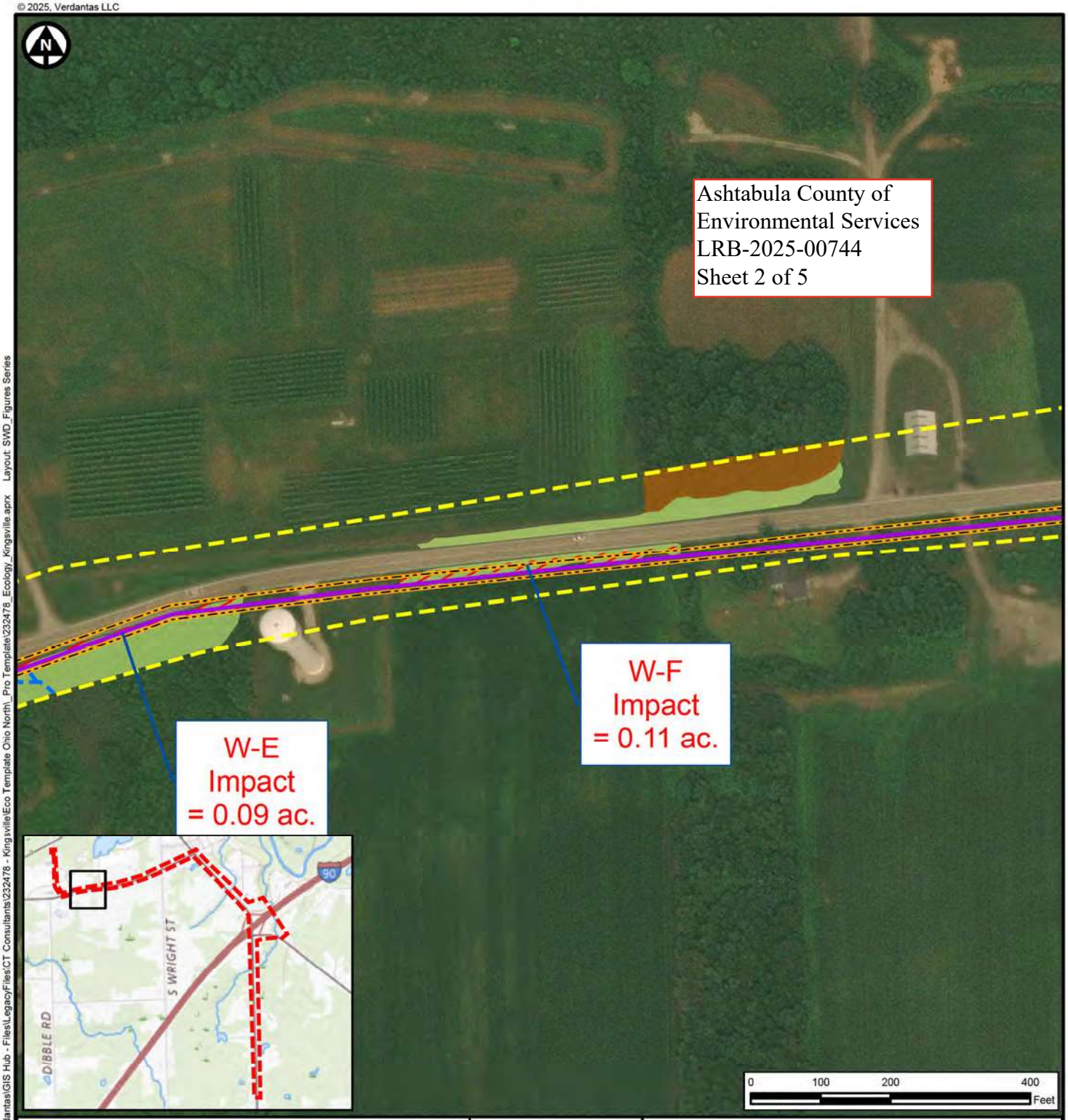
Preconstruction Notification
Kingsville I-90 Interchange Sanitary Sewers Project

Project Number	232478
Date	07/2025
Author	ljakovljevic
Scale	1 in = 200 ft
Figure	7a

Edited: 7/2/2025 File Location: C:\Users\Lindsey.Jakovljevic\Verdantas\GIS Hub - Files\LegacyFiles\CT Consultants\232478 - Kingsville\Eco Template Ohio North_Pro Template\232478_Ecology_Kingsville.aprx Layout: SWD_Figures Series

Produced Using Esri's ArcGIS Software

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Project Area
Alignment
Limits of Disturbance
Wetlands
Forested
Emergent
Streams
Intermittent Stream
Wetland Impact

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S Ridge Road E (84) and Lake Street (84/193)
City of Kingsville, Ashtabula County, Ohio

Impact Map

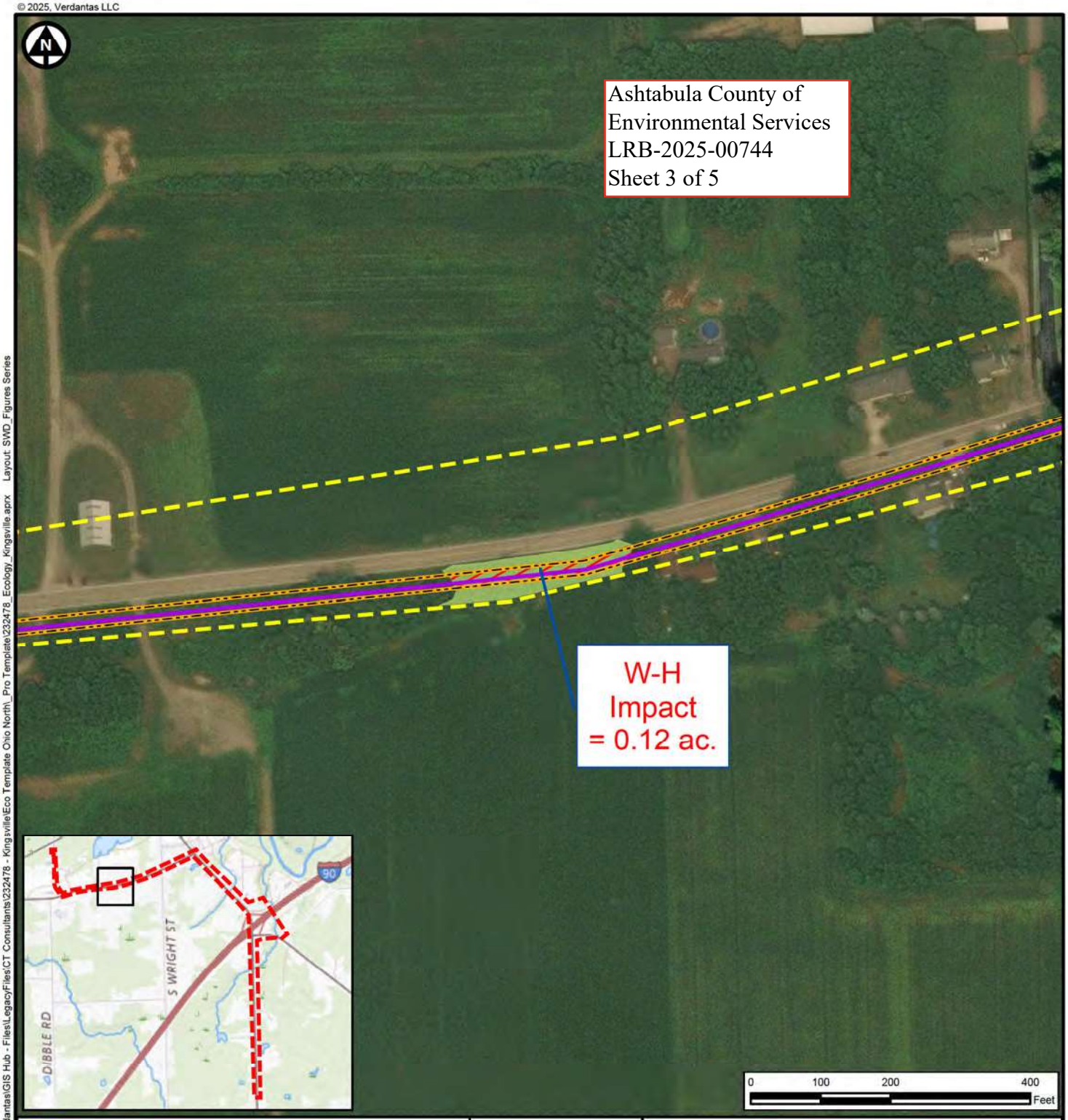
Preconstruction Notification
Kingsville I-90 Interchange Sanitary Sewers Project

Project Number	232478
Date	07/2025
Author	ljakovljevic
Scale	1 in = 200 ft
Figure	7b

Edited: 7/2/2025 File Location: C:\Users\Lindsey.Jakovljevic\Verdantas\GIS Hub - Files\LegacyFiles\CT Consultants\232478 - Kingsville\Eco Template Ohio North_Pro Template\232478_Ecology_Kingsville.aprx Layout: SWD_Figures Series

Produced Using Esri's ArcGIS Software

© 2025, Verdantas LLC



Project Area
Alignment
Limits of Disturbance
Wetlands
Forested
Emergent
Wetland Impact

DISCLAIMER: Verdantas LLC has furnished this map to the Client for its sole and exclusive use as a preliminary planning and screening tool. This map is reproduced from geospatial information compiled from third-party sources which may change over time and are not accurate as to mapping, surveying or engineering standards. Verdantas LLC makes no representation or warranty as to the content, accuracy, timeliness or completeness of any information. In no event will Verdantas LLC, its owners, officers, employees or agents, be liable for damages of any kind arising out of the use of this map by Client or any other party.

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S Ridge Road E (84) and Lake Street (84/193)
City of Kingsville, Ashtabula County, Ohio

Impact Map

Preconstruction Notification
Kingsville I-90 Interchange Sanitary Sewers Project

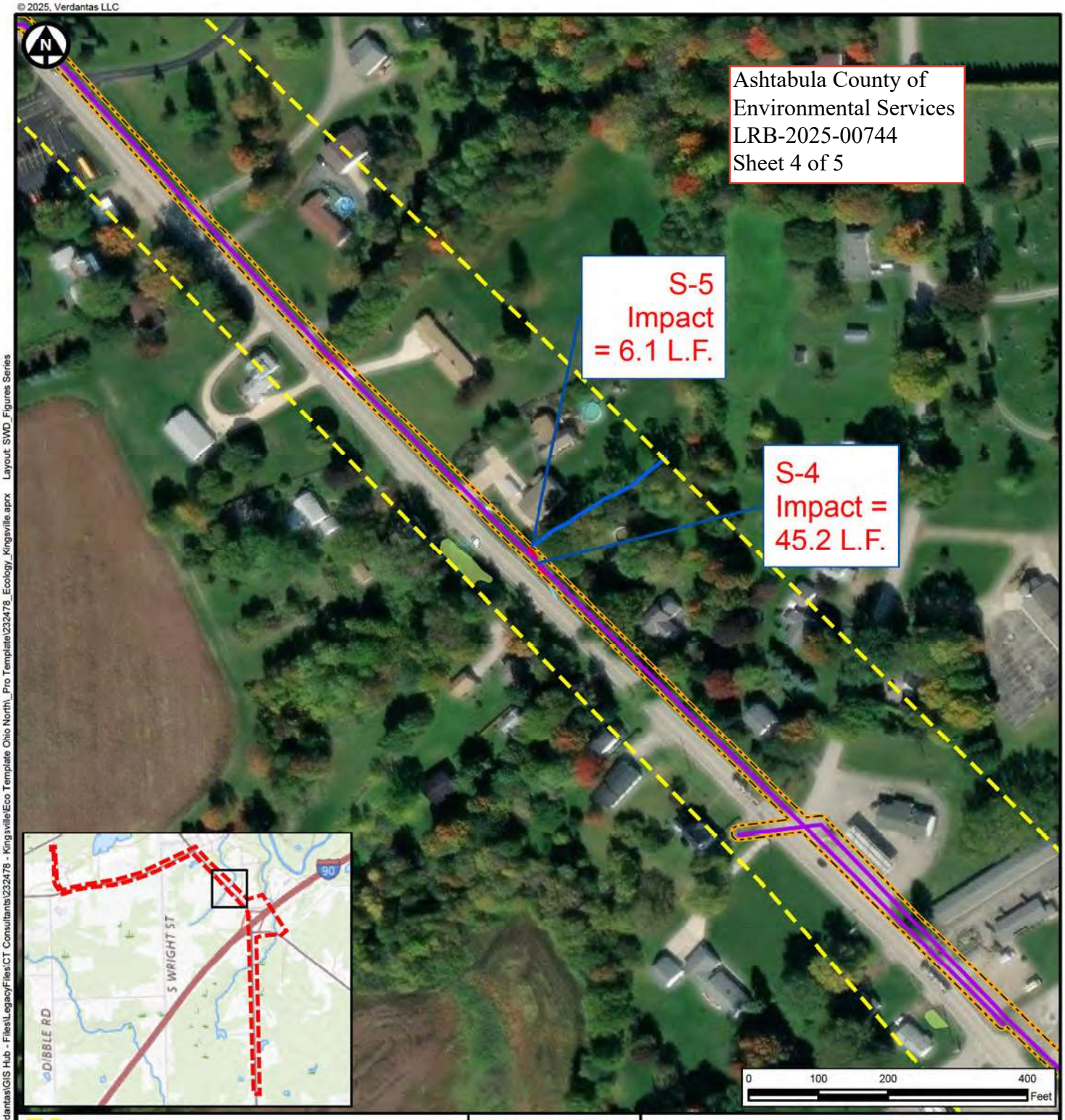
Project Number	232478
Date	07/2025
Author	ljakovljevic
Scale	1 in = 200 ft
Figure	7c

Edited: 7/2/2025 File Location: C:\Users\Lindsey.Jakovljevic\Verdantas\GIS Hub - Files\Legacy Files\CT Consultants\232478 - Kingsville\Eco Template Ohio North_Pro Template\232478_Ecology_Kingsville.aprx Layout: SWD_Figures Series

Produced Using Esri's ArcGIS Software

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Ashtabula County of
Environmental Services
LRB-2025-00744
Sheet 4 of 5



Project Area
Alignment
Limits of Disturbance
Wetlands
Emergent
Streams
Perennial Stream
Ephemeral Stream
Stream Impact

DISCLAIMER: Verdantas LLC has furnished this map to the Client for its sole and exclusive use as a preliminary planning and screening tool. This map is reproduced from geospatial information compiled from third-party sources which may change over time and are not accurate as to mapping, surveying or engineering standards. Verdantas LLC makes no representation or warranty as to the content, accuracy, timeliness or completeness of any information. In no event will Verdantas LLC, its owners, officers, employees or agents, be liable for damages of any kind arising out of the use of this map by Client or any other party.

verdantas

S Ridge Road E (84) and Lake Street (84/193)
City of Kingsville, Ashtabula County, Ohio

Impact Map

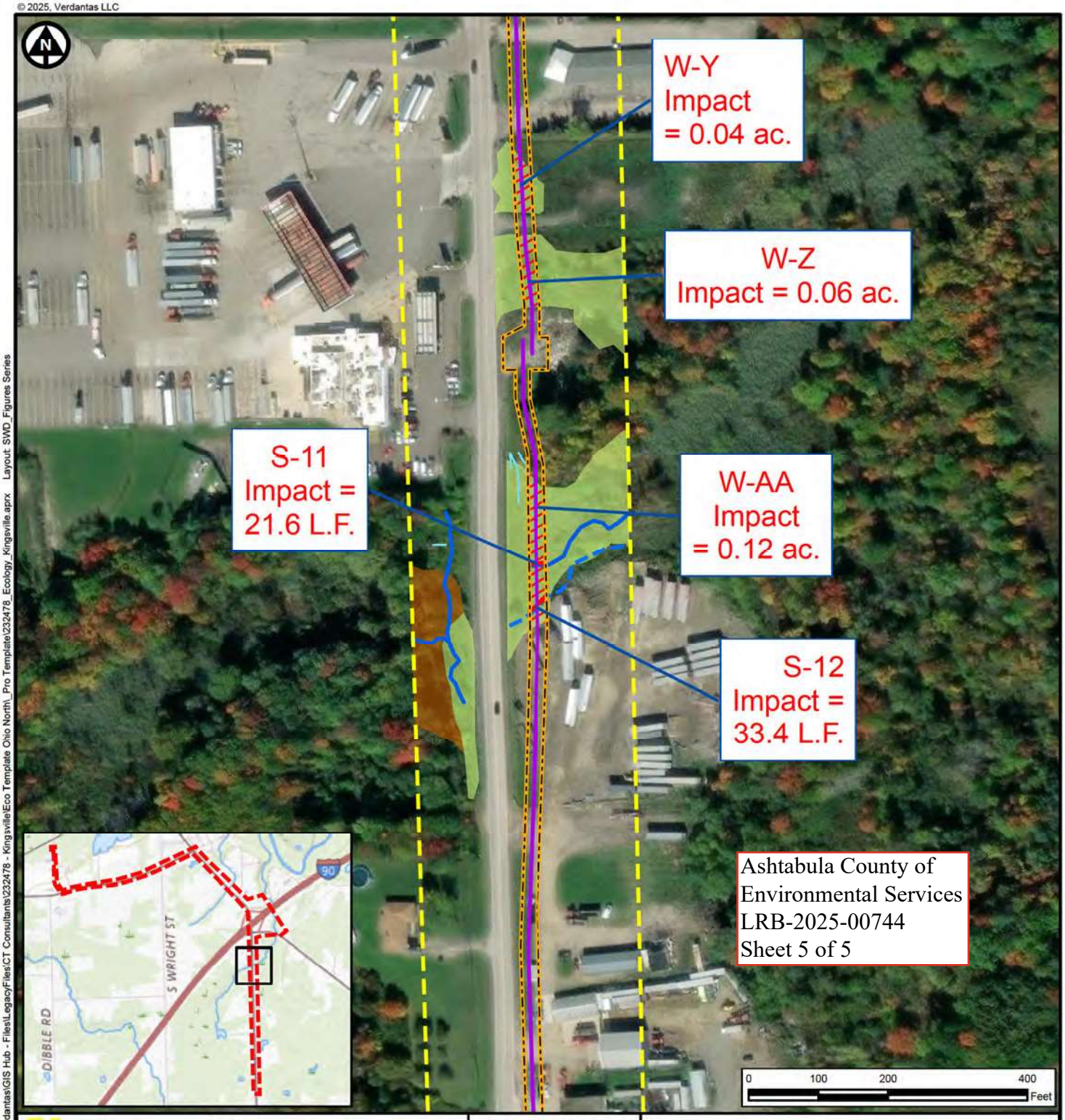
Preconstruction Notification
Kingsville I-90 Interchange Sanitary Sewers Project

Project Number	232478
Date	07/2025
Author	ljakovljevic
Scale	1 in = 200 ft
Figure	7d

Edited: 7/2/2025 File Location: C:\Users\Lindsey.Jakovljevic\Verdantas\GIS Hub - Files\Legacy Files\CT Consultants\232478 - Kingsville\Eco Template Ohio North_Pro Template\232478_Ecology_Kingsville.aprx Layout: SWD_Figures Series

Produced Using Esri's ArcGIS Software

© 2025, Verdantas LLC



Project Area
Alignment
Limits of Disturbance

Wetlands
Forested
Emergent

Streams
Perennial Stream
Intermittent Stream
Ephemeral Stream
Stream Impact
Wetland Impact

DISCLAIMER: Verdantas LLC has furnished this map to the Client for its sole and exclusive use as a preliminary planning and screening tool. This map is reproduced from geospatial information compiled from third-party sources which may change over time and are not accurate as to mapping, surveying or engineering standards. Verdantas LLC makes no representation or warranty as to the content, accuracy, timeliness or completeness of any information. In no event will Verdantas LLC, its owners, officers, employees or agents, be liable for damages of any kind arising out of the use of this map by Client or any other party.

verdantas

S Ridge Road E (84) and Lake Street (84/193)
City of Kingsville, Ashtabula County, Ohio

Impact Map

Preconstruction Notification
Kingsville I-90 Interchange Sanitary Sewers Project

Project Number	232478
Date	07/2025
Author	ljakovljevic
Scale	1 in = 200 ft
Figure	7e

Edited: 7/2/2025 File Location: C:\Users\Lindsey.Jakovljevic\Verdantas\GIS Hub - Files\Legacy\Files\CT Consultants\232478 - Kingsville\Eco Template Ohio North_Pro Template\232478_Ecology_Kingsville.aprx Layout: SMD_Figures Series

Produced Using Esri's ArcGIS Software

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Thomas H. & Donna J. Nelson ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-008-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 24 day of November, 2025.

GRANTOR:
Thomas H. & Donna J. Nelson

By: Thomas H. Nelson Donna J. Nelson

Print Name: Thomas H. Nelson + Donna J. Nelson

Title: Land Owner

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 24 day of November, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.

Notary Public Janice K. Boyle

Print Name Janice K. Boyle

Commission Expires 3-25-27

JANICE K BOYLE
NOTARY PUBLIC - OHIO
MY COMMISSION EXPIRES
03-25-27

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.350 ACRES
Land conveyed to Thomas H. & Donna J. Nelson (Parcel 27-012-00-008-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning in the northeasterly line of State Route 193 (variable width), at the intersection of the southeasterly line of land conveyed to Dibenedetto Inc., who claims title by instrument recorded in Volume 149, Page 2236 of Ashtabula County

Thence N 58°44'16" E., along said southeasterly line of land conveyed to Dibenedetto, a distance of 25.82 feet to a point;

Thence S 86°44'41" E, parallel to said northeasterly line of State Route 193 and distant 25 feet by normal therefrom, a distance of 189.71 feet to a point;

Thence S 45°43'45" E, a distance of 234.87 feet to a point;

Thence S 0°21'36" W, a distance of 69.26 feet to the northerly limited access right-of-way line of Interstate 90;

Thence N 87°47'39" W, along said northerly limited access right-of-way line of Interstate 90, a distance of 25.01 feet to a point;

Thence N 0°21'36" E, a distance of 29.67 feet to the northerly limited access right-of-way line of Interstate 90;

Thence N 86°43'45" W, a distance of 203.95 feet to said northeasterly line of State Route 193;

Thence N 45°44'41" W, along said northeasterly line of State Route 193, a distance of 228.39 feet to the Pont of Beginning, and containing 15,239 Square Feet, 0.350 Acres of land as calculated and described in June 2025 by Verdantas;

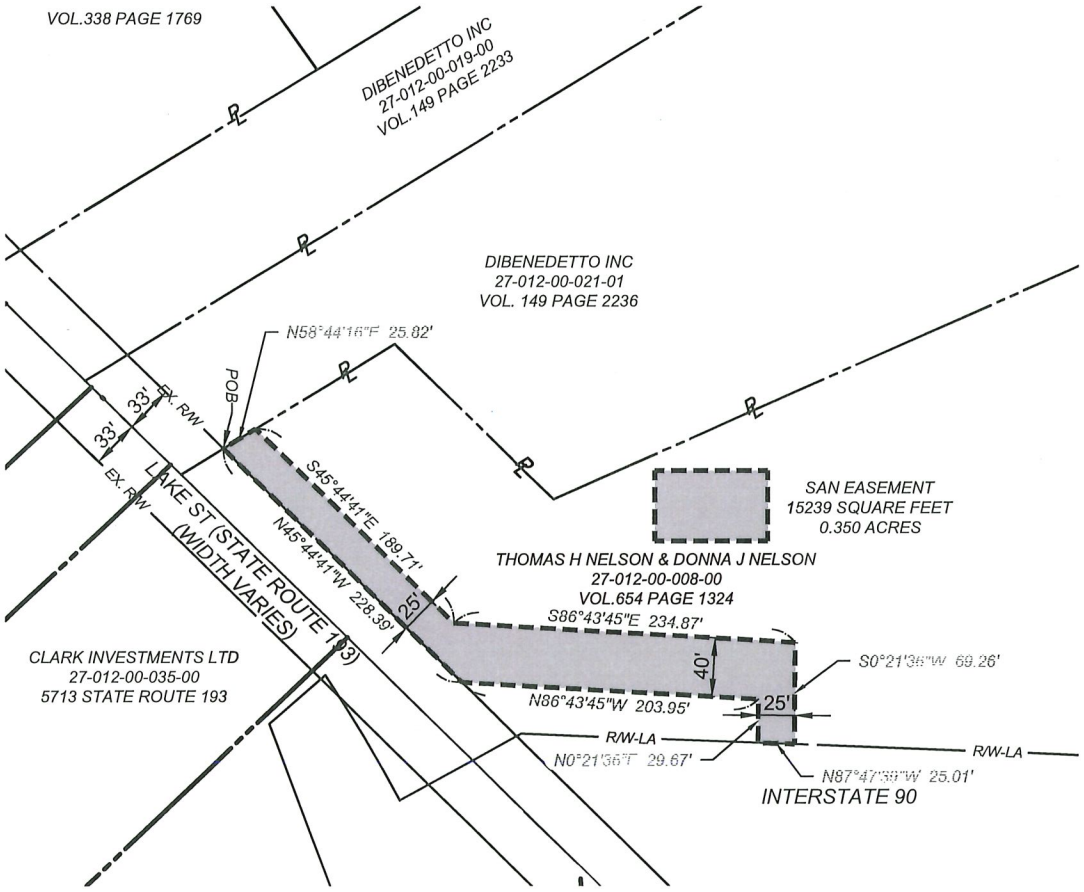
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-008-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

———	EXISTING CENTERLINE
——— EX. R/W ———	EXISTING RIGHT OF WAY
———	EXISTING PROPERTY LINE
▬▬▬▬▬	PROPOSED EASEMENT
——— R/W-LA ———	LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-008-00
0.350 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Babban, Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-017-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 3rd day of June, 2026.

GRANTOR:
Babban, Inc.

By: _____

Print Name: Hussnain Khan

Title: President

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 3rd day of June, 2026, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



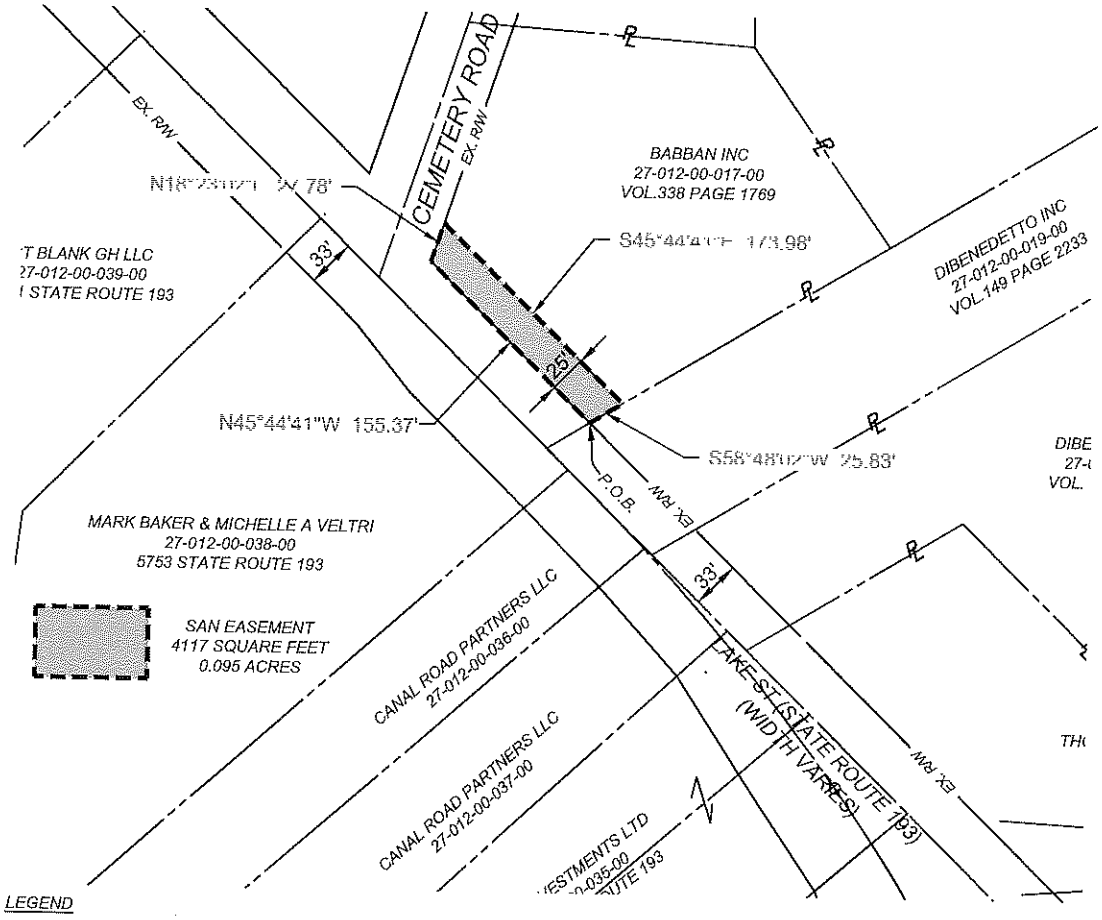
Notary Public Elizabeth Ann Vendetti

Print Name Elizabeth Ann Vendetti

Commission Expires Dec 13, 2026

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA, STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST, TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-017-00
0.095 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY	
JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Dibenedetto, Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-019-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 13th day of April, 2026.

GRANTOR:
Dibenedetto, Inc.

By: _____

Print Name: Paula O. Benedetto

Title: President

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 8th day of April, 2026, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.059 ACRES
Land conveyed to Dibenedetto (Parcel 27-012-00-019-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning in the northeasterly line of State Route 193 (variable width), at the intersection of the southeasterly line of land conveyed to Babban Inc., who claims title by instrument recorded in Volume 338, Page 1769 of Ashtabula County Records;

Thence N 58°48'02" E., along said southeasterly line of land conveyed to Babban Inc., a distance of 25.83 feet to a point;

Thence S 45°44'41" E, parallel to said northeasterly line of State Route 193 and distant 25 feet by normal therefrom, a distance of 102.47 feet to the northwesterly line of land conveyed to Dibenedetto Inc., who claims title by instrument recorded in volume 149 page 2236 of the Ashtabula County Records;

Thence S 58°48'02" W, along said northwesterly line of land conveyed to Dibenedetto Inc., a distance of 25.83 feet to said northeasterly line of State Route 193;

Thence N 45°44'41" W, along said northeasterly line of State Route 193, a distance of 102.47 feet to the Pont of Beginning, and containing about 2,562 Square Feet, 0.059 Acres of land as calculated and described in June 2025 by Verdantas;

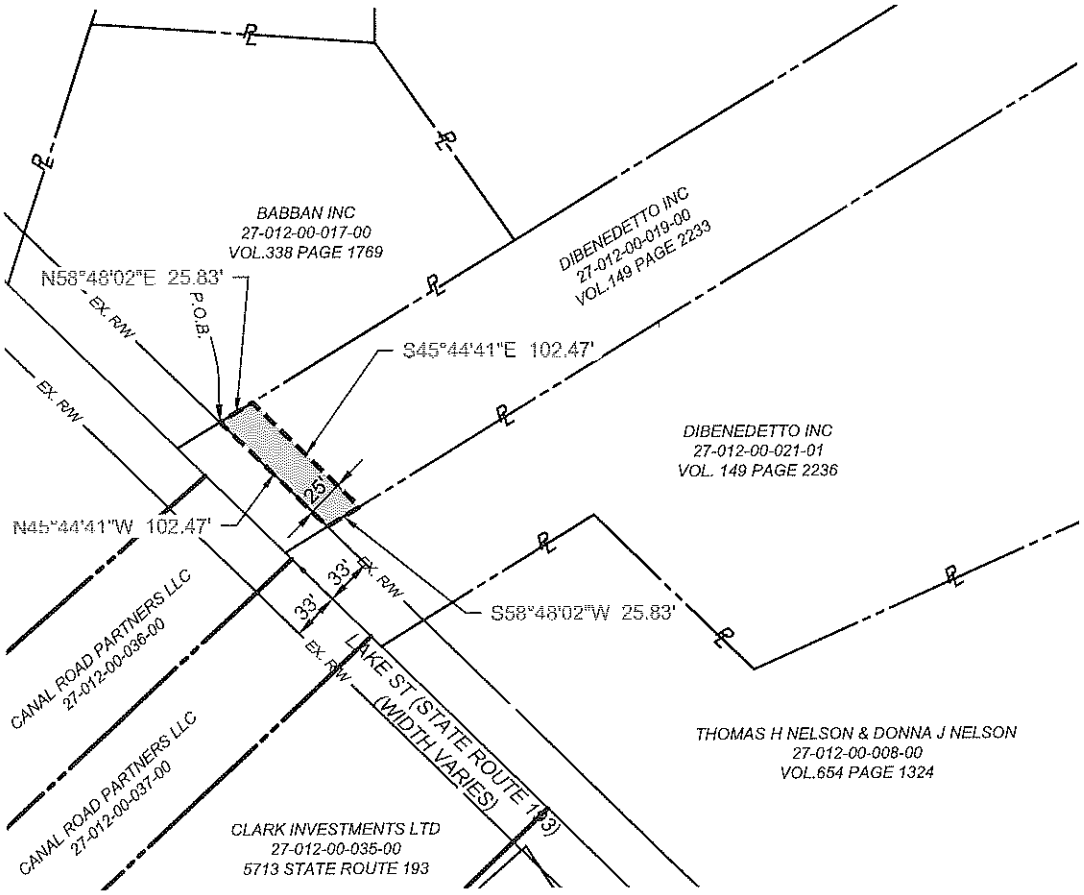
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-019-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

SAN EASEMENT
2562 SQUARE FEET
0.059 ACRES

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET
100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-019-00
0.059 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY	
JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Dibenedetto, Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-021-01

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 13th day of April, 2026.

GRANTOR:
Dibenedetto, Inc.

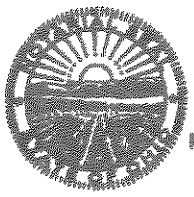
By: PAD

Print Name: Paul D. Benedetto

Title: President

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 13th day of April, 2026, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.053 ACRES
Land conveyed to Dibenedetto (Parcel 27-012-00-021-01)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning in the northeasterly line of State Route 193 (variable width), at the intersection of the southeasterly line of land conveyed to Dibenedetto Inc., who claims title by instrument recorded in Volume 149, Page 2233 of Ashtabula County

Thence N 58°48'02" E., along said southeasterly line of land conveyed to Dibenedetto Inc, a distance of 25.83 feet to a point;

Thence S 45°44'41" E, parallel to said northeasterly line of State Route 193 and distant 25 feet by normal therefrom, a distance of 91.79 feet to the northwesterly line of land conveyed to Thomas & Donna J. Nelson, who claims title by instrument recorded in volume 654 page 1324 of the Ashtabula County Records;

Thence S 58°44'16" W, along said northwesterly line of land conveyed to Thomas & Donna J. Nelson, a distance of 25.82 feet to said northeasterly line of State Route 193;

Thence N 45°44'41" W, along said northeasterly line of State Route 193, a distance of 91.82 feet to the Pont of Beginning, and containing about 2,295 Square Feet, 0.053 Acres of land as calculated and described in June 2025 by Verdantas;

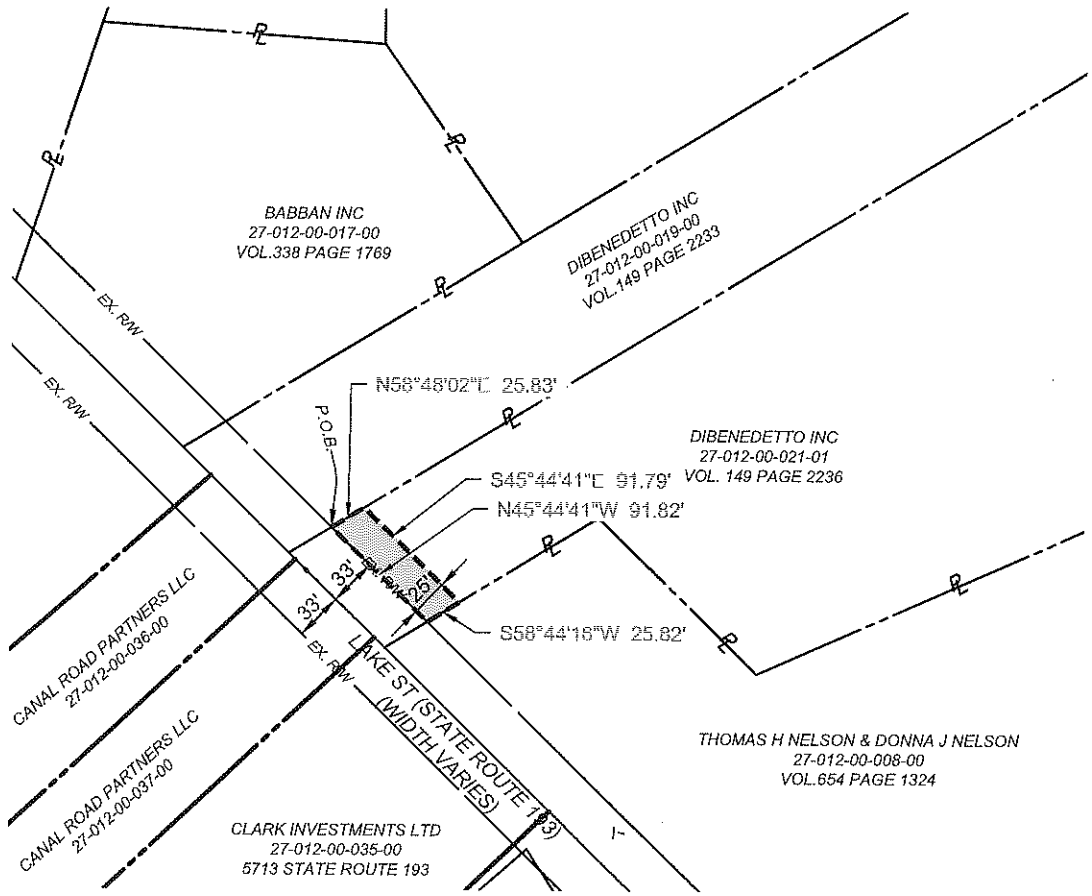
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-021-01.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

SAN EASEMENT
2295 SQUARE FEET
0.053 ACRES

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET
100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-021-01
0.053 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY	
JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Virgil Marcy ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-027-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this Dec 10th day of December, 2025.

GRANTOR:
Virgil Marcy

By: Virgil L Marcy

Print Name: VIRGIL L MARCY

Title: OWNER

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.081 ACRES
Land conveyed to Virgil Marcy (Parcel 27-012-00-027-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 80.07 feet to a point;

Thence N.88°31'27"E., perpendicular to said centerline of State Route 193, 81.02 feet to the easterly line of said State Route 193, said point also being the southerly line of State Route 84, and the principal point of beginning;

Thence N.74°52'24"E., along said southerly line of State Route 84, 23.96 feet to a point;

Thence S 0°53'21" W., a distance of 136.14 feet to the northerly line of land conveyed to Marcy Transportation Inc., by instrument recorded in volume 432 page 336 of the Ashtabula County Records;

Thence N 89°50'44" W, along said northerly line of land conveyed to Marcy Transportation Inc., a distance of 30.13 feet to said easterly line of State Route 193;

Thence N 4°00'57" E, along said easterly line of State Route 193, a distance of 130.11 feet to the Principal Point of Beginning, and containing 3,523 Square Feet, 0.081 Acres of land as calculated and described in June 2025 by Verdantas;

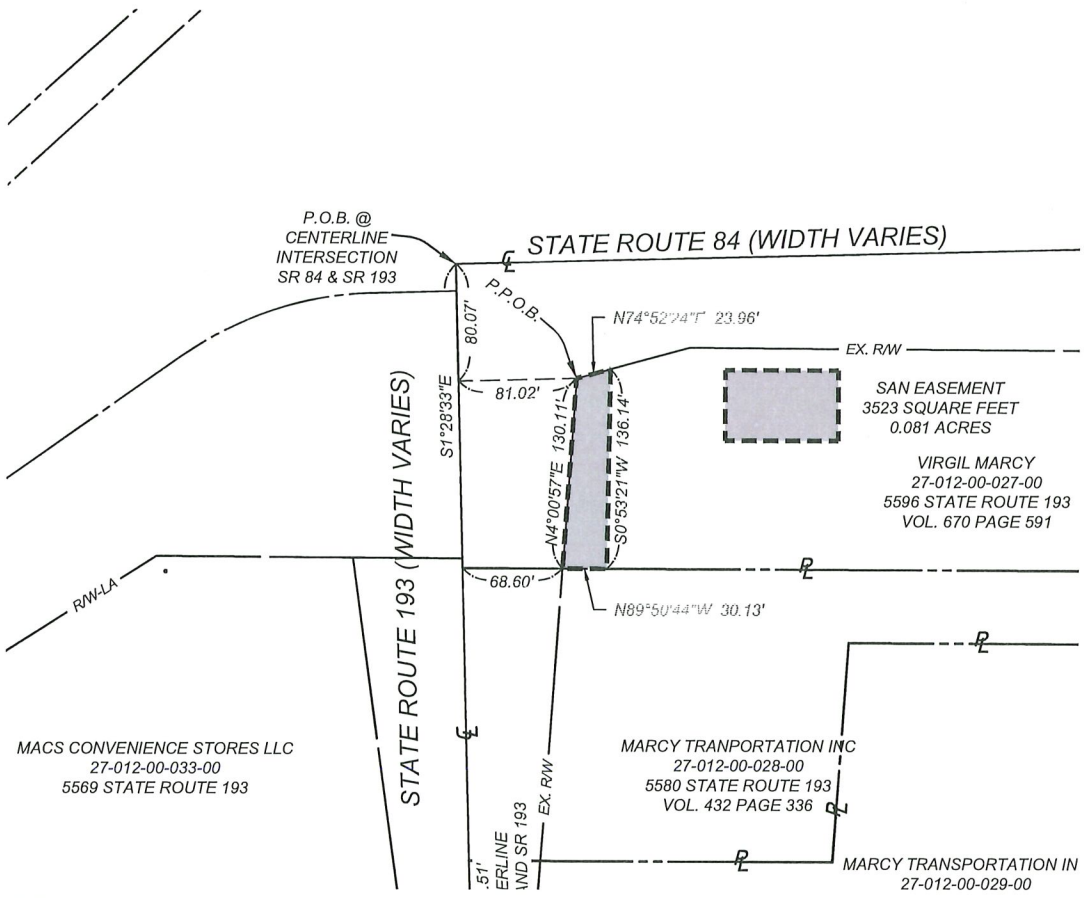
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-027-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-027-00
0.081 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Marcy Transportation Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-028-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 10 day of December, 2025.

GRANTOR:
Marcy Transportation Inc.

By: Elaine M Marcy

Print Name: Elaine M Marcy

Title: President

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.137 ACRES
Land conveyed to Marcy Transportation Inc. (Parcel 27-012-00-028-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 207.64 feet to the southwesterly corner of land conveyed to Virgil Marcy, who claims title by instrument recorded in volume 670 page 591 of the Ashtabula County Records;

Thence S.89°50'44"E., along the southerly line of said land conveyed to Virgil Marcy, 68.60 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence S.89°50'44"E., along said southerly line of land conveyed to Virgil Marcy, 30.13 feet to a point;

Thence S 0°53'21" W., a distance of 40.59 feet to a point;

Thence S 6°10'02" W., a distance of 159.77 feet to a northerly line of land conveyed to Marcy Transportation Inc., by instrument recorded in volume 432 page 327 of the Ashtabula County Records;

Thence N 89°53'13" W, along said northerly line of land conveyed to Marcy Transportation Inc., a distance of 26.78 feet to said easterly line of State Route 193;

Thence N 4°11'24" E, along said easterly line of State Route 193, a distance of 49.67 feet to a point;

Thence N 4°07'33" E, along said easterly line of State Route 193, a distance of 150.31 feet to the Principal Point of Beginning, and containing 5,969 Square Feet, 0.137 Acres of land as calculated and described in June 2025 by Verdantas;

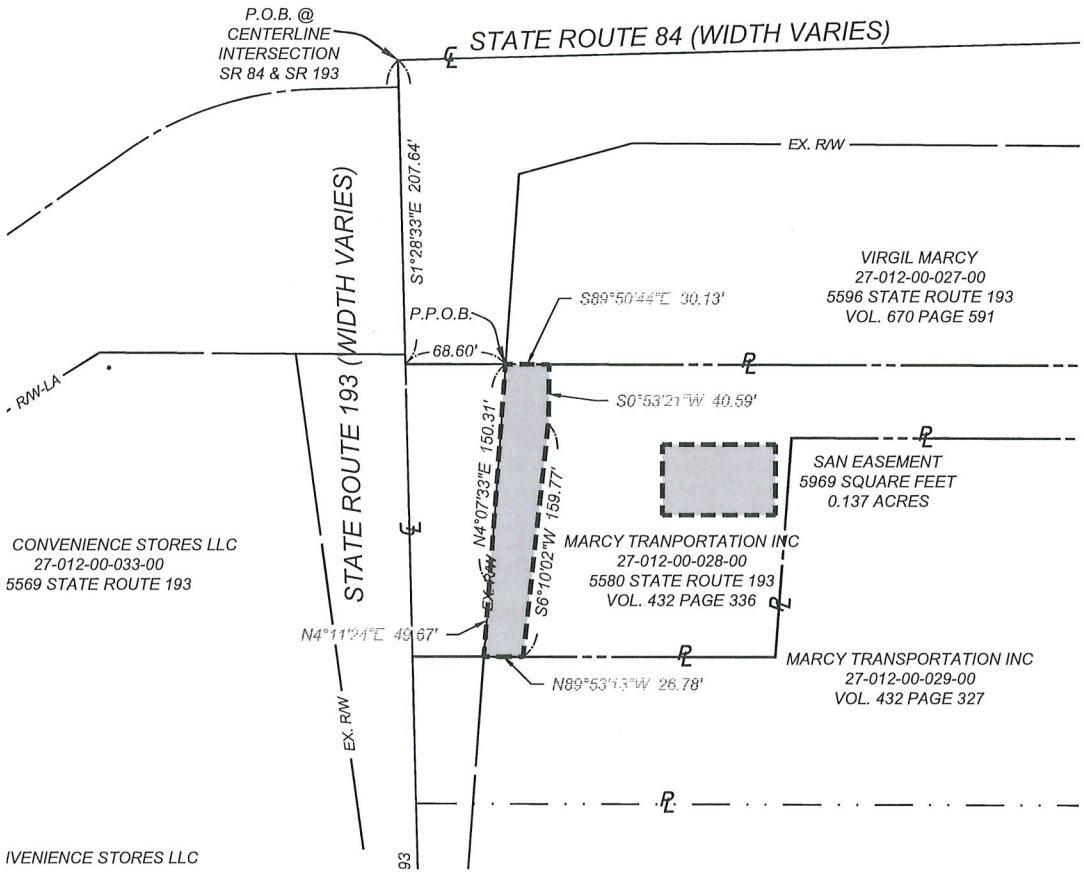
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-028-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

———	EXISTING CENTERLINE
——— EX. R/W ———	EXISTING RIGHT OF WAY
———	EXISTING PROPERTY LINE
▬▬▬▬▬▬	PROPOSED EASEMENT
——— R/W-LA ———	LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-028-00
0.137 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Marcy Transportation Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-029-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 10 day of December, 2025.

GRANTOR:
Marcy Transportation Inc.

By: Elaine M Marcy

Print Name: Elaine M Marcy

Title: president

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.063 ACRES
Land conveyed to Marcy Transportation Inc. (Parcel 27-012-00-029-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 407.25 feet to the southwesterly corner of land conveyed to Marcy Transportation Inc., who claims title by instrument recorded in volume 432 page 336 of the Ashtabula County Records;

Thence S.89°53'13"E., along the southerly line of said land conveyed to Marcy Transportation Inc., 49.02 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence S.89°53'13"E., along said southerly line of land conveyed to Marcy Transportation Inc., 26.78 feet to a point;

Thence S 6°10'02" W., a distance of 43.32 feet to a point;

Thence S 1°28'33" E., parallel to said centerline of State Route 193 and distant 70 feet by normal measure therefrom, a distance of 57.25 feet to a northerly line of land conveyed to Joel L. & Kimberly S. Thomas, who claims title by instrument recorded in volume 674 page 2645 of the Ashtabula County Records;

Thence N 89°48'58" W, along said northerly line of land conveyed to Joel L. & Kimberly S. Thomas, a distance of 30.94 feet to said easterly line of State Route 193;

Thence N 4°11'24" E, along said easterly line of State Route 193, a distance of 100.52 feet to the Principal Point of Beginning, and containing 2,729 Square Feet, 0.063 Acres of land as calculated and described in June 2025 by Verdantas;

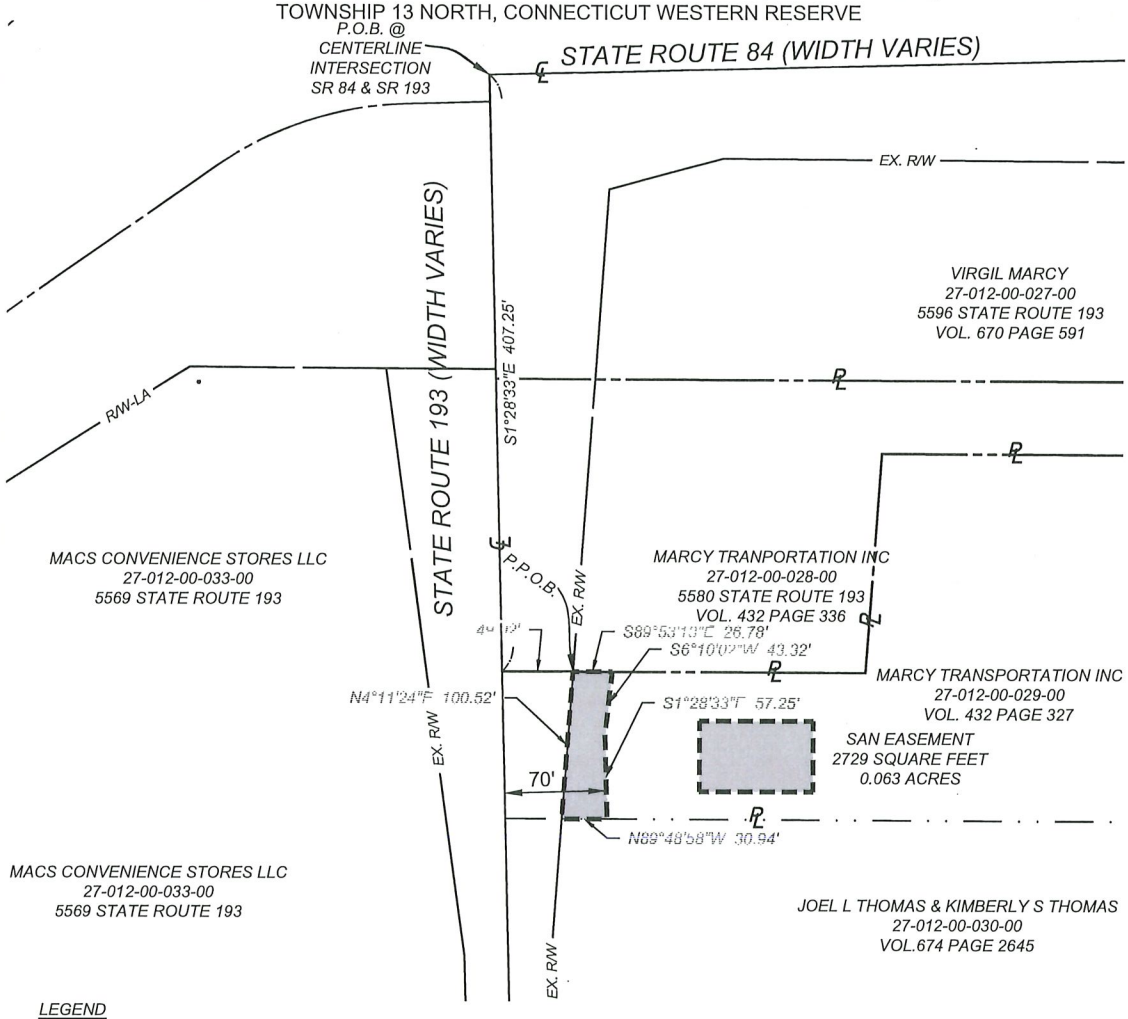
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-029-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-029-00
0.063 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Joel L. Thomas & Kimberly S. Thomas ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-012-00-030-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 10 day of December, 2025.

GRANTOR:
Joel L. Thomas & Kimberly S. Thomas

By: Joel L Thomas Kimberly S Thomas

Print Name: Joel L. Thomas / Kimberly S. Thomas

Title: Owners

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.128 ACRES
Land conveyed to Joel L. Thomas & Kimberly S. Thomas (Parcel 27-012-00-030-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 17, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 507.51 feet to the southwesterly corner of land conveyed to Marcy Transportation Inc., who claims title by instrument recorded in volume 432 page 327 of the Ashtabula County Records;

Thence S.89°48'58"E., along the southerly line of said land conveyed to Marcy Transportation Inc., 39.09 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence S.89°48'58"E., along said southerly line of land conveyed to Marcy Transportation Inc., 30.94 feet to a point;

Thence S 1°28'33" E., parallel with said centerline of State Route 193, and distant 70 feet by normal there from, a distance of 150.00 feet to a northerly line of land conveyed to Dibenedetto Inc., who claims title by instrument recorded in volume 149 page 2231 of the Ashtabula County Records, which is coincident with the east-west line between the original Lot 17 and Lot 18;

Thence N 89°48'58" W, along said northerly line of land conveyed to Dibenedetto Inc., a distance of 40.02 feet to said easterly line of State Route 193;

Thence N 1°28'33" W, along said easterly line of State Route 193, a distance of 58.30 feet to an angle therein;

Thence N 4°11'24" E, along said easterly line of State Route 193, a distance of 91.89 feet to the Principal Point of Beginning, and containing 5,584 Square Feet, 0.128 Acres of land as calculated and described in June 2025 by Verdantas;

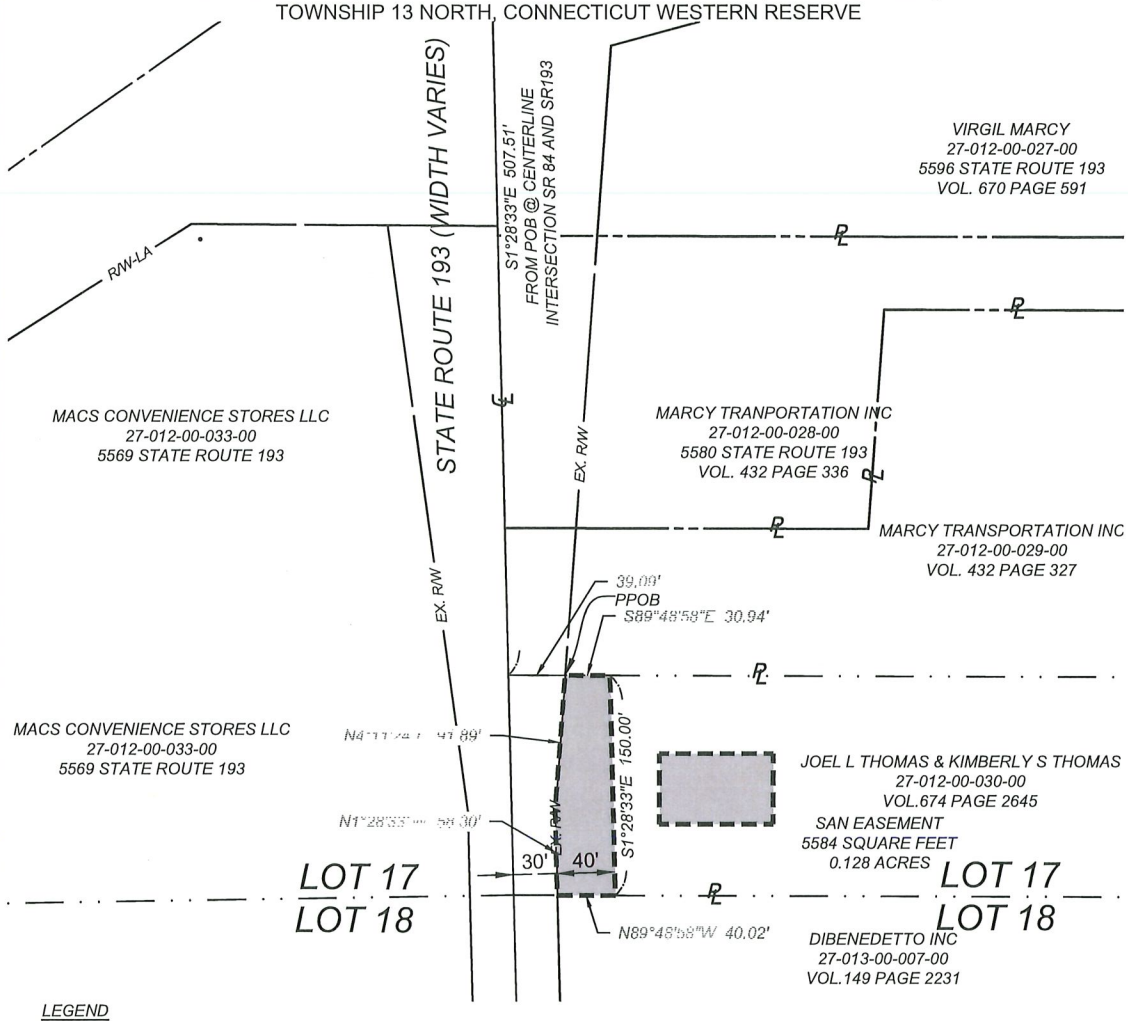
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-012-00-030-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 17, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET
100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-012-00-030-00
0.128 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Dibenedetto, Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-013-00-007-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 13th day of April, 2026.

GRANTOR:
Dibenedetto, Inc.

By: _____

Print Name: Paul D. Benedetto

Title: President

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 13th day of April, 2026, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.145 ACRES
Land conveyed to Dibenedetto Inc. (Parcel 27-013-00-007-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 18, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 657.51 feet to the southwesterly corner of land conveyed to Joel L. & Kimberly S. Thomas, who claims title by instrument recorded in volume 674 page 2645 of the Ashtabula County Records;

Thence S.89°48'58"E., along the southerly line of said land conveyed to Joel L. & Kimberly S. Thomas, which is coincident with the east-west line between the original Lot 17 and Lot 18, a distance of 30.01 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence S.89°48'58"E., along said southerly line of land conveyed to Joel L. & Kimberly S. Thomas, 40.02 feet to a point;

Thence S 1°28'33" E., parallel with said centerline of State Route 193, and distant 70 feet by normal therefrom, a distance of 66.82 feet;

Thence S 4°24'32" E., a distance of 97.10 feet to a northerly line of land conveyed to Kingsville Towing and Repair Inc., who claims title by instrument recorded in volume 629 page 944 of the Ashtabula County Records;

Thence N 89°49'03" W, along said northerly line of land conveyed to Kingsville Towing and Repair Inc., a distance of 24.98 feet to said easterly line of State Route 193;

Thence N 89°49'03" W, along said easterly line of land conveyed to of State Route 193, a distance of 10.00 feet to an angle therein;

Thence N 7°36'22" W, along said easterly line of State Route 193, a distance of 93.64 feet to an angle therein;

Thence N 1°28'33" W, along said easterly line of State Route 193, a distance of 70.83 feet to the Principal Point of Beginning, and containing 6,322 Square Feet, 0.145 Acres of land as calculated and described in June 2025 by Verdantas;

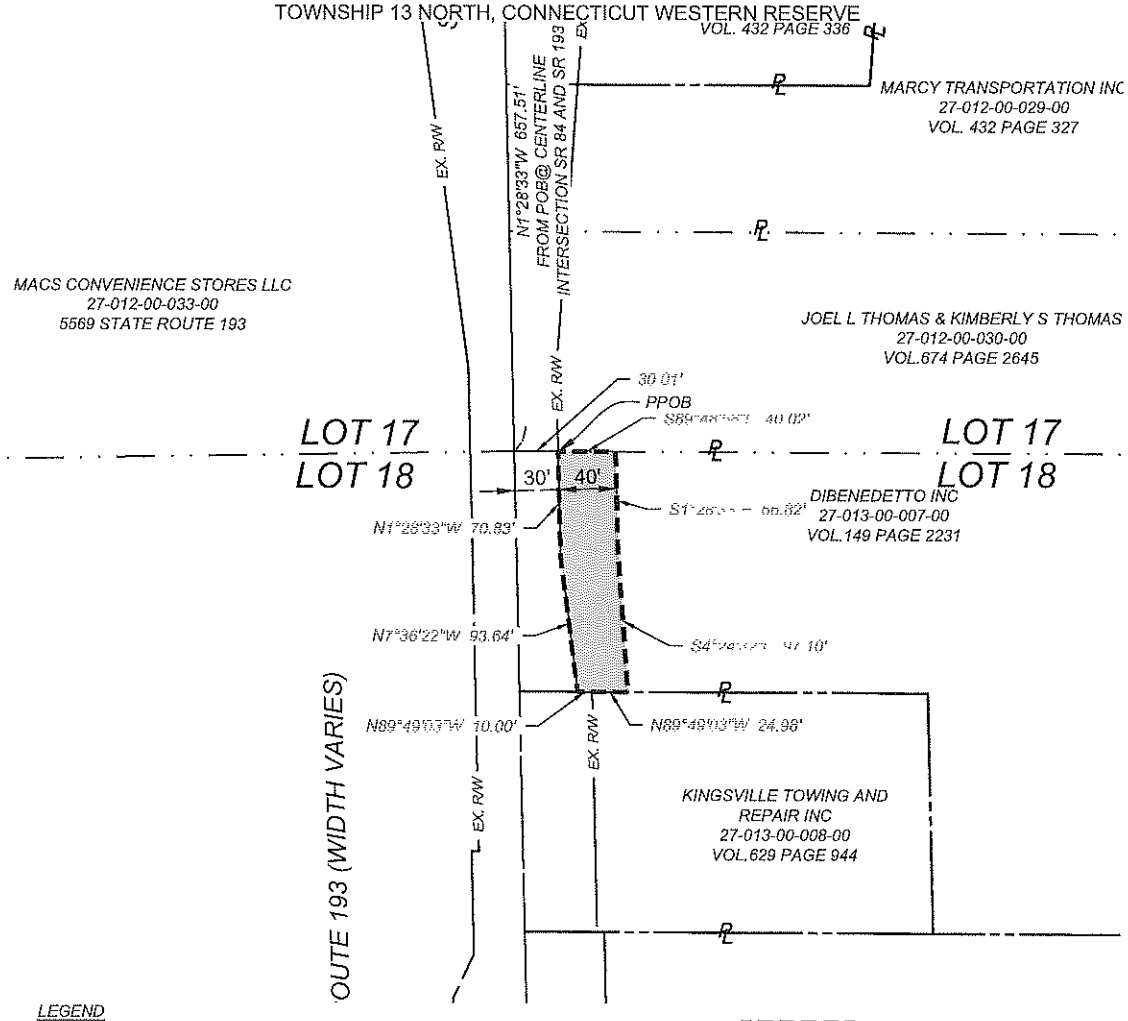
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-013-00-007-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 18, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

SAN EASEMENT
6322 SQUARE FEET
0.145 ACRES

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST) FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE) HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-013-00-007-00
0.145 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY	
JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Kingsville Towing and Repair Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-013-00-008-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 10th day of December, 2025.

GRANTOR:
Kingsville Towing and Repair Inc.

By: _____ pres

Print Name: Donald W Horton

Title: pres

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.



Christina Partridge
Notary Public, State of Ohio
Commission #: 2024-RE-872212
My Commission Expires 01-07-2029

Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029

verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.103 ACRES
Land conveyed to Kingsville Towing and Repair Inc. (Parcel 27-013-00-008-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 18, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 821.16 feet to the southwesterly corner of land conveyed to Dibenedetto Inc., who claims title by instrument recorded in volume 149 page 2231 of the Ashtabula County Records;

Thence S.89°49'03"E., along the southerly line of said land conveyed to Dibenedetto Inc., a distance of 50.02 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence S.89°49'03"E., along said southerly line of land conveyed to Dibenedetto Inc., 24.98 feet to a point;

Thence S 3°13'24" E., a distance of 163.90 feet to a northerly line of land conveyed to Rudy Pryately Jr., who claims title by instrument recorded in volume 102 page 2474 of the Ashtabula County Records;

Thence N 89°49'03" W, along said northerly line of land conveyed to Rudy Pryately Jr., a distance of 24.98 feet to said easterly line of State Route 193;

Thence N 89°49'03" W, along said easterly line of land conveyed to of State Route 193, a distance of 5.00 feet to an angle therein;

Thence N 1°28'33" W, along said easterly line of State Route 193, a distance of 163.68 feet to the Principal Point of Beginning, and containing 4,496 Square Feet, 0.103 Acres of land as calculated and described in June 2025 by Verdantas;

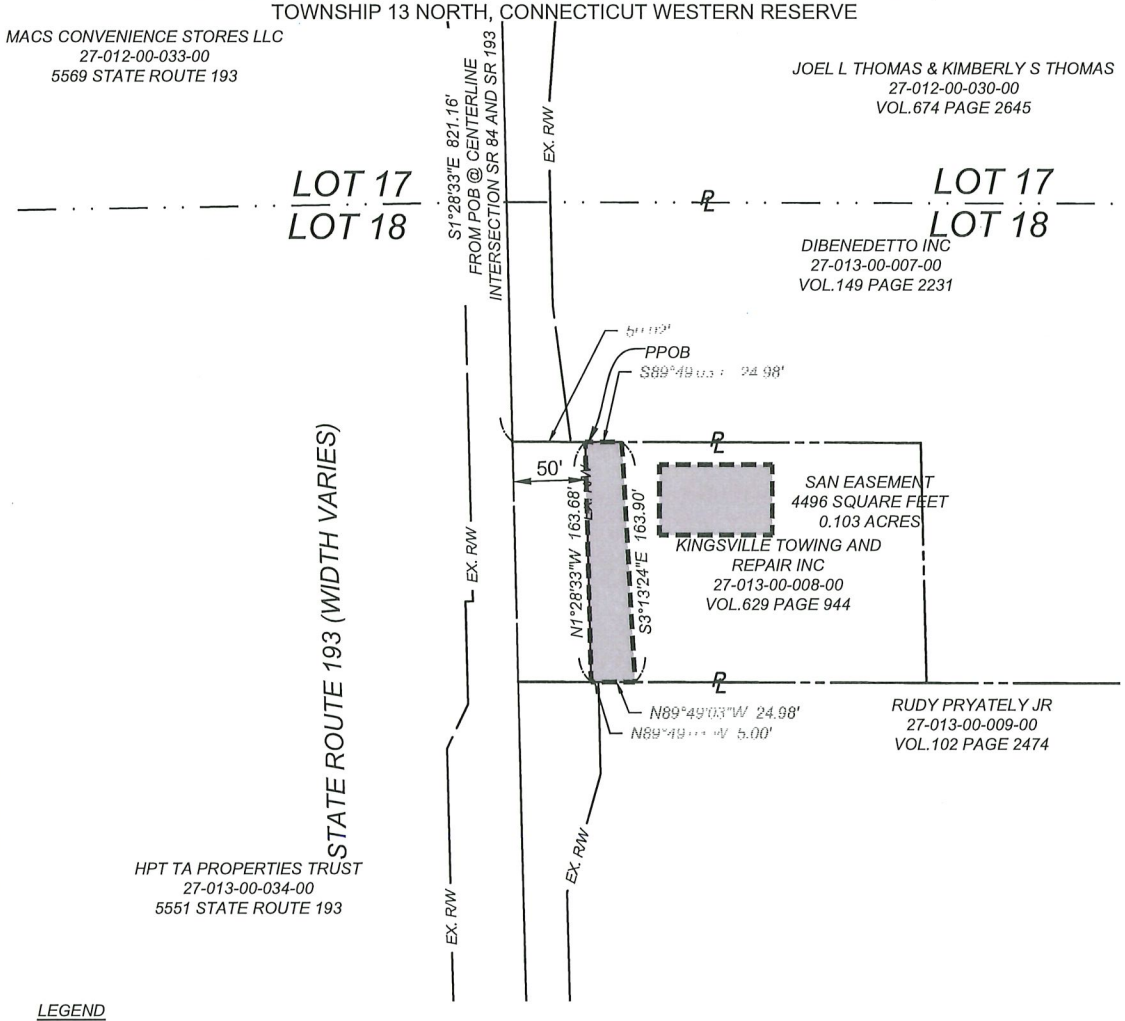
The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-013-00-008-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 18, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



LEGEND

- EXISTING CENTERLINE
- EX. R/W — EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED EASEMENT
- R/W-LA — LIMITED ACCESS RIGHT OF WAY

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)

N

SCALE IN FEET

100 0 100

verdantas

SANITARY SEWER EASEMENT
PARCEL 27-013-00-008-00
0.103 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	1

PERMANENT GRANT OF EASEMENT FOR CONSTRUCTING, MAINTAINING, OPERATING AND REPAIRING SANITARY SEWERS IN THE COUNTY OF ASHTABULA, OHIO

KNOW ALL MEN BY THESE PRESENTS, Kingsville Towing and Repair Inc. ("Grantor"), in return for sufficient consideration, does hereby give, grant and convey unto the Board of Commissioners of Ashtabula County, Ohio, and to their officers, agents, employees, successors and assigns, including but not limited to the Ashtabula County Department of Environmental Services ("Grantee"), a non-exclusive, perpetual right-of-way and Easement for the right to construct, install, repair, replace, relay, maintain, operate and inspect an underground sanitary sewage system and necessary appurtenances thereto, and forever to have and to hold such right for the purpose and conditions herein set forth (the "Easement") over and through the real estate described in EASEMENT EXHIBIT.

The easement area is shown as the shaded area on the map attached hereto as part of EASEMENT EXHIBIT for illustrative purposes.

Affecting Permanent Parcel No. PP#27-013-00-011-00

Grantor may fully use and enjoy the said premises, except for the purposes granted to Grantee and provided that the Grantor shall not construct nor permit to be constructed any house, structures or obstructions on or over the property described in this Easement, or that will interfere with the construction, maintenance or operation of the sanitary sewer system or appurtenances constructed hereunder, and will not change the grade over such sanitary sewer system.

This Easement is granted on the express condition that Grantee shall, after the construction of said sanitary sewer system and all subsequent alterations or repairs thereunto, restore all property belonging to the Grantor, except buildings or other structures (excluding fences and landscaping) in the permanent Easement to its original condition. Grantee shall promptly compensate Grantor for any property damaged or destroyed by Grantee, except buildings or other structures (excluding fences and landscaping) located in this Easement which cannot be restored to their original condition as a result of said construction, maintenance, repair, or removal of said sanitary sewer system.

IN WITNESS WHEREOF, the Grantor does hereby set its hand this 10th day of December, 2025.

GRANTOR:
Kingsville Towing and Repair Inc.

By: _____ Pres

Print Name: David W. Horn

Title: Pres

State of Ohio)
) SS
County of Ashtabula)

BE IT REMEMBERED, that on the 10th day of December, 2025, the foregoing Grantor(s), who are known to me or who were identified by satisfactory evidence, executed and acknowledged the foregoing instrument before me, a notary public.

Notary Public Christina Partridge

Print Name Christina Partridge

Commission Expires 01-07-2029



verdantas

SANITARY SEWER EASEMENT DESCRIPTION OF 0.370 ACRES
Land conveyed to Kingsville Towing and Repair Inc. (Parcel 27-013-00-011-00)

Situated in the Township of Kingsville, County of Ashtabula, and State of Ohio, and known as being part of Lot 18, Range 2 West, Township 13 North, Connecticut Western Reserve, and further being bounded and described as follows:

Beginning at the intersection of the centerline of State Route 193, variable width, with the centerline of State Route 84, variable width;

Thence S.1°28'33"E., along said centerline of State Route 193, 2112.56 feet to an angle point therein;

Thence S.1°55'46"E., continuing along said centerline of State Route 193, 136.42 feet to a point;

Thence N.88°04'14"E., perpendicular to said centerline of State Route 193, a distance of 40.00 feet to the easterly line of said State Route 193, and the principal point of beginning;

Thence N 1°55'46" W, along said easterly line of State Route 193, a distance of 136.26 feet to an angle therein;

Thence N 1°28'33" W, along said easterly line of State Route 193, 183.19 feet to an angle therein;

Thence N 2°06'02" E, along said easterly line of State Route 193, 400.78 feet to an angle therein;

Thence N 1°28'33" W, along said easterly line of State Route 193, a distance of 83.53 feet to the southerly line of land conveyed to Rudy Pryately Jr., who claims title by instrument recorded in volume 102 page 2474 of the Ashtabula County Records;

Thence N.74°22'10"E, along said southerly line of land conveyed to Rudy Pryately Jr., 20.63 feet to a point;

Thence S 1°28'33" E., parallel with said centerline of State Route 193 and distant 85 feet by normal measure therefrom, a distance of 89.20 feet to a point;

Thence S 2°06'02" W, parallel with said easterly line of State Route 193 and distant 20 feet by normal measure therefrom, 400.78 feet to a point;

Thence S 1°28'33" E., parallel with said centerline of State Route 193 and distant 60 feet by normal measure therefrom, a distance of 182.49 feet to a point;

Thence S 1°55'46" E., parallel with said centerline of State Route 193 and distant 60 feet by normal measure therefrom, a distance of 136.18 feet to a point;

Thence S 88°04'14" W, perpendicular to said centerline of State Route 193, a distance of 20.00 feet to the Principal Point of Beginning, and containing 16,124 Square Feet, 0.370 Acres of land as calculated and described in June 2025 by Verdantas;

The above-described easement area burdens a part of Ashtabula County Auditor's Parcel No. 27-013-00-011-00.

The bearings described herein are based on Grid North (North 00°00'00" East) from GPS observations utilizing the Ohio State Plane North American Datum 1983 (2011 adj, North Zone) coordinate system. All distances expressed herein are in US Survey Feet.

This description is based on existing records and minimal field survey work performed during the month of May 2024, by or under the direct supervision of Thomas Meeks, PS Registered Professional Surveyor #8674.

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 18, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE

LEGEND

EXISTING CENTERLINE

EX. R/W *EXISTING RIGHT OF WAY*

EXISTING PROPERTY LINE

PROPOSED EASEMENT

R/W-LA *LIMITED ACCESS RIGHT OF WAY*

NOTES:

1. RECORDS SHOWN HEREON ARE FROM THE ASHTABULA COUNTY RECORDER'S OFFICE.
2. EASEMENTS AND/OR RIGHT-OF-WAYS WERE NOT ADDRESSED DURING THIS SURVEY OTHER THAN SHOWN HEREON.
3. THIS IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

CERTIFICATION:

I HEREBY CERTIFY THAT THIS EXHIBIT DEPICTS THE CORRECT REPRESENTATION OF THE LAND AS DETERMINED FROM EXISTING RECORDS & MINIMAL FIELD SURVEY WORK. THIS EXHIBIT IS NOT INTENDED TO BE A BOUNDARY SURVEY AND DOES NOT MEET THE STANDARDS OUTLINED AND DEFINED BY CHAPTER 4733-37 OF THE OHIO ADMINISTRATIVE CODE.

DATE

THOMAS M. MEEKS
OHIO REGISTRATION/LICENSE NO. 8674

BASIS OF BEARINGS

THE BEARINGS SHOWN HEREON ARE BASED ON GRID NORTH (NORTH 0°00'00" EAST)
FROM GPS OBSERVATIONS UTILIZING THE OHIO STATE PLANE COORDINATE SYSTEM (NORTH ZONE)
HORIZONTAL DATUM NAD83 (2011 ADJ.)



SCALE IN FEET

100 0 100

verdantas

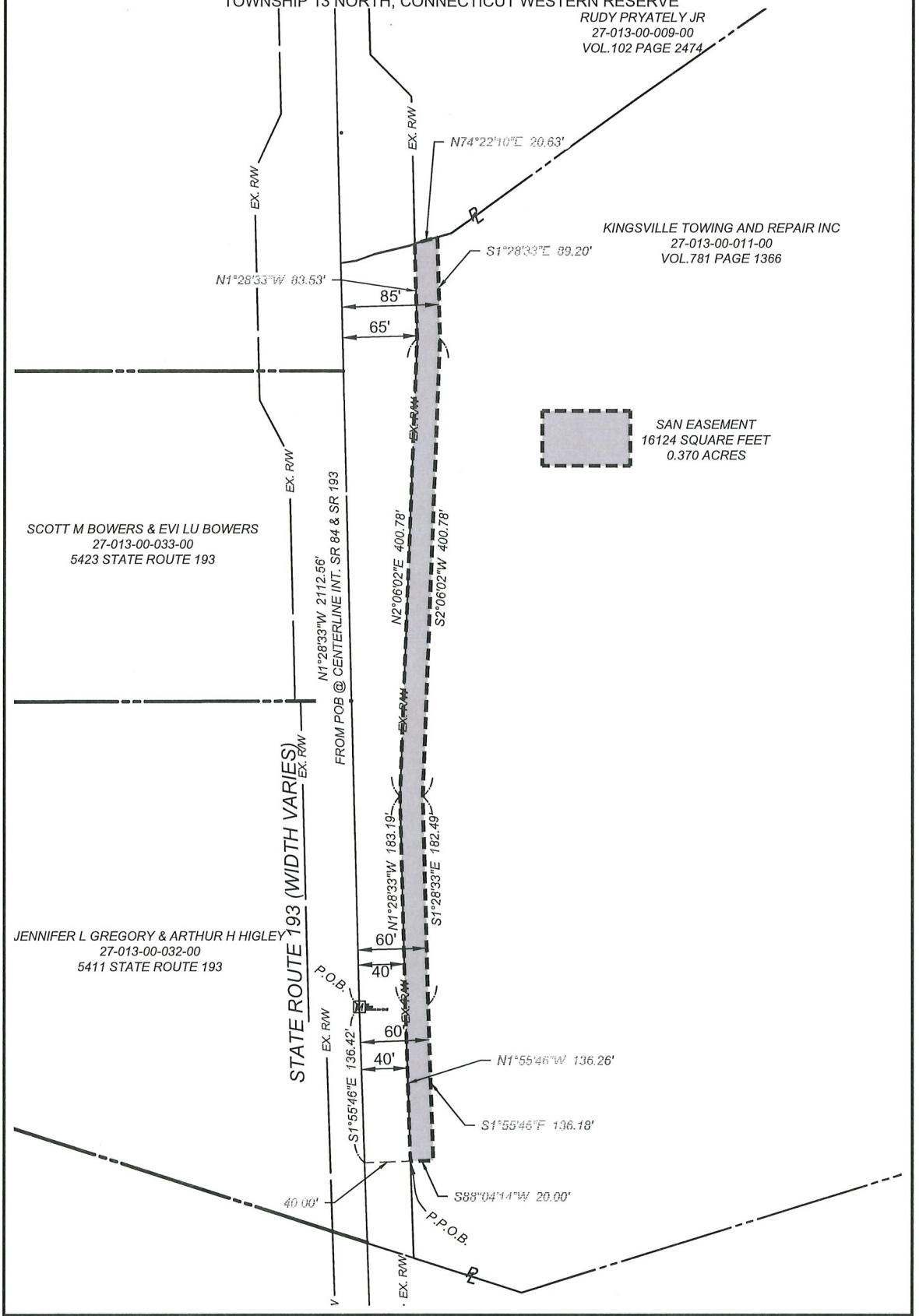
SANITARY SEWER EASEMENT
PARCEL 27-013-00-011-00
0.370 AC.

EASEMENT EXHIBIT

PROJECT NO.	
232478	
DISCIPLINE	
SURVEY JSD	
SHEET	OF
1	2

SANITARY SEWER EASEMENT

BEING A PART THE TOWNSHIP OF KINGSVILLE, COUNTY OF ASHTABULA,
STATE OF OHIO, AND KNOWN AS BEING PART OF LOT 18, RANGE 2 WEST,
TOWNSHIP 13 NORTH, CONNECTICUT WESTERN RESERVE



verdantas

SANITARY SEWER EASEMENT **PARCEL 27-013-00-011-00** **0.370 AC.**	PROJECT NO. **232478**
	DISCIPLINE **SURVEY** JSD
EASEMENT EXHIBIT	SHEET **2** OF **2**