

JR Smith Park Improvements
City of Sunbury
Land & Water Conservation Fund
November 2025

0000041545



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

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ADVERTISEMENT FOR BIDS/PUBLIC NOTICE TO BIDDERS

Sealed bids will be received at the Sunbury Municipal Building, 9 E. Granville Street, Sunbury, Ohio 43074 until 10:00 a.m. on December 12, 2025, and will be opened and read immediately thereafter for the

JR SMITH PARK IMPROVEMENTS

ODNR LAND & WATER CONSERVATION FUND

COMPLETION DATE: JULY 17, 2026

Bids mailed or otherwise submitted via the United States Postal Service (USPS) shall use the Sunbury mailing address: P.O. Box 508, 9 E. Granville Street, Sunbury, Ohio 43074. The USPS does not deliver to the building, only to the post office box.

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.

THIS PROJECT IS FEDERALLY ASSISTED. CONTRACTS TO BE AWARDED UNDER THIS INVITATION FOR BIDS WILL BE SUBJECT TO FEDERAL LAWS AND RELATED ACTS THAT ARE REFERENCED IN THIS BID PACKAGE.

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06/25

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 his bid for a period of 90 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 90 days after the day of the bid opening. When necessary and by mutual consent between the Owner and the Successful Bidder, this 90-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 the 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 Project coordination and scheduling.
- 1.4 Detailed breakdown of lump sum bid items as requested by the Engineer.
- 1.5 All provisions necessary to protect workers, the general public, and property along the work in accordance with the Contract Documents.
- 1.6 Protection and/or replacement of existing property corner monuments.
- 1.7 Record drawings of the installed location of all underground electrical conduit, sewers, tees, wyes, laterals, etc.
- 1.8 Materials testing.
- 1.9 Reimbursement to Owner for costs of re-inspection or re-testing of any work not installed in compliance with the Contract Documents.

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. ODOT 104.02 D., 611.04, 611.12, and 611.13 shall not apply to this project.

2.1 (SPC) PRECONSTRUCTION VIDEO DOCUMENTATION

Basis of Payment

The lump sum price shall include all costs associated with hiring a professional videotaping firm to document in detail the existing conditions of the entire work area and potential disturbed areas and submitting a high-quality USB flash drive with audio commentary and video log.

2.2 (SPC) BONDS AND INSURANCES

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 (202) DRIVE APRON REMOVED, AS PER PLAN
(202) WALK REMOVED, AS PER PLAN
(202) CURB REMOVED, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of square feet of removed drive apron and walk and the number of linear feet of removed curb.

Basis of Payment

The unit price shall include removal and disposal of all drive aprons, walk and curbs including but not limited to sawcutting of existing rigid and/or flexible pavement to clean and neat edge for removal extents, removal and disposal of all base materials, and installation and disposal of temporary facilities and the furnishing of all labor, materials, tools and appurtenances necessary to complete the work per the plans and specifications

- 2.4 (202) EXCAVATION AND REMOVAL OF EXISTING PAVEMENT & BASE, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of square yards of removed pavement and base.

Basis of Payment

The unit price shall include removal and disposal of all pavement and base materials, and the furnishing of all labor, materials, tools and appurtenances necessary to complete the work per the plans and specifications

- 2.5 (202) STRUCTURE REMOVED, AS PER PLAN

Basis of Payment

The lump sum price includes removing and disposing of all structures and items within the work limits, including but not limited to the concrete block bleachers, wall and basketball courts. This includes but is not limited to removal of all pavements, walls, curbs, base material, , and miscellaneous structures and the furnishing of all labor, materials, tools, and appurtenances necessary to complete the work as specified or as shown per the plans and specifications.

2.6 (202) REMOVAL MISC.: MISC. SITE ITEMS

Basis of Payment

The lump sum price includes removing and disposing of all structures and items within the work limits not covered by other items, including footers, scoreboard, posts, parking blocks, walks, pavements, fence, equipment, basketball hoops, furnishings, lighting, controls, poles and wiring back to source, irrigation boxes, pipes and drains. This includes but is not limited to removal of all walls, curbs, base material, footers, foundations, pipes, drains, and miscellaneous structures and the furnishing of all labor, materials, tools, and appurtenances necessary to complete the work as specified or as shown per the plans and specifications.

2.7 (203) SPECIAL - BIORETENTION CELL, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of stormwater ponds installed, as indicated in the plans.

Basis of Payment

The price shall include all costs for labor, materials, tools, and appurtenances necessary to complete the work as specified and in accordance with the details in the contract documents. The contractor shall furnish and install biosoils using amended stockpiled topsoil, pea gravel and sand base layers as part of stormwater pond bottom profile construction. Payment shall be made upon completion of installation.

2.8 (251) PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of cubic yards of partial depth pavement repair.

Basis of Payment

The unit price shall include partial depth removal of existing pavement in areas exhibiting deterioration at the surface as directed by the engineer, applying tack coat and placing and compacting, asphalt pavement as well as furnishing of all labor, materials, tools and appurtenances necessary to complete the work per the plans and specifications

2.9 (254) PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of square yards of pavement planning regardless of the depth of planning.

Basis of Payment

All grindings shall become property of the Owner and shall be delivered and stockpiled in a location designated by the Owner within the Owner's municipal.

The unit price shall include milling miscellaneous asphalt pavement sections whether at the surface or within the planing depth. The unit price will also include the installation of a temporary apron wedge (ramp) as directed out of asphalt or asphalt millings for any pavement or apron lip more than 3" height after planing and must be maintained throughout the project to the satisfaction of the Engineer and Owner. All temporary wedges shall be removed prior to paving any course and reinstalled as needed

2.10 (255) FULL DEPTH PAVEMENT SAWING, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of linear feet of full depth pavement sawing.

Basis of Payment

The unit price shall include full depth sawcutting of the existing pavement and furnishing of all labor, materials, tools and appurtenances necessary to complete the work per the plans and specifications

2.11 (441) ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22, (448), AS PER PLAN

The work, method of construction and materials for asphalt concrete surface course shall be in accordance with ODOT Item 441 with the following modifications:

- A. Surface compacted thickness of as per plan.
- B. All gutters and joints shall be sealed with an approved liquid bituminous material 4 inches in width and the cost is to be included with the bid item.
- C. Necessary butt or tapered edge joints and pavement saw cuts shall be considered incidental costs to be included in this bid item.
- D. Installation of asphalt transitions at existing drive aprons shall be considered an incidental cost to be included in this item.
- E. **Reclaimed or recycled material shall not be used. Only new materials shall be used.**

Method of Measurement

The measurement of asphalt concrete surface course of the thickness specified shall be the number of cubic yards of asphalt concrete surface course completed and accepted in place. The area for

measurements will be as shown on the plans, or as otherwise directed in writing by the Engineer. The plan quantities as adjusted for changes, errors and deviation in excess of allowable tolerances will be the method of measurement.

Basis of Payment

The accepted quantities of asphalt concrete surface course of the thickness specified shall be full compensation for furnishing and placing all materials, including sealing materials and furnishing all labor, tools, appliances, equipment and all other appurtenances necessary to complete the work as specified or as shown.

- 2.12 (452) 8 INCH NON-REINFORCED CONCRETE DRIVES AND APRONS, CLASS QC MS, AS PER PLAN
- (452) 8 INCH NON-REINFORCED CONCRETE DRIVES AND APRONS, CLASS QC MS, INCLUDING INTEGRAL COLOR, AS PER PLAN

Method of Measurement

The method of measurement shall be the number of square yards of drive or apron installed.

Basis of Payment

The basis of payment shall be as per ODOT 452 as applicable with the following additions: furnishing and placing of all materials, curb replacement, base material, subgrade preparation, integral color, 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; furnishing all labor, tools, appliances, equipment and all other appurtenances necessary to complete the work as specified or as shown

- 2.13 (608) 4 INCH CONCRETE WALK, AS PER PLAN
- (608) 4 INCH CONCRETE WALK, DECORATIVE SURFACE, AS PER PLAN
- (608) 6 INCH CONCRETE APRON
- (608) 6 INCH CONCRETE CURB RAMP, AS PER PLAN
- (609) CURB, TYPE 6, AS PER PLAN
- (609) INTEGRAL CURB, AS PER PLAN
- (SPC) CURB, MISC., FLUSH CURB, AS PER PLAN

The work, method of construction and materials for concrete walk, curbs and concrete curb ramps shall conform to ODOT Items 609, 608, 452, 304, 203 and 202, except as modified herein or as shown on the contract drawings.

- A. ODOT Item 499 Concrete, QC 1 shall be used for walks, curb ramps and curbs.
- B. Each and every sidewalk and joint shall be edge tooled after texturing surface.
- C. ODOT 304 Aggregate Base, utilizing crushed limestone, shall be provided with these items.

- D. Decorative surface items include integral color per the plans and specifications.
- E. Curb ramp includes detectable warning plates.

Method of Measurement

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

Basis of Payment

The unit price stipulated per linear foot, square foot or square yards (as indicated in the Proposal) for concrete walk, concrete curb ramps and curbs to the thickness, height and class of concrete specified shall be full compensation for furnishing all materials, grading, forming, finishing of the walk, curb ramp, truncated domes 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, 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.

Work also includes production of a five foot by five-foot sample panel(s) at a site indicated by the City, integral color, special finish, tooling of a border separation joint, saw cut contraction joints, stamping, and application of a special saline sealing compound, and gutter/joint seal for the joint at the road pavement and the curb; and the furnishing of all labor, materials, tools and appurtenances necessary to complete the work per the plans and specifications

2.14 (605) 4 INCH SHALLOW PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, AS PER PLAN

Method of Measurement

The method of measurement shall be the linear feet of underdrain installed.

Basis of Payment

The unit price shall include excavating, installing, backfilling, backfill material, underdrain pipe, geotextile fabric, and furnishing all labor and all other materials necessary for the installation per the plans and specifications.

2.15 (611) CONDUIT TYPE B, AS PER PLAN, ALL SIZES
(611) 6" CONDUIT TYPE B, PERFORATED, 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 between centerlines of as-built manholes and/or inlets, 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 installation of the pipe; earth and/or rock excavation for the pipe trench, including clearing and grubbing; removal of all materials necessary for placing the pipe, furnishing and placing granular or concrete bedding and special backfill as required, testing of compaction, 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, 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, sanitary sewers, sanitary connections, storm sewers, storm connections, curb drains, catch basins, culverts, signal poles; traffic signal pull boxes; traffic signal controllers; pedestrian signal poles; all underground traffic conduits; 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; 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.

- 2.16 (611) CATCH BASIN (ALL SIZES AND TYPES)
(611) STORM SEWER CLEAN OUT, AS PER PLAN

Method of Measurement

The quantity of each catch basin 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 catch basins shall include the furnishing and construction in place of the catch basins complete with excavation; backfill; frame and cover; steps; concrete; steel reinforcement; bricks; mortar; plastering; precast manhole sections; granular backfill under proposed or existing pavements, walks, drives, existing drainage structures, and disposal of all undesirable material; 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, 2' sumps and plugs or connection of existing sewers to the drainage 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 unit price.

2.17 INLET, YARD DRAIN, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of inlet yard drains, castings, and grates, installed per the plans and specifications.

Basis of Payment

The unit price shall include setting structures to proposed grades shown in plans, and the furnishing of all labor, materials, tools and appurtenances necessary to complete the work as specified or as shown.

2.18 (614) MAINTAINING TRAFFIC

The lump sum price shall include maintaining and protecting vehicular and pedestrian traffic according to the requirements of ODOT Item 614 and the Ohio Manual of Uniform Traffic Control Devices including, but not limited to, the following: detour notifications; lane transitions, temporary pavement markings, barrels, modification of existing traffic signals including: phasing, timing and covering of signal heads; installation of temporary signal and detection; and temporary strain poles and hardware. Contractor shall submit a maintenance of traffic plan for review and approval by the engineer that is coordinated with the means and methods expected to be utilized for the construction of the water main, cutting & capping and water service installations.

Payment shall be made progressively throughout the contract period in proportion to the percentage of work completed or otherwise approved by the Engineer.

2.19 (623) CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN

Basis of Payment

The lump sum (LS) price shall include all labor to provide construction layout staking, property pin monument documentation, as-build information and resetting disturbed property pins.

2.20 (624) MOBILIZATION

Basis of Payment

The basis of payment shall be as per ODOT 624. The lump sum price shall include all labor to transfer all equipment, materials, personnel, field offices, storage area, sanitary facilities, and

incidentals to the project site as required to complete the project per plans and specifications and for mobilization and demobilization.

2.21 (625) LIGHTING, MISC, AS PER PLAN

Method of Measurement

The lump sum price shall include all lighting related items as indicated to be installed per the plans and specifications.

Basis of Payment

The lump sum price shall include the furnishing of all labor, tools and appurtenances necessary to complete the work as specified or as shown. The contractor shall install light poles, base covers, arms and luminaires, foundations, distribution cables (all sizes), pole and bracket cable (all sizes), conduits (all sizes), trenches, backfill material, ducts, concrete encasement, tracing wire, photocells, pull boxes, ground rods, connections to restroom electrical panel services, installation of luminaires on existing poles and the furnishing of all labor, tools, materials and equipment necessary to complete the work as specified or as shown. The contractor shall complete field installations, connections and testing of complete lighting system.

2.22 (630) SIGN, FLAT SHEET, WITH MOUNTING POST

Method of Measurement

The quantity to be paid shall be the number of signs regardless of type, foundation, and mounting post installed per the plans and specifications.

Basis of Payment

The unit price shall include signs, post, installation and all labor and materials to install sign and post per plans and specifications.

2.23 (630) REMOVAL OF GROUND MOUNTED SIGN AND RE-ERECTION, AS PER PLAN

Method of Measurement

The quantity to be paid shall be the number of signs regardless of type, foundation, and mounting post removed, stored and re-erected per the plans and specifications.

Basis of Payment

The unit price shall include removal of existing sign, storing of the sign during the construction, re-erecting sign after construction is complete and all labor and materials to complete the work per plans and specifications.

2.24 (642) PAVEMENT MARKINGS, AS PER PLAN

Basis of Payment

The lump sum price shall include all labor to furnish and apply pavement markings as indicated in the plans and specifications. Materials for traffic paint shall be in accordance with ODOT Item 642 and per plan.

2.25 (659) SEEDING AND MULCHING, AS PER PLAN

Basis of Payment

The lump sum price shall include furnishing and placement of topsoil, testing of topsoil, finish grading, seed, fertilizers, lime, water, maintenance, mowing, and all else necessary to establish a grass turf over all disturbed areas to be grassed and all areas designated stormwater basin seeding.

2.26 (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 straw bales, silt fence, check dams, 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.

2.27 (SPC) RESTROOM / SHELTER, AS PER PLAN

Method of Measurement

The quantity to be paid shall be Lump Sum. The quantity to be paid shall be for the complete operational furnished constructed building as indicated in the architectural plans and summary of work including permits, inspections, excavation, foundations, walls, roof, fixtures, furnishings, finishes, signage, building MEP, connections to site electric, water and sanitary piping, utility company contact and coordination between City and utility company, taps, service drop, service lateral, wires, connectors, fees, transformer, underground cables, duct banks, meters and connections, and coordination of splash pad equipment and utility connections and installation in storage room.

Basis of Payment

The price shall include all costs for labor, materials, tools and appurtenances necessary to complete the work as specified and in accordance with the architectural drawings and specifications. Price shall include all components of the structure, all hardware, furnishings, exterior and interior utilities and finishes required for the construction of the structure based on the architectural drawings. Payment shall be made upon completion of the renovations. The contractor shall install distribution cables (all sizes), conduits (all sizes), trenches, backfill material, ducts, concrete encasement, tracing wire, pull boxes, ground rods, connection to main service line drop.

2.28 (SPC) SPLASH PAD AS PER PLAN

Method of Measurement

The quantity to be paid shall be Lump Sum. The quantity to be paid shall be for the complete furnishing and installation of the splash pad equipment including purchasing, acquiring, installation and assembly, grading, pavement, base materials, water play features, piping, plumbing and sanitary connections, utilities, sanitary tap, drains, mechanical, electrical and control systems, permits, inspections and start up as indicated in the plans. This work shall be coordinated with the site work operations and the restroom construction.

Basis of Payment

The price shall include all costs for labor, materials, tools and appurtenances necessary to complete the work as specified and in accordance with manufacturer's recommendations. Price shall include all pavement, features, all utilities, foundations required for the structure based on the architectural drawings. Payment shall be made upon complete installation and operation of the splash pad.

ALTERNATE BID

2.29 (SPC) PLAYGROUND EQUIPMENT, AS PER PLAN

Method of Measurement

The quantity to be paid shall be Lump Sum. The quantity to be paid shall be for the complete furnishing and installation of the specified playground equipment including purchasing, acquiring, installation and assembly as indicated in the plans. This work shall be coordinated with the site work operations.

Basis of Payment

The price shall include all costs for labor, materials, tools and appurtenances necessary to complete the work as specified and in accordance with manufacturer's recommendations. Price shall include all equipment and foundations required for the structure based on manufacturer recommendations. Payment shall be made upon complete installation and operation of the play equipment.

ALTERNATE BID

2.30 (SPC) PLAY SURFACE, SAFETY SURFACING SYSTEM

Method of Measurement

The quantity to be paid shall be Lump Sum. The quantity to be paid shall be for the complete furnishing and installation of the specified playground turf safety surfacing with shock pad including purchasing, acquiring, and installation as indicated in the plans. This work shall be coordinated with the site work operations.

Basis of Payment

The price shall include all costs for labor, materials, tools and appurtenances necessary to complete the work as specified and in accordance with manufacturer's recommendations. Price shall include turf surfacing and shock pad based on manufacturer recommendations. Payment shall be made upon complete installation and operation of the turf safety surfacing.

2.31 CONTINGENCY / DISCRETIONARY ALLOWANCE

Basis of Payment

A Contingency/Discretionary Allowance has been included in the bid proposal to be utilized as directed by the Engineer for unscheduled work items not included on the proposal forms or other changes in the work. Any portion of the allowance not utilized shall be credited to the Owner.

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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»
«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.

«OwnerCaps»

«OwnerCEOFirst» «OwnerCEOLast», «OwnerCEOTitle»

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. 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: _____

ESCROW AGREEMENT FOR CONTRACTOR'S RETAINAGE

In accordance with a certain Contract between the «OwnerMuni», «OwnerState», (hereinafter referred to as "the Owner") and «ContractName», (hereinafter referred to as "the Contractor"), an Escrow Agent is hereby appointed to hold funds arising out of the Owner's agreement to pay retainage into an escrow fund, said Agent to be:

All retained funds will be placed with the above Escrow Agent from the date your Contract is certified as being 50% complete pursuant to Sections 153.13, and 153.14 and 153.63 Ohio Revised Code.

During the time the aforementioned retained funds are in the custody of the Escrow Agent, the Escrow Agent has authority to invest the escrow funds in the classes of securities listed below which, in the judgment of the Escrow Agent, allow for the least risk to capital preservation and provide for a reasonable income. The income from investment of the escrowed funds shall be accumulated in the escrow account.

- (a) Obligation issued or guaranteed as to interest and principal by the government of the United States, or obligations of the State of Ohio or any political subdivision thereof;
- (b) Obligations including certificates of deposit of any national bank located in this State and/or any bank as defined by Section 1101.01, O.R.C.;
- (c) Repurchase agreements fully secured by obligations of any kind specified in clauses (a) and (b) above; or
- (d) Interest in any money market fund or trust, the investments of which are generally restricted to obligations of any of the kind specified in clauses (a) through (c) above.

The Escrow Agent shall hold the escrowed principal and interest until receipt of notice from the Owner, or until receipt of an Arbitration Order or an Order of the Court of Claims, or other appropriate courts, specifying the amount of the escrowed principal to be released and the person to whom it is to be released. Upon receipt of such a request or order, the Escrow Agent shall, within 30 days, pay such amount of principal and interest earned on the retainage to the Contractor less the Escrow Agent's fee.

It is understood that the Escrow Agent shall have no duties, obligations, or liabilities hereunder other than to hold and invest said funds and to deliver them in accordance with the provisions hereof.

«ContractCAPName»

«ContractFirst» «ContractLast», «ContractTitle»

«OwnerCaps»

«OwnerFiscalFirst» «OwnerFiscalLast», «OwnerFiscalTitle»

ESCROW WAIVER

In accordance with a certain Contract between the «OwnerMuni», «OwnerState», (hereinafter referred to as "the Owner") and «ContractName», (hereinafter referred to as "the Contractor") it is mutually agreed by and between the parties hereto that because of the short-term duration of the within contract, no escrow account will be established pursuant to Sections 153.13, 153.14 and 153.63 of the Ohio Revised Code nor shall any interest be paid on any retainage.

«ContractCAPName»

«ContractFirst» «ContractLast», «ContractTitle»

«OwnerCaps»

«OwnerFiscalFirst» «OwnerFiscalLast», «OwnerFiscalTitle»

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»

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

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

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.

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.

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.

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

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:*

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.

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

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:*

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

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

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

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

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

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

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.

- 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.

- 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:

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:

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

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

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.

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.

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.

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

- 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

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.

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

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

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.

- 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.

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

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:

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,

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.

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.

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.

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

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.

- 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.

- 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.

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

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

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.

- 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, expeditors, 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.

- 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.

- 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;

- 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

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.

- 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.

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

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

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

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

- 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

- 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

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.

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:*

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:

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.

- 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.

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.

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 "one hundred twentieth day."

SC-2.03 (B) By submission of a bid, the bidder hereby grants consent that the award and execution period shall be extended from sixty days to ninety days after the date on which the bids are opened.

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
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General Aggregate	\$4,000,000
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- (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
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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 50% complete, the Contractor will be paid 92% of the estimated value of labor and material completed in acceptable form. After the work is 50% complete, no further funds shall be retained and the Contractor shall be paid 100% of the estimated value of the remaining labor and material completed in acceptable form, provided that the Contractor is making satisfactory progress and there is no specific cause for greater withholding. Upon the Owner's agreement that the project is substantially complete, the Retainage may be reduced to twice the value 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:

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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, joinder 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 of 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 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION OF THE PROJECT

- A. The project is located at the J.R. Smith Park, 20 S Morning St, Sunbury, OH 43074.

1.2 PROJECT DESCRIPTION

- A. Contract A:
 - 1. Base Bid: The project consists of storm sewer, stormwater management, excavation & embankment, grading, asphalt parking, drives and path, restroom/shelter building, playground excavation, flush curbing, stone base and subdrainage, splash pad, asphalt trail, stamped color concrete walk, concrete walk, concrete pads, site lighting, court paving and surfacing, court equipment, fencing, furnishings, topsoil, seeding, mulching, erosion control and landscaping.
 - 2. Alternate A: Playground equipment pieces and safety surfacing. The scope of work involves furnishing and installing the play equipment, footer excavation and concrete footer installation and installation of turf safety surfacing and nailer board.

1.3 SPECIFICATIONS

- 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.

1.4 DRAWING SCHEDULE

- A. The work to be done under this Contract is shown per the Sheet List Table on the drawings Cover Sheet.

END OF SECTION 011100

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 designated for the improvements as is necessary for his 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 his 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 his 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 his work. The Contractor shall remove daily all mud, soil and debris that may be tracked onto existing streets, drives, or walks by his equipment or that of subcontractors or suppliers.

1.3 CLOSING STREETS TO TRAFFIC

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 men, 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 his 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 his 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.

SECTION 011423 - ADDITIONAL WORK, OVERTIME

PART 1 - GENERAL

1.1 NIGHT, SUNDAY AND HOLIDAY WORK

- A. 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.

END OF SECTION 011423

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 his bid on the particular materials and equipment specified. Following the award of the contract, should the Contractor desire to use other equipment and materials, he 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 his work.
- C. The Contractor shall bring to the preconstruction meeting a proposed construction progress schedule, erosion control plan, 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 efforts required by the contract.

1.2 PROGRESS MEETINGS

- A. 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 his 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 his 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 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 DVD record of the surface features within the proposed construction zone of influence. This record shall include, but not be limited to, all audio-video DVDs, 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 video DVD 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 DVD 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 DVD format.

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 a 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, his subcontractors, or his suppliers. The testing frequency and types of testing shall be as scheduled herein.
- 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 testing laboratories performing required inspections, test, and similar services and the Engineer or his representative.
- E. Materials and installed work may require testing or retesting at anytime 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. Water distribution systems.
 - 2. Storm sewer systems.
 - 3. Sanitary sewer systems.

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 (*registered Engineer*) (*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 his representative upon arrival on site for instructions and requirements. Prior to leaving the site, furnish the Engineer or his 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.
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.
4. 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 40° F. (4° C.) and below, and when 80° F. (27° 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.

D. Asphalt

- 1. Provide testing for mixture acceptance in accordance with Ohio Department of Transportation Procedures. The person performing the testing must have a current Level 1 Bituminous Concrete approval from ODOT.

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 his 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

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 2.8 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. For product 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 01061.
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 affect 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
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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 01061.

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 his 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 his 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 his 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 in accordance with all applicable regulations.

END OF SECTION 013543

SECTION 014126 - GENERAL REGULATIONS AND PERMITS

PART 1 - GENERAL

1.1 REGISTRATION

All Contractors shall be registered to work in the City of Sunbury. Registration information can be found at

All application submittals can be dropped off at 50 Channing Street, Delaware, Ohio 43015. Submittal requirements can be found on Delaware County's website <https://buildingsafety.co.delaware.oh.us>. For any questions in regards to this information you may contact their office at 740-833-2200 or building@co.delaware.oh.us.

If the registered Prime Contractor or subcontractor performs any work within the municipal limits outside the performance of this contract, he shall provide a separate Ten Thousand Dollar (\$10,000.00) registration bond. If the Contractor performs work only within this contract, he may submit the Contract Performance Bond in lieu of a Ten Thousand Dollar (\$10,000.00) registration bond.

1.2 PERMITS

The City of Sunbury Building Department will issue a Certificate of Plan Approval (permit) for this work. The permit fees, inspection fees, and deposit will be waived. Inspections during the course of the work will be required. A list of required inspections will be provided. It is the Contractor's responsibility to call and schedule his inspections. All permit and inspection fees required by other authorities shall be paid for by the General Contractor.

1.3 ARCHAEOLOGICAL DISCOVERIES

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

Should archaeological discoveries or other activities delay progress of the work, an adjustment in contract time will be made.

END OF SECTION 014126

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
ASTM	-	American Society of Testing and Materials
AWWA	-	American Water Works Association
CMS	-	Construction and Material Specifications
NEMA	-	National Electrical Manufacturers Association
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 Engineer or his 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 Engineer so orders, and shall not be re-employed unless express permission be given by the Engineer. 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 his 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 015100 - TEMPORARY POWER SERVICE

PART 1 - GENERAL

1.1 ELECTRICAL POWER

- A. The Contractor shall furnish at his own expense all electrical power which may be required for the project. All temporary lines shall be furnished and installed by the Contractor at his own expense in a manner which meets the approval of the Engineer, and shall be removed by the Contractor at the completion of the construction.

END OF SECTION 015100

SECTION 015136 - TEMPORARY WATER AND DISTRIBUTION

PART 1 - GENERAL

1.1 WATER

- A. The Contractor shall be responsible for an adequate supply of water suitable for his use for construction and drinking. At his own expense, he shall provide and maintain adequate supplies and supply lines in such locations and installed in such a manner as may be satisfactory to the Engineer.

END OF SECTION

SECTION 015526 - TEMPORARY TRAFFIC CONTROL DEVICES

PART 1 - GENERAL

1.1 BARRICADES, SIGNS AND LIGHTS

- A. The Contractor shall employ watchmen on the work when and as necessary. The Contractor shall erect and maintain such strong and suitable barriers and such lights as will effectively prevent the occurrence of any accident to health, limb or property. Lights shall be maintained between the hours of one-half (1/2) hour after sunset and one-half (1/2) hour before sunrise.
- B. No manhole, trench, excavation will be left open awaiting connection or removal at a later date by the Contractor's forces or others but shall be temporarily backfilled and resurfaced if applicable with a temporary pavement passable to traffic at no additional cost to the Owner.
- C. In addition to other safety requirements, a minimum of four (4) foot high fence will be incorporated around any shaft or manhole or other excavation left open at the end of a day's work.

1.2 MAINTENANCE OF TRAFFIC

- A. The Contractor is required to provide maintenance of traffic in conformance with the Ohio Manual of Uniform Traffic Control Devices and Item 614 of the current Construction and Material Specifications of the Ohio Department of Transportation.
- B. This work shall include providing suitable and satisfactorily trained and properly attired flagmen for use at any location where existing roadway is narrowed to a width of less than 2 full lanes (18 feet).
- C. The Contractor is also responsible for maintaining local access to all residences and businesses along the route of the construction and to provide whatever temporary materials are necessary to provide a safe, adequate drive surface.
- D. At all boring locations, Contractor shall provide suitable flashers, barricades, and traffic control devices as may be deemed necessary by the Engineer or the responsible authority in the case of the Department of Transportation, Turnpike Commission, or affected railroad. This may extend to maintain facilities on a 24-hour basis until such time as the areas are completely backfilled.

END OF SECTION 015526

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 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 E 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.

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 his 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 his 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 his 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 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.

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.
- C. The location of each water connection as measured along the water line from the nearest fire hydrant.

END OF SECTION 017839

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. 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 non-reinforced 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 not 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 imbedment 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 insure 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.

END OF SECTION 024116

SECTION 024119 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

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 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. 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 non-reinforced 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 CATCH BASINS, INLETS AND SIMILAR STRUCTURES

- A. Existing drainage structure designated by the Engineer to be removed shall be completely removed.
- B. Abandoned sewers shall be sealed and made watertight with approved masonry bulkheads.
- C. 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 FENCE

- A. Where so required by the Drawings, existing 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 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.

3.6 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 offsite.
- B. The Contractor shall police the hauling of debris to insure that all spillage from haul trucks is promptly and completely removed.

3.7 BACKFILLING

- A. All trenches, holes, and pits resulting from the removal and abandonment of any structure or obstruction shall be backfilled and compacted.

END OF SECTION 024119

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-cementitious 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. **Preinstallation 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.

- C. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
1. Limit use of fly ash to not exceed 25% of cement content by weight.
 2. 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: ASTM C 330.
- Maximum nominal aggregate size of 1 inch.
- 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 thyoocyanates 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 03255.
- 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		Entrained Air %
					Min.	Inch Max.	
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 laitance.
- 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 03255 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 03255 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, form-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 1/4-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 02300CT.

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

Coarse & Fine Aggregate Gradation

		Percent Passing				
Slump _____ +/- _____ in.	Sieve Size	Aggregate No.				
		1	2	3	4	Combined
Unit Weight _____ pcf	2 in.	_____	_____	_____	_____	_____
Air Content _____ +/- _____ %	1-1/2 in.	_____	_____	_____	_____	_____
	1 in.	_____	_____	_____	_____	_____
	3/4 in.	_____	_____	_____	_____	_____
	1/2 in.	_____	_____	_____	_____	_____
If Trail Batch Data -	3/8 in.	_____	_____	_____	_____	_____
Identify Batch No. _____	No. 4	_____	_____	_____	_____	_____
Batch Date _____	No. 8	_____	_____	_____	_____	_____
Concrete Temp. _____ °F	No. 16	_____	_____	_____	_____	_____
Comp. Strength-Average _____ °F	No. 30	_____	_____	_____	_____	_____

EXAMPLE FORM A (CONTINUED)

7 day avg. _____ psi	No. 50	_____	_____	_____	_____	_____
28 day avg. _____ psi	No. 100	_____	_____	_____	_____	_____
	No. 200	_____	_____	_____	_____	_____

Comments: _____

Signature: _____ Date: _____

Title: _____

Organization: _____

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

	<u>## -1</u>	<u>## -2</u>	<u>## -3</u>	<u>## -4</u>
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)	_____	_____	_____	_____

EXAMPLE FORM B (CONTINUED)

28 days	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
Average (28 day)	_____	_____	_____	_____
Water-Cementitious Material Ratio:	_____	_____	_____	_____

Signature: _____ Date: _____

Title: _____

Organization: _____

END OF SECTION 030000

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
- E. Samples for waterstops.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Waterstops.
 - 4. Curing compounds.
 - 5. Floor and slab treatments.
 - 6. Bonding agents.
 - 7. Adhesives.
 - 8. Semirigid joint filler.
 - 9. Joint-filler strips.
 - 10. Repair materials.
- B. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Aggregates.
- C. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.8 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 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.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301.
 - 2. ACI 117.

2.2 FORM-FACING MATERIALS

- A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

- B. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- C. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.

2.4 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

2.5 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, gray; Type I or Type II with heat of hydration limitations, as indicated in concrete mixture requirements in this Section.
 - 2. Fly Ash: ASTM C 618, Class F or C.
 - 3. Slag Cement (Ground Granulated Blast Furnace Slag): ASTM C 989/C 989M, Grade 100 or 120.
 - 4. Silica Fume: ASTM C 1240, amorphous silica.

- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4M coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: $\frac{3}{4}$ inch nominal for slabs up to 12 inches thick.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C 260/C 260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride. Do not use accelerating admixtures.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- F. Water: ASTM C 94/C 94M and potable.

2.6 WATERSTOPS

- A. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals. Factory fabricate corners, intersections, and directional changes.
 - 1. Profile: Flat dumbbell or ribbed with center bulb.
 - 2. Dimensions: 6 inches by $\frac{3}{8}$ inch thick; non-tapered.

2.7 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A. For use with slabs-on-grade.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:

- a. BASF Corp. - Construction Chemicals.
- b. ChemMasters, Inc.
- c. Dayton Superior.
- d. Euclid Chemical Company (The); an RPM company.
- e. Kaufman Products, Inc.
- f. L&M Construction Chemicals, Inc.
- g. SpecChem, LLC.
- h. W.R. Meadows, Inc.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.9 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash: 25 percent maximum.
 2. Combined Fly Ash and Pozzolan: 25 percent maximum.
 3. Slag Cement: 50 percent maximum.
 4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
 5. Silica Fume: 10 percent maximum.
 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent maximum, with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 7. Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 50 percent maximum, with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.10 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing or high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing or high-range water-reducing or plasticizing admixture, as required, in pumped concrete, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.
 - 1. Minimum Compressive Strength: 4,000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.50 unless noted otherwise.
 - 3. Portland Cement: Type I or II.
 - 4. Slump Limit: 4 inches, plus or minus 1 inch, if no high-range water-reducing admixture or plasticizing admixture is used. 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
- B. Foundation Walls: Normal-weight concrete.
 - 1. Minimum Compressive Strength: 4,500 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.50 unless noted otherwise.
 - 3. Portland Cement: Type I or II.
 - 4. Slump Limit: 4 inches, plus or minus 1 inch, if no high-range water-reducing admixture or plasticizing admixture is used. 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 5. Air Content for Walls exposed to freeze/thaw: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.
- C. Interior Slabs-on-Grade: Normal-weight concrete.
 - 1. Minimum Compressive Strength: 4,000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.45.
 - 3. Minimum Cementitious Materials Content: 520 lb/cu. yd.
 - 4. Portland Cement: Type I or II.
 - 5. Slump Limit: 4 inches, plus or minus 1 inch, if no high-range water-reducing admixture or plasticizing admixture is used. 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

6. Air content must not exceed 3 percent total for concrete used in trowel-finished floors.

D. Exterior Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 4,500 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Minimum Cementitious Materials Content: 520 lb/cu. yd.
4. Portland Cement: Type I or II.
5. Slump Limit: 4 inches, plus or minus 1 inch, if no high-range water-reducing admixture or plasticizing admixture is used. 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
6. Air content must not exceed 3 percent total for concrete used in trowel-finished floors.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
1. Class C, 1/2 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.

- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
 - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of footings and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 72 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 WATERSTOP INSTALLATION

- A. Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, and firmly pressing into place. Install in longest lengths practicable.

3.5 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slabs on grade.
 - 2. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces, unless noted otherwise.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when

cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 - 2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 1. Apply to concrete surfaces not exposed to public view.

3.9 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Do not spray or sprinkle water on slabs.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 1. Apply float finish to surfaces indicated to receive trowel finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 1. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

3.10 MISCELLANEOUS CONCRETE ITEM INSTALLATION

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend

with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 12-inch centers around the full perimeter of concrete base.
5. For supported equipment, install hot-dip galvanized anchor bolts that extend through concrete base and anchor into structural concrete substrate. Use post-installed hot-dip galvanized anchors with chemical adhesive where indicated.
6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.11 CONCRETE PROTECTING AND CURING

- A. **General:** Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. **Evaporation Retarder:** Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. **Formed Surfaces:** Cure formed concrete surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. **Unformed Surfaces:** Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, and other surfaces.
- E. **Cure concrete according to ACI 308.1, by one or a combination of the following methods:**
 1. **Moisture Curing:** Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.

- b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period. Apply to all concrete slabs, unless otherwise indicated.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least two months. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.14 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports. Contractor shall coordinate dates and times of required tests and inspections with the testing agency.
- B. Inspections:

1. Steel reinforcement placement.
 2. Verification of use of required design mixture.
 3. Concrete placement, including conveying and depositing.
 4. Curing procedures and maintenance of curing temperature.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change. Perform an additional test to verify slump before adding high-range water-reducing admixture or plasticizing admixture, for each slump test required after adding high-range water-reducing admixture or plasticizing admixture.
 3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and field cure at least three sets of two 6 inch cylinder specimens for each composite sample. Additional standard cylinders may be cast and cured, at the testing company's option.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two field-cured specimens at 7 days, one set of two specimens at 28 days, and one set of two specimens at 56 days. Additional compressive-strength tests may be added, at the testing company's option.
 - a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 8. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall

contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for all 3-, 7- and 28-day tests.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
 10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
 11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to the straightedge method within 48 hours of finishing.

END OF SECTION 033000

SECTION 034000.02 - PRECAST CONCRETE MANHOLES

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 concrete manholes, including drops and manhole stacks of types and at locations shown on the Drawings and/or scheduled.
- B. This section includes additional excavation to widen and deepen sewer trenches for manhole construction, furnishing and installing concrete of classes called for, brick, Portland cement mortar, reinforcing steel, precast concrete pipe, integral base sections, bottom riser sections, transition sections, riser sections, eccentric cones, flat slab tops and adjusting rings, flexible manhole connections, pipe for drop connections, plugging lifting holes, pointing joints, forming channels through manhole bottoms, making watertight connections to new and existing sewers, and other work incidental to manhole construction.

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. The various types of manholes are as shown on the Drawings or in the Standard Details.

1.5 SUBMITTALS

- A. Manufacturer's Shop Drawings and Certificates
 - 1. Precast Concrete Manhole Sections and Specials
 - 2. Flexible Joints
- B. Supplier's Certificates
 - 1. Reinforced Concrete Pipe Manhole Sections.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Precast Concrete Pipe Manhole Sections

1. Precast concrete pipe manhole sections, transition sections, eccentric cones, flat slab tops, and adjusting rings shall conform to ASTM Specification C 478. Reinforcing in transition sections shall be equal to that specified for wall sections of the larger diameter.
2. Joints shall be O-ring type conforming to ASTM Specification 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. Specified manhole steps shall be factory installed to provide a continuous ladder of 16 in. c/c rung spacing. Steps shall be placed in the forms and cast in pipe wall or placed immediately after the pipe is removed from casting and carefully mortared in place with nonshrink mortar to insure a watertight joint. If the outer surface of the pipe wall is pierced, the patch shall be completely covered with a bituminous sealer.
6. Where pressure tight manhole frames and covers are called for, 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.

B. Manhole frames, covers, and steps utilized shall comply with their respective specification.

C. Mortar

1. Mortar used for the structures herein specified shall conform to Specifications for Mortar for Unit Masonry, ASTM Designation C 270 Type S, containing no masonry cement. The mortar shall be composed of one part Portland cement to two parts sand by volume.
2. Materials for nonshrinking grout shall conform to CRD-C "Corps of Engineers Specifications for Non- Shrink Grout". Approved products are "Sauereisen F-100 Grout" by Sauereisen Cements Co.; "Five Star Grout" by U.S. Grout Corporation; "Masterflow 713" by Master Builders; "Euco N-S" by Euclid Chemical Company.

D. All cast-in-place concrete used for forming channels in manhole bottoms shall be Class B as specified in the Section 03310.

E. Reinforcing steel used in cast-in-place concrete shall meet the requirements of Section 03310.

F. Flexible joints for precast manhole pipe openings herein specified shall conform to ASTM designation C 923, "A-Lok" & "Z-Lok" Type as manufactured by A-Lok Products; or an approved equivalent.

- G. The pipe and size for manhole drops shall conform to the Standard Details and its respective specification contained herein.
- H. Brick used for catch basin and manhole construction shall conform to Specifications for Sewer and Manhole Brick (made from clay or shale), ASTM Designation C 32, and shall be Grade "MS" unless otherwise specified.

PART 3 - EXECUTION

3.1 LOCATION AND CONSTRUCTION

- A. Location and type of manhole 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 under this section.

3.2 EXCAVATION

- A. Excavation for manhole construction shall be prepared as directed in the applicable paragraphs of Section 02200 Excavation, Bedding & Backfill.

3.3 INSTALLATION OF INTEGRAL BASE SECTIONS

- A. Class B concrete shall be poured so as to provide a minimum of 4-in. thick pad under the entire area of the manhole base. Place the manhole on the pad before the concrete is completely set so that final leveling adjustment can be made.
- B. 6" Granular backfill bedding can be used in lieu of Class B concrete.

3.4 CHANNELING MANHOLE BOTTOMS

- A. 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.
- 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 manhole shall be installed immediately below the flat slab top.
- B. Pipe section joints shall be pointed and lifting holes filled with nonshrinking mortar.

3.6 SPECIAL PROVISIONS

- A. The intent of this section is to identify requirements only associated with improvements, or rehabilitation of existing sewerage manholes.
- B. The installation of bottom riser sections shall be as follows:
 - 1. The base shall be of Class A concrete as specified in Section 03310 9 in. thick minimum placed on undisturbed earth.
 - 2. 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.
 - 3. On straight runs the Contractor may carry the sewer pipe through the manhole and break out the top half after the fill concrete has set. In all cases the sewer pipe shall extend through the manhole wall to the inside face.
- C. All manholes for sanitary sewers shall have an application of Thoro-Seal or other approved coating (any color but gray).

END OF SECTION 034000.02

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 insure 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 EXCAVATION

- A. Excavation for catch basin construction shall be prepared as directed in applicable paragraphs of Section 02200 Earthwork.

3.3 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.

3.4 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.

3.5 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.

3.6 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.

3.7 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 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.
 - 2. Mortar and grout.
 - 3. Steel reinforcing bars.
 - 4. Masonry-joint reinforcement.
 - 5. Embedded flashing.
 - 6. Masonry-cell insulation.
 - 7. Miscellaneous masonry accessories.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of the following:
 - 1. Masonry units.

- a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units, include data and calculations establishing average net-area compressive strength of units.
- 2. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 3. Mortar admixtures.
 - 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 5. Grout mixes. Include description of type and proportions of ingredients.
 - 6. Reinforcing bars.
 - 7. Joint reinforcement.
 - 8. Anchors, ties, and metal accessories.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
- 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 - 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- C. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide bullnose units for exposed outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
 - 2. Density Classification: Normal weight.
 - 3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
 - 4. Exposed Faces: Provide color and texture matching the range selected by Architect.

2.5 MASONRY LINTELS

- A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cemex S.A.B. de C.V.; Brikset Type N
 - b. Essroc; Brixment
 - c. Holcim (US) Inc; Mortamix Masonry Cement
 - d. Lafarge North America Inc.; Lafarge Masonry Cement
 - e. Lehigh Hanson; HeidelbergCement Group; Lehigh Masonry Cement
- E. Mortar Cement: ASTM C1329/C1329M.
 - 1. Products: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Lafarge North America Inc.; Lafarge Mortar Cement.
 - b. Lehigh Hanson; HeidelbergCement Group; Lehigh Mortar Cement.
 - c. Fairborn Cement Company, MIAMI Mortar Cement
- F. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

3. White-Mortar Aggregates: Natural white sand or crushed white stone.
- G. Aggregate for Grout: ASTM C404.
- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
1. Products: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Euclid Chemical Company (The); an RPM company; Accelguard 80, EUCO Winter Admixture, or EUCO Winter Mix Powder.
 - b. GCP Applied Technologies Inc.; Morset.
 - c. RussTech, Inc.; Mortar-Accel.
- I. Water: Potable.

2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
1. Products: Subject to compliance with requirements, provide products by one of the following:
 - a. Heckmann Building Products, Inc.; No. 376 Rebar Positioner..
 - b. Hohmann & Barnard, Inc; #RB or #RB-Twin Rebar Positioner.
 - c. Wire-Bond; Core Lock Rebar Positioner
- C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.
1. Interior/Exterior Walls: Hot-dip galvanized carbon steel.
 2. Wire Size for Side/Cross Rods: 0.148-inch diameter.
 3. Spacing of Cross Rods: Not more than 16 inches o.c.
 4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

2.8 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
 - 2. Galvanized-Steel Sheet: ASTM A653/A653M, Commercial Steel, G60 zinc coating.
 - 3. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
 - 4. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.060 inch-thick steel sheet, galvanized after fabrication.
- D. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
 - 1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.

2.9 MASONRY-CELL INSULATION

- A. Molded-Polystyrene Insulation Units: Rigid, cellular thermal insulation formed by the expansion of polystyrene-resin beads or granules in a closed mold to comply with ASTM C 578, Type I. Provide specially shaped units designed for installing in cores of masonry units.
- B. Foam-in-Place Insulation: Two component system consisting of amino-plast resin and a catalyst foaming agent surfactant.

2.10 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Diedrich Technologies, Inc.
- b. EaCo Chem, Inc.
- c. ProSoCo, Inc.

2.11 MISCELLANEOUS MASONRY ACCESSORIES

- A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

2.12 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Use portland cement-lime, masonry cement, or mortar cement mortar.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 1. For masonry below grade or in contact with earth, use Type S.
 2. For reinforced masonry, use Type S.
 3. For above-grade, load-bearing and nonload-bearing walls, use Type S or N.
- D. Grout for Unit Masonry: Comply with ASTM C476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
 - 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
 - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.

3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Set stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
 - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
 - 2. Wet joint surfaces thoroughly before applying mortar.
 - 3. Rake out mortar joints for pointing with sealant.
- C. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 MASONRY-CELL INSULATION

- A. Install molded-polystyrene insulation units into masonry unit cells before laying units.
- B. Install foam-in-place insulation into cavities to fill void spaces per manufacturer's written instructions. Maintain inspection ports to show presence of insulation at extremities of each area. Close the ports after filling has been confirmed.

3.7 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.

- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, and other special conditions.

3.8 CONTROL JOINTS

- A. General: Install control-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
 - 1. Install preformed control-joint gaskets designed to fit standard sash block.
 - 2. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

3.9 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 24 inches for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY

- A. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 12.67 ft.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- E. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for mortar air content and compressive strength.
- F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042200

SECTION 047300 – MANUFACTURED STONE VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Manufactured Stone Veneer.
- B. Related Sections:
 - 1. Section 061000 “Rough Carpentry” for blocking and nailers installed as part of stone veneer system.
 - 2. Section 079200 “Joint Sealants” for sealants installed as part of stone veneer wall system.

1.3 PERFORMANCE REQUIREMENTS

- A. Building Code Compliance:
 - 1. International Code Council (ICC):
 - a. ES Report: ICC ESR 1364.
 - 2. Tested by Underwriters Laboratories, Inc.
 - 3. Backup Wall System and installation method for manufactured stone veneer shall meet the requirements of ASTM C 1780–Standard Practice for Installation Methods for Adhered Manufactured Stone Masonry Veneer.

1.4 ACTION SUBMITTALS

- A. Product Data: Manufacturer’s data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation standards and methods.

- B. Shop Drawings: Submit drawings depicting proper installation and flashing techniques. Coordinate locations with those found on the Drawings.
- C. Samples for Initial Selection: For each finish product specified, provide manufacturer's literature representing manufacturer's full range of available sizes, colors, and textures.
- D. Samples for Verification: For each finish product specified, large enough to indicated colors and sizes of stone, but not less than 24 inches square, representing actual product, color, and texture.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- F. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for cleaning and repair of components.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer who is a current member of National Concrete Masonry Association (NCMA) with a minimum of 5 years documented experience manufacturing and marketing all manufactured stone products of the type specified in this section.
- B. Installer Qualifications: Company with documented experience in installation of manufactured masonry of the type specified including at least five projects within a 400 mile radius of the Project.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish panel of size and location designated by Owner.
 - 2. Minimum size 60 inches by 60 inches, showing sill and transition to adjacent materials anticipated.
 - 3. Do not proceed with remaining work until workmanship, color, texture, and pattern are approved by Owner.
 - 4. Mock-up/Sample Panel may become part of the finished work if acceptable to Owner at completion of work.
- D. Pre-Installation Conference:
 - 1. Contractor shall arrange a meeting not less than thirty days prior to starting stone veneer work.
 - 2. Attendance: Contractor, Architect/Owner Representative, veneer stone installer and manufacturer's representative.

1.6 DELIVERY, STORAGE & HANDLING

- A. Store and handle products in conformance with the manufacturer's requirements and recommendations.
- B. Store products off the ground on pallets in manufacturer's unopened packaging until ready for installation.
- C. Protect materials from precipitation and freezing temperatures. Product with visible frozen moisture should not be installed.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Cold weather installations: Maintain materials and ambient temperature at minimum 40 degrees F (4 degrees C) prior to, during, and 48 hours after installation.
- C. Hot weather installations: Mist water on the scratch coated surface and the backs of the masonry veneer for installations that exceed 90 degrees (32 degrees C).

1.8 WARRANTY

- A. Provide manufacturer's standard warranty.
 - 1. Warranty shall not be less than 30-year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURED STONE VENEER

- A. Manufactured Stone Veneer Products:
 - 1. Products: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Brickworks Limited (Glen-Gery).
 - b. Coronado Stone Products.
 - c. Cultured Stone – Westlake Royal Building Products.
 - d. Lee Building Products.
 - 2. Stone Style, Color, and Accessories:

- a. Color and Style: As selected by Owner from manufacturer's full range of options, including all available styles and colors.
 - b. Include matching corner pieces.
 - c. Provide with single style and color throughout.
 - d. Accessories: Provide manufacturer's standard electrical box accessories for installing electrical receptacles and light fixtures on walls with manufactured stone veneer, so that they are flush with the face of the stone veneer.
- B. Manufactured Stone Veneer Performance Requirements: Conforming to ASTM C 1670 and as follows:
1. Compressive Strength: Not less than 1800 psi (12.4 MPa) average for 5 specimens and not less than 2100 psi (14.4 MPa) for individual specimen when tested in accordance with ASTM C 39 & ASTM C 192.
 2. Bond Between Manufactured Masonry Unit, Mortar and Backing: Not less than 50 psi (345 kPa) when tested in accordance with ASTM C 482 using Type S mortar.
 3. Thermal Resistance: R-value of not less than 0.355 per inch (25.4 mm) of thickness when tested in accordance with ASTM C 177.
 4. Freeze/Thaw: No disintegration and less than 3 percent weight loss when tested in accordance with ASTM C 67.
 5. Water Absorption: Tested in accordance with UBC 15-5 9-22% depending on density value.
 6. Unit Weight: Not more than 15 psf (73 kg/m²) saturated.
 7. Surface Burning Characteristics: Not more than the following when tested in accordance with UL 723:
 - a. Flamespread: 25.
 - b. Smoke Development: 450.
 8. UV Stable - Mineral oxide pigments.
- C. Certifications:
1. ICC ES AC 51 Acceptance Criteria for Manufactured Stone Veneer.
 2. ICC Evaluation Service - Evaluation Report ESR 1364 & ASTM C 1670.
 3. UL Tested for Surface Burning Characteristics.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared in conformance with ASTM C 1780 for the backup wall system indicated on the Drawings.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install manufactured stone masonry veneer in accordance with NCMA Installation Guide for Adhered Manufactured Stone Veneer, ASTM C 1780 and applicable Codes.
- C. Install/Apply Related Materials in accordance with type of substrate and manufactured stone veneer manufacture's installation instructions.
- D. General:
 - 1. Provide with single style and color throughout.
 - 2. Special Shapes: Color to match stones specified.
 - 3. Provide Stones manufactured specifically for installation at corners where located on the Drawings.
 - 4. Mortar Joints Style: As selected by Owner from manufacturer's full range of options.
 - 5. Stone Direction: Random placement.
 - 6. Windows, Door, and Wall Openings:
 - a. Butt field stones to wall opening.
 - b. Install standard trim stones where located on the Drawings.
 - 7. Sills: Install standard sills where located on the Drawings.
 - 8. Caps: Install standard capstones where located on the Drawings.
- E. Install electrical box accessories per manufacturer's written instructions and recommendations.
- F. Seal all joints at wall openings and penetrations with a sealant approved for use with masonry products.
- G. Flashing: Coordinate with manufacturer's flashing requirements in the written installation instructions and recommendations.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide periodic site visits during the course of work. Report any discrepancies to the Contractor with copies to the Architect within 24 hours of each visit.

3.5 CLEANING

- A. Clean manufactured masonry in accordance with manufacturer's installation instructions

3.6 PROTECTION

- A. Protect finished work from rain and work on either side of the wall during and for 48 hours following installation.
- B. Protect installed products until completion of project.
- C. Clean prior to Substantial Completion.
- D. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION 047300

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel framing and supports for mechanical and electrical equipment.
 - 2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
 - 3. Slotted channel framing.
- B. Products furnished, but not installed, under this Section include the following:
 - 1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
- C. Related Requirements:
 - 1. Section 042200 "Concrete Unit Masonry" for installing anchor bolts and other items built into unit masonry.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:

1. Fasteners.
 2. Shop primers.
 3. Shrinkage-resisting grout.
 4. Slotted channel framing.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
1. Steel framing and supports for mechanical and electrical equipment.
 2. Steel framing and supports for applications where framing and supports are not specified in other Sections.

1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Stainless Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 304.
- D. Stainless Steel Bars and Shapes: ASTM A276/A276M, Type 304.
- E. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

- F. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.
- G. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
 - 1. Size of Channels: 1-5/8 by 1-5/8 inches.
 - 2. Material: Galvanized steel, ASTM A653/A653M, commercial steel, Type B structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.
- H. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.
- I. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.
- J. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.
- K. Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.
- L. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless steel fasteners for fastening aluminum stainless steel or nickel silver.
 - 2. Provide bronze fasteners for fastening bronze.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.
- D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.
- E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
 - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

- F. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
- G. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.
- H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.
- I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting."

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with 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. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
1. Fabricate units from slotted channel framing where indicated.
 2. Furnish inserts for units installed after concrete is placed.
- C. Galvanize exterior miscellaneous framing and supports.

2.7 GENERAL FINISH REQUIREMENTS

- A. Finish metal fabrications after assembly.

- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.8 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
 - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete or masonry, or unless otherwise indicated.
 - 1. Shop prime with primers specified in Section 099113 "Exterior Painting" unless indicated.
- D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 3. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
 - 4. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.9 ALUMINUM FINISHES

- A. As-Fabricated Finish: AA-M12.
- B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 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. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
 - 1. Cast Aluminum: Heavy coat of bituminous paint.
 - 2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports for operable partitions and overhead doors securely to, and rigidly brace from, building structure.

3.3 REPAIRS

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

SECTION 055313 - BAR GRATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes metal bar gratings and metal frames and supports for gratings.

1.3 COORDINATION

- A. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including items with integral anchors, that are to be embedded in concrete. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For the bar grating.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.

1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 METAL BAR GRATINGS

- A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual".
- B. Welded Steel Grating:
 - 1. Bearing Bar Spacing: 1-3/16 inches (30 mm) o.c.
 - 2. Bearing Bar Depth: 3/4 inch (19 mm) minimum.
 - 3. Bearing Bar Thickness: 1/8 inch (3.2 mm) minimum.
 - 4. Crossbar Spacing: 2 inches (51 mm) o.c.
 - 5. Traffic Surface: Plain.
 - 6. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. (550 g/sq. m) of coated surface.

2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Bars for Bar Gratings: ASTM A 36/A 36M or steel strip, ASTM A 1011/A 1011M or ASTM A 1018/A 1018M.
- C. Wire Rod for Bar Grating Crossbars: ASTM A 510 (ASTM A 510M).
- D. Uncoated Steel Sheet: ASTM A 1011/A 1011M, structural steel, Grade 30 (Grade 205).
- E. Galvanized-Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 33 (Grade 230), with G90 (Z275) coating.

2.3 FABRICATION

- A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.
- D. Fit exposed connections accurately together to form hairline joints.

- E. Welding: Comply with AWS recommendations 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.
- F. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Grating to be set in place loose with no clips, lugs, or holdown connections.
- G. Fabricate cutouts in grating sections for penetrations as required by splashpad supplier/installer. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.
 - 1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.
- H. Do not notch bearing bars at supports to maintain elevation.

2.4 GRATING FRAMES AND SUPPORTS

- A. Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.
 - 1. Unless otherwise indicated, fabricate from same basic metal as gratings.
 - 2. Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches (600 mm) o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches (32 mm) wide by 1/4 inch (6 mm) thick by 8 inches (200 mm) long.

2.5 STEEL FINISHES

- A. Finish gratings, frames, and supports after assembly.
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
- B. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.
- C. Fit exposed connections accurately together to form hairline joints.
 - 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication.
- D. Field Welding: Comply with AWS recommendations 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.

3.2 INSTALLING METAL BAR GRATINGS

- A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
- B. Set removable units on supporting members.

3.3 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055313

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Wood blocking and nailers.
 - 3. Plywood backing panels.
- B. Related Requirements:
 - 1. Section 061600 "Sheathing" for sheathing.
 - 2. Section 061753 "Shop-Fabricated Wood Trusses" for wood trusses made from dimension lumber.

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
 1. Wood-preservative-treated wood.
 2. Power-driven fasteners.
 3. Post-installed anchors.
 4. Metal framing anchors.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
 3. Wood exposed to the exterior.

2.3 DIMENSION LUMBER FRAMING

- A. Framing: No. 2 grade or better.
 1. Species:
 - A. Southern pine or mixed southern pine; SPIB.
 - B. Spruce-pine-fir; NLGA.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 1. Blocking.
 2. Nailers.
 3. Sleepers.
- B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.
- C. Concealed Boards: 19 percent maximum moisture content and of any species.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.6 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193, and/or ICC-ES AC308 as appropriate for the substrate.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.

2.7 METAL FRAMING ANCHORS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Simpson Strong-Tie Co., Inc.; framing anchors or comparable product by one of the following:
 - 1. Cleveland Steel Specialty Co.
 - 2. KC Metals Products, Inc.
 - 3. Phoenix Metal Products, Inc.
 - 4. USP Structural Connectors.
- B. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
 - 1. Use for interior locations unless otherwise indicated.

- D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
 - 1. Use for wood-preservative-treated lumber, and where indicated.
- E. Rafter Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches wide by 0.062 inch thick. Tie fits over top of rafter or truss and fastens to both sides of rafter or truss, face of top plates, and side of stud below.
- F. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.
 - 1. Bolt Diameter: 5/8 inch.
 - 2. Width: 3-3/16 inches.
 - 3. Body Thickness: 0.138 inch.
 - 4. Base Reinforcement Thickness: 0.239 inch.
- G. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches wide by 9/16 inch deep by 0.034 inch thick with hemmed edges.
- H. Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch thick with hemmed edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install plywood backing panels by fastening to masonry; coordinate locations with utilities requiring backing panels.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

- F. Do not splice structural members between supports unless otherwise indicated.
- G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- H. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- I. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- J. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. ICC-ES evaluation report for fastener.
- L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
 - 1. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061300 - HEAVY TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing using timbers.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for dimension lumber items associated with heavy timber framing.
 - 2. Section 061516 "Wood Roof Decking."
 - 3. Section 061800 "Glued-Laminated Construction."

1.3 DEFINITIONS

- A. Timbers: Lumber of 5 inches nominal or greater in least dimension.
- B. Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.

1.4 ACTION SUBMITTALS

- A. Product Data: For preservative-treated wood products and timber connectors.
 - 1. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 - 2. For timber connectors. Include installation instructions.
- B. Shop Drawings: For heavy timber framing. Show layout, dimensions of each member, and details of connections.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates:
 - 1. For timbers specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by ALSC's Board of Review.
 - 2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of materials to avoid extended on-site storage and to avoid delaying the Work.
- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 - PRODUCTS

2.1 TIMBER

- A. Comply with DOC PS 20 and with grading rules of lumber-grading agencies certified by ALSC's Board of Review as applicable.
 - 1. Factory mark each item of timber with grade stamp of grading agency.
 - 2. For exposed timber indicated to receive a stained or natural finish, apply grade stamps to surfaces that are not exposed to view, or omit grade stamps and provide certificates of grade compliance issued by grading agency.
- B. Timber Species and Grade: Hem-Fir; Select Structural, NeLMA.
- C. Structural Properties: Provide timbers that, for moisture content provided, complies with required structural properties.
 - 1. Allowable Stress Ratings for 12-Inch Nominal Depth: Fb 1,200 psi and E 1,300,000 psi.
- D. Moisture Content: Provide timber with 19 percent maximum moisture content at time of dressing or provide timber that is unseasoned at time of dressing but with 19 percent maximum moisture content at time of installation.
- E. Dressing: Provide dressed timber (S4S) unless otherwise indicated.

2.2 PRESERVATIVE TREATMENT

- A. Pressure treat materials with waterborne preservative according to AWWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
- B. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- C. Use process that includes water-repellent treatment.
- D. Mark treated materials with treatment quality mark of an inspection agency approved by ALSC's Board of Review.
- E. Application: Treat all heavy timber framing unless otherwise indicated.

2.3 TIMBER CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
 - 1. Cleveland Steel Specialty Co.
 - 2. Halfen Anchoring Systems.
 - 3. Simpson Strong-Tie Co., Inc.
 - 4. USP Structural Connectors.
 - 5. Wood Care Systems.
- B. Fabricate beam seats, side plats, and anchors from steel as noted on drawings.
- C. Materials: Unless otherwise indicated, fabricate from the following materials:
 - 1. Structural-steel shapes, plates, and flat bars complying with ASTM A36/A36M.
 - 2. Round steel bars complying with ASTM A575, Grade M 1020.
 - 3. Hot-rolled steel sheet complying with ASTM A1011/A1011M, Structural Steel, Type SS, Grade 33.
- D. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A123/A123M or ASTM A153/A153M.

2.4 FABRICATION

- A. Predrill for fasteners and assembly of units.
- B. Coat crosscuts with end sealer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Erect heavy timber framing true and plumb. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
 - 1. Install horizontal and sloping members with crown edge up, and provide not less than 4 inches of bearing on supports. Provide continuous members unless otherwise indicated; tie together over supports with metal strap ties if not continuous.
 - 2. Handle and temporarily support heavy timber framing to prevent surface damage, compression, and other effects that might interfere with indicated finish.
- B. Framing Built into Masonry: Provide 1/2-inch clearance at tops, sides, and ends of members built into masonry, and bevel cut ends 3 inches; do not embed more than 4 inches unless otherwise indicated.
- C. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.
- D. Fitting: Fit members by cutting and restoring exposed surfaces to match specified surfacing.
 - 1. Predrill for fasteners using timber connectors as templates.
 - 2. Coat crosscuts with end sealer.
- E. Install timber connectors as indicated.

3.2 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged heavy timber framing if repairs are not approved by Architect.

END OF SECTION 061300

SECTION 061516 - WOOD ROOF DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-sawn wood roof decking and ceiling treatments.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for dimension lumber items associated with wood roof decking.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For preservative-treated wood products, include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Schedule delivery of wood roof decking to avoid extended on-site storage and to avoid delaying the Work.

B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack wood roof decking with surfaces that are to be exposed in the final Work protected from exposure to sunlight.

PART 2 - PRODUCTS

2.1 WOOD ROOF DECKING, GENERAL

A. General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

2.2 SOLID-SAWN WOOD ROOF DECKING

A. Standard for Solid-Sawn Wood Roof Decking: Comply with AITC 112.

- B. Roof Decking Species:
 - 1. Southern pine.
- C. Roof Decking Nominal Size: 3 by 6.
- D. Roof Decking Grade:
 - 1. Dense Select Decking.
- E. Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that are not exposed to view.
- F. Moisture Content: Provide wood roof decking with 15 percent maximum moisture content at time of dressing.
- G. Face Surface: Smooth.
- H. Edge Pattern: Vee grooved.

2.3 PRESERVATIVE TREATMENT

- A. Pressure treat wood roof decking in accordance with AWPA U1; Use Category UC2.
- B. Preservative Chemicals: Inorganic boron (SBX) Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 1. For exposed items indicated to receive a stained or natural finish, use products that do not contain colorants, bleed through, or otherwise adversely affect finishes.
- C. Use process that does not include water repellents or other substances that might interfere with application of indicated finishes.
- D. After treatment, redry materials to 15 percent maximum moisture content.

2.4 ACCESSORY MATERIALS

- A. Fasteners for Solid-Sawn Roof Decking: Provide fastener size and type complying with AITC 112 for thickness of deck used.
- B. Nails: Common; complying with ASTM F1667, Type I, Style 10.
- C. Fastener Material: Hot-dip galvanized steel.
- D. Penetrating Sealer: Clear sanding sealer complying with Section 099300 "Staining and Transparent Finishing" and compatible with topcoats specified for use over it.

2.5 FABRICATION

- A. Shop Fabrication: Where preservative-treated roof decking is indicated, complete cutting, trimming, surfacing, and sanding before treating.
- B. Seal Coat: After fabricating and surfacing roof decking, apply a saturation coat of penetrating sealer in fabrication shop.
- C. Apply indicated finish materials to comply with Section 099300 "Staining and Transparent Finishing" in fabrication shop if possible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and support framing in areas to receive wood roof decking for compliance with installation tolerances and other conditions affecting performance of wood roof decking.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install solid-sawn wood roof decking to comply with AITC 112.
 - 1. Locate end joints for controlled random lay-up.

3.3 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged roof decking if repairs are not approved by Architect.

3.4 PROTECTION

- A. Provide water-resistive barrier over roof decking as the Work progresses to protect roof decking until roofing is applied.
- B. If, despite protection, inorganic boron (SBX)-treated roof decking becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061516

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wall and roof sheathing.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for plywood backing panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Wood-preservative-treated plywood.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

- A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- B. Factory mark panels to indicate compliance with applicable standard.

2.2 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC3b for exterior construction not in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat all plywood unless otherwise indicated.

2.3 WALL SHEATHING

- A. Plywood Panels: Either DOC PS 1 or DOC PS 2, Exterior sheathing.
 - 1. Span Rating: Not less than 24/0.
 - 2. Nominal Thickness: Not less than 1/2 inch.

2.4 ROOF SHEATHING

- A. Plywood Sheathing: Either DOC PS 1 or DOC PS 2, Exterior sheathing.
 - 1. Span Rating: Not less than 24/0.
 - 2. Nominal Thickness: Not less than 5/8 inch.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. For wood panels, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M, Type 304 stainless steel, or with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
 - 2. ICC-ES evaluation report for fastener.
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate panel installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Wall and Roof Sheathing:
 - a. Nail, screw, or staple to wood framing.
 - b. Space panels 1/8 inch apart at edges and ends.

END OF SECTION 061600

SECTION 061753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood roof trusses.

1.3 DEFINITIONS

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings: Show fabrication and installation details for trusses.
 - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
 - 2. Indicate sizes, stress grades, and species of lumber.
 - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
 - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
 - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For metal connector-plate manufacturer and fabricator.
- B. Material Certificates: For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.
- C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.
- D. Evaluation Reports: For the following, from ICC-ES:
 - 1. Metal-plate connectors.
 - 2. Metal truss accessories.

1.6 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
 - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program and complies with quality-control procedures in TPI 1.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."
 - 1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
 - 2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
 - 3. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer to design metal-plate-connected wood trusses.
- B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
 - 1. Design Loads: As indicated.
 - 2. Maximum Deflection under Design Loads:
 - a. Roof Trusses: Vertical deflection of 1/360 of span.
- C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 DIMENSION LUMBER

- A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Provide dressed lumber, S4S.
 - 3. Provide dry lumber with 15 percent maximum moisture content at time of dressing.
- B. Minimum Chord Size for Roof Trusses: Not less than 2 by 4 inches nominal for all framing members.
- C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

2.3 METAL CONNECTOR PLATES

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
 - 1. Alpine Engineered Products, Inc.; a division of ITW Building Components Group, Inc.
 - 2. Cherokee Metal Products, Inc.; Masengill Machinery Company.

3. CompuTrus, Inc.
4. Eagle Metal Products.
5. Jager Building Systems, Inc.
6. MiTek Industries, Inc.
7. Robbins Engineering, Inc.
8. Truswal Systems Corporation.

- B. Fabricate connector plates to comply with TPI 1.
- C. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.
1. Use for interior locations unless otherwise indicated.

2.4 FASTENERS

- A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
- B. Nails, Brads, and Staples: ASTM F1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
1. Cleveland Steel Specialty Co.
 2. KC Metals Products, Inc.
 3. Phoenix Metal Products, Inc.
 4. Simpson Strong-Tie Co., Inc.
 5. USP Structural Connectors.
- B. Allowable design loads, as published by manufacturer, shall comply with or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
1. Use for interior locations unless otherwise indicated.

- D. Truss Tie-Downs: Provide one of the following as recommended by engineer responsible for the design of the trusses.
 - 1. Bent strap tie for fastening roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to one side of truss, top plates, and side of stud below.
 - 2. Bent strap tie for fastening roof trusses to wall studs below, 2-1/4 inches wide by 0.062 inch thick. Tie fits over top of truss and fastens to both sides of truss, top plates, and one side of stud below.
- E. Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2 inches wide by 1 inch deep by 0.040 inch thick, made to fit between two adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

2.7 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
 - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses 24 inches o.c. maximum; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal truss tie-downs as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- H. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install bracing to comply with Section 061053 "Miscellaneous Rough Carpentry."
- I. Install wood trusses within installation tolerances in TPI 1.
- J. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- K. Replace wood trusses that are damaged or do not comply with requirements.
 - 1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.2 REPAIRS AND PROTECTION

- A. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Repair damaged galvanized coatings on exposed surfaces according to ASTM A780/A780M and manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

END OF SECTION 061753

SECTION 061800 - GLUED-LAMINATED CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural glued-laminated timber.
2. Timber connectors.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for dimension lumber items associated with structural glued-laminated timber.
2. Section 061300 "Heavy Timber Construction" for framing using timbers.
3. Section 061516 "Wood Roof Decking" for wood roof decking.

1.2 DEFINITIONS

- A. Structural Glued-Laminated (Glulam) Timber:** An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives and with the grain of the laminations approximately parallel longitudinally.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on lumber, adhesives, fabrication, and protection.
2. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
3. For connectors. Include installation instructions.

B. Shop Drawings:

1. Show layout of structural glued-laminated timber system and full dimensions of each member.
2. Indicate species and laminating combination.

1.4 INFORMATIONAL SUBMITTALS

- A. Certificates of Conformance: Issued by a qualified testing and inspecting agency indicating that structural glued-laminated timber complies with requirements in ANSI A190.1.
- B. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained.
- C. Research/Evaluation Reports: For structural glued-laminated timber and timber connectors, from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: An AITC- or APA-EWS-licensed firm.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with provisions in AITC 111.
- B. Individually wrap members using plastic-coated paper covering with water-resistant seams.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Structural glued-laminated timber and connectors are to withstand the effects of structural loads shown on Drawings without exceeding allowable design working stresses listed in ANSI 117 or determined according to ASTM D3737 and acceptable to authorities having jurisdiction.

2.2 STRUCTURAL GLUED-LAMINATED TIMBER

- A. General: Provide structural glued-laminated timber that complies with ANSI A190.1 and ANSI 117 or research/evaluation reports acceptable to authorities having jurisdiction.
 - 1. Factory mark each piece of structural glued-laminated timber with AITC Quality Mark or APA-EWS trademark. Place mark on surfaces that are not exposed in the completed Work.
 - 2. Provide structural glued-laminated timber made from single species.
 - 3. Provide structural glued-laminated timber made from solid lumber laminations; do not use laminated veneer lumber.

4. Provide structural glued-laminated timber made with wet-use adhesive complying with ANSI A190.1.
- B. Species and Grades for Structural Glued-Laminated Timber:
1. Unless otherwise noted, any species that complies with structural properties, combination symbols, and beam stress classifications indicated.
- C. Species, Grades, and Beam Classification: For beams.
1. As indicated on Drawings.
 2. Lay-up: Either balanced or unbalanced.
- D. Appearance Grade: Architectural, complying with AITC 110.
1. For Architectural appearance grades, fill voids as required by AITC 110.

2.3 PRESERVATIVE TREATMENT

- A. Preservative Treatment: Where preservative-treated structural glued-laminated timber is indicated, comply with AWWA U1, Use Category 3A.
1. Use preservative solution without water repellents or substances that might interfere with application of indicated finishes.
 2. Do not incise southern pine structural glued-laminated timber or wood used to produce structural glued-laminated timber.
- B. Preservative: One of the following:
1. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.
 2. Propiconazole tebuconazole imidacloprid (PTI) in a water emulsion.

2.4 TIMBER CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Cleveland Steel Specialty Co.
 2. Simpson Strong-Tie Co., Inc.
- B. Provide metal framing connections and anchors as indicated on the Drawings.
- C. Provide bolts, 3/4 inch unless otherwise indicated, complying with ASTM A307, Grade A; nuts complying with ASTM A563; and, where indicated, flat washers.
- D. Materials: Unless otherwise indicated, fabricate from the following materials:

1. Structural-steel shapes, plates, and flat bars complying with ASTM A36/A36M.
 2. Hot-rolled steel sheet complying with ASTM A1011/A1011M, Structural Steel, Type SS, Grade 33.
- E. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A123/A123M or ASTM A153/A153M.

2.5 MISCELLANEOUS MATERIALS

- A. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
- B. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.6 FABRICATION

- A. Shop fabricate for connections to greatest extent possible, including cutting to length and drilling bolt holes.
1. Dress exposed surfaces as needed to remove planing and surfacing marks.
- B. Camber: Fabricate horizontal and inclined members of less than 1:1 slope with either circular or parabolic camber equal to 1/500 of span.
- C. Where preservative-treated members are indicated, fabricate (cut, drill, surface, and sand) before treatment to greatest extent possible. Where fabrication must be done after treatment, apply a field-treatment preservative to comply with AWP A M4.
1. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
- D. End-Cut Sealing: Immediately after end cutting each member to final length and after preservative treatment, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.
- E. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit except for preservative-treated wood where treatment included a water repellent.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates in areas to receive structural glued-laminated timber, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Erect structural glued-laminated timber true and plumb and with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
 - 1. Handle and temporarily support glued-laminated timber to prevent surface damage, compression, and other effects that might interfere with indicated finish.
- B. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.
- C. Fit structural glued-laminated timber by cutting and restoring exposed surfaces to match specified surfacing.
 - 1. Predrill for fasteners using timber connectors as templates.
 - 2. Finish exposed surfaces to remove planing or surfacing marks and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.
 - 3. Coat cross cuts with end sealer.
 - 4. Where preservative-treated members must be cut during erection, apply a field-treatment preservative to comply with AWWA M4.
 - a. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
- D. Install timber connectors as indicated on Drawings.
 - 1. Unless otherwise indicated, install bolts with same orientation within each connection and in similar connections.
 - 2. Install bolts with orientation as indicated or, if not indicated, as directed by Architect.

3.3 ADJUSTING

- A. Repair damaged surfaces after completing erection. Replace damaged structural glued-laminated timber if repairs are not approved by Architect.

3.4 PROTECTION

- A. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose, including protection from weather, sunlight, soiling, and damage from work of other trades.
 - 1. Coordinate wrapping removal with finishing work. Retain wrapping where it can serve as a painting shield.
 - 2. Slit underside of wrapping to prevent accumulation of moisture inside the wrapping.

END OF SECTION 061800

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Extruded polystyrene foam-plastic board.
 - 2. Glass-fiber blanket.
- B. Related Requirements:
 - 1. Section 042000 "Unit Masonry" for insulation installed in masonry cells.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
 - 1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
 - 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD

- A. Extruded Polystyrene Board, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Kingspan Insulation Limited.
 - d. Owens Corning.

2.2 GLASS-FIBER BLANKET

- A. Glass-Fiber Blanket, Kraft Faced: ASTM C 665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.

2.3 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
 - 1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
 - 2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
- B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

- C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Adhesive Installation: Install with adhesive according to manufacturer's written instructions.

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. For framed wall cavities where cavity heights exceed 96 inches, support faced blankets by stapling flanges of insulation to wood framing.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Building wrap.
 - 2. Flexible flashing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.
- B. Shop Drawings: Show details of building wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dorken Systems Inc.; DELTA-VENT S

- b. Dow Chemical Company (The); Styrofoam Weathermate Plus Brand Housewrap.
 - c. DuPont de Nemours, Inc.; Tyvek CommercialWrap
 - d. Kingspan Insulation Limited; GreenGuard C2000
 - e. Ludlow Coated Products; Air Stop Housewrap
 - f. Raven Industries, Inc; Fortress Pro Weather Protective Barrier.
 - g. TYPAR; TYPAR BuildingWrap
- 2. Allowable UV Exposure Time: Not less than three months.
 - 3. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.
- B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 FLEXIBLE FLASHING

- A. Rubberized-Asphalt Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.040 inch.
- 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Advanced Building Products Inc.; Strip-N-Flash.
 - b. Carlisle Coatings & Waterproofing Inc; CCW-705-TWF Thru-Wall Flashing.
 - c. Fiberweb, Clark Hammerbeam Corp.; Aquaflash 500.
 - d. Fortifiber Building Systems Group; Fortiflash 40
 - e. GCP Applied Technologies Inc.; Vycor V40 Self-Adhered Flashing
 - f. MFM Building Products Corp.; Window Wrap.
 - g. Polyguard Products, Inc.; Polyguard JT-20 Tape
 - h. TYPAR.
 - i. Wire-Bond; Aquaflash 500 #4120.
 - 2. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.
- B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.
- C. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F 1667.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.
- B. Cover sheathing with water-resistive barrier as follows:
 - 1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
 - 2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.
- C. Building Wrap: Comply with manufacturer's written instructions and warranty requirements.
 - 1. Seal seams, edges, fasteners, and penetrations with tape.
 - 2. Extend into jambs of openings and seal corners with tape.

3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 - 1. Prime substrates as recommended by flashing manufacturer.
 - 2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
 - 3. Lap flashing over water-resistive barrier at bottom and sides of openings.
 - 4. Lap water-resistive barrier over flashing at heads of openings.
 - 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 072500

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Standing-seam metal roof panels.
- B. Related Sections:
 - 1. Section 077253 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface, allowing it to melt and drain off slowly.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
 - 1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate sizes and locations of roof penetrations.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 - 1. Wind Loads: As indicated on Drawings.
- B. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.
- C. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: Class 1A- 60.
 2. Hail Resistance: SH.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F , ambient; 180 deg F , material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

- A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.
 2. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1637.
- B. Vertical-Rib, Snap-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and snapping panels together.
1. Manufacturers: Subject to compliance with requirements, provide one of the following:
 - a. AEP Span; A BlueScope Steel Company.
 - b. Architectural Metal Systems.
 - c. ATAS International, Inc.
 - d. Berridge Manufacturing Company.
 - e. CENTRIA.
 - f. Dimensional Metals, Inc.
 - g. Fabral.
 - h. Garland Company, Inc. (The).

- i. MBCI.
 - j. McElroy Metal, Inc.
 - k. Merchant and Evans.
 - l. Metal Panel Systems, Inc.
 - m. Morin - A Kingspan Group Company.
 - n. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 0.022 inch.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Owner from manufacturer's full range.
 3. Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - a. Thickness: 0.032 inch.
 - b. Surface: Smooth, flat finish.
 - c. Exterior Finish: Two-coat fluoropolymer.
 - d. Color: As selected by Owner from manufacturer's full range.
 4. Clips: Two-piece floating to accommodate thermal movement.
 - a. Material: 0.028-inch-nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
 - b. Material: 0.0250-inch-thick, stainless steel sheet, for use with aluminum panels.
 5. Panel Coverage: Manufacturer's standard width between 12 inches and 24 inches.
 6. Panel Height: Manufacturer's standard height between 1.0 inch and 1.5 inches.

2.3 UNDERLAYMENT MATERIALS

- A. Felt Underlayment: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felts.
- B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

- A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- C. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.
- D. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- E. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- F. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components

are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

D. Aluminum Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

- A. Felt Underlayment: Apply over entire roof surface, in shingle fashion to shed water, and with lapped joints of not less than 2 inches.
- B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

- C. Flashings: Install flashings to cover underlayment to comply with manufacturer's requirements.

3.3 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 - 1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 - 2. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.

3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 4. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

- J. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.4 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113.16

SECTION 074646 - FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fiber-cement siding and soffit.
- B. Related Requirements:
 - 1. Section 072500 "Weather Barriers" for weather-resistive barriers.

1.3 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Verification: For each type, color, texture, and pattern required.
 - 1. 12-inch- long-by-actual-width Sample of siding.
 - 2. 12-inch- long-by-actual-width Sample of soffit.
 - 3. 12-inch- long-by-actual-width Samples of trim and accessories.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of fiber-cement siding and soffit.

- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.
- C. Research/Evaluation Reports: For each type of fiber-cement siding required, from ICC-ES.
- D. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish full lengths of fiber-cement siding and soffit including related accessories, in a quantity equal to 2 percent of amount installed.

1.9 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.
 - 1. Build mockup of typical wall areas, including horizontal siding and trims. Location to be selected by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials on elevated platforms, under cover, and in a dry location.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking and deforming.
 - b. Deterioration of materials beyond normal weathering.
 - 2. Warranty Period: No less than 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 FIBER-CEMENT SIDING

- A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide James Hardie Building Products, Inc.; HardiePlank Lap Siding and HardieTrim Boards or a comparable product by one of the following:
 - a. American Fiber Cement Corporation.
 - b. CertainTeed Corporation; Saint-Gobain North America.
 - c. GAF.
 - d. Nichiha Architectural Panels.
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C 1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Nominal Thickness: Not less than 5/16 inch.
- D. Horizontal Pattern: Boards 6-1/4 inches wide for 5 inches of exposure.
 - 1. Texture: Wood grain (Select Cedarmill).
- E. Factory Finishing: Manufacturer's standard multi-coat, baked on color finish (ColorPlus).
 - 1. Color: As selected by Owner from manufacturer's full range.

2.3 FIBER-CEMENT SOFFIT

- A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide James Hardie Building Products, Inc.; HardieSoffit Panels or a comparable product by one of the following:
 - a. American Fiber Cement Corporation.
 - b. CertainTeed Corporation; Saint-Gobain North America.
 - c. GAF.
 - d. Nichiha Architectural Panels.
- B. Nominal Thickness: Not less than 1/4 inch.
- C. Pattern: Unless noted otherwise, 24-inch wide sheets with woodgrain texture (Cedarmill).
 - 1. Provide perforated soffit unless otherwise indicated.
- D. Factory Finishing: Manufacturer's standard multi-coat, baked on color finish (ColorPlus).
 - 1. Color: As selected by Owner from manufacturer's full range.

2.4 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
 - 1. Color: As selected by Owner from manufacturer's full range.
- B. Trim: Provide HardieTrim Boards; 4/4 Rustic, in sizes indicated on Drawings.
 - 1. Factory Finishing: Manufacturer's standard multi-coat, baked on color finish (ColorPlus).
- C. Flashing: Provide flashing at window and door heads and where indicated.
- D. Fasteners:
 - 1. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch, or three screw-threads, into substrate.
 - 2. For fastening fiber cement, use hot-dip galvanized or stainless-steel fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement siding, soffit, and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Do not install damaged components.
 - 2. Install fasteners no more than 24 inches o.c.
- B. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646

SECTION 077253 - SNOW GUARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes (Contractor's Option):
 - 1. Rail-type, seam-mounted snow guards.
 - 2. Pad-type, seam-mounted snow guards.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.
 - 1. Include details of snow guards.
- C. Samples:
 - 1. Pad-Type Snow Guards: Full-size unit.
 - 2. Rail-Type Snow Guards: Bracket and 12-inch long rail.
 - a. For units with factory-applied finishes, submit manufacturer's standard color selections.
- D. Delegated-Design Submittal: For snow guards, include analysis reports signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Include calculation of number and location of snow guards.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that the engineer is licensed in the state in which the Project is located.
- B. Product Test Reports: For each type of snow guard, for tests performed by a qualified testing agency, indicating load at failure of attachment to roof system identical to roof system used on this Project.

1.5 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit adhesive-mounted snow guards to be installed, and adhesive cured, according to adhesive manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer to design snow guards, including attachment to roofing material and roof deck, as applicable for attachment method, based on the following:
 - 1. Roof snow load.
 - 2. Snow drifting
 - 3. Roof slope.
 - 4. Roof type.
 - 5. Roof dimensions.
 - 6. Roofing substrate type and thickness.
 - 7. Snow guard type.
 - 8. Snow guard fastening method and strength.
 - 9. Snow guard spacing.
 - 10. Coefficient of Friction Between Snow and Roof Surface: 0.
 - 11. Factor of Safety: Not less than 2.
- B. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Temperature Change: 120 deg F , ambient; 180 deg F , material surfaces.
- C. Structural Performance: Snow guards shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.

1. Snow Loads: As indicated on Drawings for conventionally framed structures.

2.2 RAIL-TYPE SNOW GUARDS

A. Rail-Type, Seam-Mounted Snow Guards:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alpine SnowGuards, a division of Vermont Slate & Copper Services, Inc.
 - b. Berger Building Products, Inc.
 - c. IceBlox Inc.
 - d. LMCurbs.
 - e. PMC Industries, Ltd.
 - f. Rocky Mountain Snow Guards, Inc.
 - g. S-5! Metal Roof Innovations, Ltd.
 - h. TRA Snow and Sun, Inc.
2. Description: Snow guard rails fabricated from metal pipes, bars, or extrusions, anchored to brackets and equipped with two rails.
3. Brackets and Baseplate: ASTM B209 aluminum; mill finished, or ASTM A240/A240M, Type 304 stainless steel; mill finished.
4. Bars: ASTM B221 aluminum; mill finish, or ASTM A240/A240M, Type 304 stainless steel; mill finish.
 - a. Profile: Round or square.
5. Seam clamps: ASTM B221 aluminum extrusion or ASTM B85/B85M aluminum casting with stainless steel set screws incorporating round nonpenetrating point; designed for use with applicable roofing system to which clamp is attached.

2.3 PAD-TYPE SNOW GUARDS

A. Seam-Mounted Metal Pad-Type Snow Guards:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alpine SnowGuards, a division of Vermont Slate & Copper Services, Inc.
 - b. Berger Building Products, Inc.
 - c. IceBlox Inc.
 - d. LMCurbs.
 - e. PMC Industries, Ltd.
 - f. Rocky Mountain Snow Guards, Inc.
 - g. S-5! Metal Roof Innovations, Ltd.
 - h. TRA Snow and Sun, Inc.

2. Material: ASTM B 26/B 26M cast aluminum; mill finish.
3. Attachment: Manufacturer's tested system, capable of resisting design loads.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.
 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install snow guards according to manufacturer's written instructions.
 1. Space rows as recommended by manufacturer/engineer, and as shown on Shop Drawings.
- B. Attachment for Standing-Seam Metal Roofing:
 1. Do not use fasteners that will penetrate metal roofing or fastening methods that void metal roofing finish warranty.
 2. Rail-Type, Seam-Mounted Snow Guards:
 - a. Install brackets to vertical ribs in straight rows.
 - b. Secure with stainless steel set screws, incorporating round nonpenetrating point, on same side of standing seam.
 - c. Torque set screw according to manufacturer's instructions.
 - d. Install cross members to brackets.
 3. Seam-Mounted, Pad-Type Snow Guards:
 - a. Install snow guards in straight rows.
 - b. Secure in place using stainless-steel set screws, incorporating round nonpenetrating point.
 - c. Torque set screw according to manufacturer's instructions.

END OF SECTION 077253

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Nonstaining silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Butyl joint sealants.
 - 5. Latex joint sealants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Adfast; Adseal 4580 series.
 - b. Dow Corning Corporation; Dow Corning 756 SMS Building Sealant or Dow Corning 795 Silicone Building Sealant.
 - c. GE Construction Sealants; Momentive Performance Materials Inc.; Silpruf NB.
 - d. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 295 FPS NB.
 - e. Pecora Corporation; Pecora 864NST, Pecora 895NST, or Pecora 898NST.
 - f. Sika Corporation; Joint Sealants; Sikasil WS-295.
 - g. Tremco Incorporated; Spectrem 2 or Spectrem 3.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation; MasterSeal CR 195, MasterSeal NP 1, or MasterSeal TX 1.

- b. Bostik, Inc; Chem-Calk 2000, Chem-Calk 900, Chem-Calk 915, Chem-Calk 916, or Chem-Calk GPS1.
 - c. ER Systems; an ITW Company; Pacific Polymers Elasto-Thane 230 MP.
 - d. Everkem Diversified Products, Inc.; AcuraSeal 50 Year Acrylic Urethane Caulk.
 - e. Pecora Corporation; Dynatrol I-XL.
 - f. Polymeric Systems, Inc; Flexiprene 1000.
 - g. Schnee-Morehead, Inc., an ITW company; Permathane SM7108.
 - h. Sherwin-Williams Company (The); Stampede-1 or Stampede-TX.
 - i. Sika Corporation; Joint Sealants; Sikaflex Textured Sealant.
 - j. Tremco Incorporated; Dymonic.
- B. Urethane, M, P, 50, T, NT: Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 50, Uses T and NT.
- 1. Products: Subject to compliance with requirements, provide the following, or another comparable product:
 - a. LymTal International Inc; Iso-Flex 888QC.
 - b. Pecora Corporation; DynaTrol II-SG.
 - c. Tremco Incorporated; Dymeric 240FC.

2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Adfast; Adseal 4800.
 - b. Dow Corning Corporation; Dow Corning 786 Silicone Sealant.
 - c. GE Construction Sealants; Momentive Performance Materials Inc.; SCS1700 Sanitary.
 - d. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 100 WF.
 - e. Pecora Corporation; Pecora 860.
 - f. Soudal USA; RTV GP.
 - g. Tremco Incorporated; Tremsil 200.

2.5 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Bostik, Inc; Chem-Calk 300.
 - b. Pecora Corporation; BC-158.
 - c. Tremco Butyl Sealant.

2.6 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Everkem Diversified Products, Inc.; SilTex 40 Siliconized Acrylic Latex Caulk.
 - b. Franklin International; Titebond Painter's Plus Caulk or Titebond UA 920 Sealant.
 - c. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex 600 or Bondaflex Sil-A 700.
 - d. Pecora Corporation; AC-20, AVW-920, or Tilt-Seal.
 - e. Sherwin-Williams Company (The); 850A Siliconized Acrylic Latex Caulk, 950A Siliconized Acrylic Latex Caulk, or PowerHouse Siliconized Acrylic Latex Sealant.
 - f. Tremco Incorporated; Tremflex 834.

2.7 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Adfast; Adseal BR 2600.
 - b. Alcot Plastics Ltd.; ALCOT Soft Type Backer Rod or ALCOT Standard Backer Rod.
 - c. BASF Corporation; MasterSeal 920 & 921(Pre-2014: Sonolastic Backer Rod).
 - d. Construction Foam Products; a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface

skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.8 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

- a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
1. Joint Locations:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 2. Joint Sealant: Urethane, M, P, 50, T, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Control and expansion joints in unit masonry.
 - b. Joints between metal panels.
 - c. Perimeter joints between materials listed above and frames of doors and windows.
 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Vertical joints on exposed surfaces of unit masonry.
 2. Joint Sealant: Urethane, S, NS, 25, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 2. Joint Sealant: Acrylic latex.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Exterior standard steel doors and frames.
- B. Related Requirements:
 - 1. Section 087111 "Door Hardware (Descriptive Specification)" for door hardware for hollow-metal doors and frames silencers.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly and thermally rated door assemblies, for tests performed by a qualified testing agency.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door; ASSA ABLOY.
 - 2. Curries Company; ASSA ABLOY.
 - 3. Deansteel Manufacturing Company, Inc.
 - 4. Fleming Door Products Ltd.; Assa Abloy Group Company.
 - 5. Gensteel Doors, Inc.
 - 6. LaForce, Inc.
 - 7. Mesker Door Inc.
 - 8. Pioneer Industries.
 - 9. Republic Doors and Frames.
 - 10. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

- A. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.40 deg Btu/F x h x sq. ft. when tested in accordance with ASTM C518.

2.3 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3; SDI A250.4, Level A.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
 - d. Edge Construction: Model 2, Seamless.
 - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
 - f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
 - g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
 - h. Core: Manufacturer's standard core.
 - 2. Frames:
 - 1. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
 - 2. Construction: Face welded.
 - 3. Exposed Finish: Prime.

2.4 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
 - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

2.6 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.7 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.8 LOUVERS

- A. Provide louvers for doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch thick, cold-rolled steel sheet set into 0.032-inch thick steel frame.
 1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
- B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

- B. Hollow-Metal Frames: Comply with SDI A250.11.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - 2. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Solidly pack mineral-fiber insulation inside frames.
 - 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
 - 5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
 - 1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.

3.3 CLEANING AND TOUCHUP

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Access doors and frames for walls and ceilings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, materials, individual components and profiles, and finishes.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Access Panel Solutions.
 - 2. Acudor Products, Inc.
 - 3. Alfab, Inc.
 - 4. Babcock-Davis.
 - 5. Broan-Nutone LLC.
 - 6. Cendrex Inc.
 - 7. Elmdor/Stoneman Manufacturing Company; a division of Acorn Engineering Company.
 - 8. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - 9. Karp Associates, Inc.
 - 10. Larsens Manufacturing Company.
 - 11. Maxam Metal Products Limited.
 - 12. Metropolitan Door Industries Corp.

13. MIFAB, Inc.
 14. Milcor; Commercial Products Group of Hart & Cooley, Inc.
 15. Nystrom, Inc.
 16. Williams Bros. Corporation of America (The).
- B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.
- C. Flush Access Doors with Exposed Flanges:
1. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
 2. Locations: As required to access concealed valves (and similar items) and attic area.
 3. Door Size: As required, if not indicated.
 4. Uncoated Steel Sheet for Door: Nominal 0.060 inch (1.52 mm), 16 gage.
 - a. Finish: Factory prime.
 5. Frame Material: Same material, thickness, and finish as door.
 6. Hinges: Manufacturer's standard.
 7. Hardware: Latch.
- D. Hardware:
1. Latch: Manufacturer's standard cam latch, slam latch, or self-latching bolt operated by screwdriver, knurled knob, hex-head wrench, pinned-hex-head wrench, spanner-head wrench, flush key, or ring turn.

2.2 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- C. Frame Anchors: Same type as door face.
- D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.3 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.
 - 1. For concealed flanges with drywall bead, provide edge trim for gypsum board securely attached to perimeter of frames.
 - 2. Provide mounting holes in frames for attachment of units to framing or masonry anchors.
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

2.4 FINISHES

- A. Steel and Metallic-Coated-Steel Finishes:
 - 1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 087111 - DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
- B. Related Requirements:
 - 1. Section 081113 "Hollow Metal Doors and Frames" for door silencers provided as part of hollow-metal frames.

1.3 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.4 PREINSTALLATION MEETINGS

- A. Keying Conference: Conduct conference at Project site.
 - 1. Conference participants shall include Installer's Architectural Hardware Consultant and Owner's security consultant.
 - 2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:
 - a. Flow of traffic and degree of security required.
 - b. Preliminary key system schematic diagram.
 - c. Address for delivery of keys.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
 - 3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Fastenings and other installation information.
 - e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - f. Mounting locations for door hardware.
 - g. List of related door devices specified in other Sections for each door and frame.
- C. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- B. Schedules: Final door hardware and keying schedule.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design".
 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

2.3 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Baldwin Hardware Corporation.
 - c. Bommer Industries, Inc.
 - d. Hager Companies.
 - e. Lawrence Hardware Inc.
 - f. McKinney Products Company; an ASSA ABLOY Group company.

- g. PBB, Inc.
- h. Stanley Commercial Hardware; a division of Stanley Security Solutions.

B. Antifriction-Bearing Hinges:

- 1. Mounting: Full mortise (butts).
- 2. Bearing Material: Manufacturer's standard antifriction bearing.
- 3. Grade 1 (heavy weight).
- 4. Base and Pin Metal:
 - a. Hinges: Stainless steel with stainless-steel pin.
- 5. Pins: Non-rising loose unless otherwise indicated.
 - a. Outswinging Exterior Doors: Nonremovable.
- 6. Tips: Flat button.
- 7. Corners: Square.

2.4 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As selected by Architect from manufacturer's full range of standard designs.
 - 2. Levers: Wrought, forged, or cast.
 - a. Construction: Solid.
 - 3. Escutcheons (Roses): Wrought, forged, or cast.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- F. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Best Access Systems; Stanley Security Solutions, Inc.
 - c. Corbin Russwin, Inc.; an ASSA ABLOY Group company.
 - d. Hager Companies.
 - e. SARGENT Manufacturing Company; ASSA ABLOY.
 - f. Yale Security Inc; an ASSA ABLOY Group company.

2.5 AUXILIARY LOCKS

- A. Mortise Auxiliary Locks: BHMA A156.36; Grade 1; with strike that suits frame.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Best Access Systems; Stanley Security Solutions, Inc.
 - c. Corbin Russwin, Inc.; an ASSA ABLOY Group company.
 - d. Hager Companies.
 - e. SARGENT Manufacturing Company; ASSA ABLOY.
 - f. Yale Security Inc; an ASSA ABLOY Group company.
2. Backset: 2-3/4 inches (70 mm).
3. Material: Stainless steel.
4. Deadlocks: Deadbolt operated by key outside.

2.6 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Adams Rite Manufacturing Co; an ASSA ABLOY Group company.
 - b. Allegion plc.
 - c. Burns Manufacturing Incorporated.
 - d. Don-Jo Mfg., Inc.
 - e. Door Controls International, Inc.
 - f. Hiawatha, Inc; a division of the Activar Construction Products Group.
 - g. INOX by Unison Hardware, Inc.
 - h. Trimco.

- B. Manual-Extension Flush Bolts: Grade 1, fabricated from extruded brass or aluminum, with 12-inch rod actuated by flat lever.
 - 1. Strike: Dustproof.
- C. Dustproof Strikes: Grade 1, polished wrought brass, with 3/4-inch- diameter, spring-tension plunger.

2.7 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Best Access Systems; Stanley Security Solutions, Inc.
 - c. Corbin Russwin, Inc.; an ASSA ABLOY Group company.
 - d. SARGENT Manufacturing Company; ASSA ABLOY.
 - e. Yale Security Inc; an ASSA ABLOY Group company.
- B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.
 - 1. Core Type: Full size; interchangeable.
 - 2. Number of Pins: Six or seven.
 - 3. Lock Type: Mortise, rim, and bored lock types.
- C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 5 construction master keys.

2.8 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
 - 1. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.
 - a. Provide three cylinder change keys and five each of master and grand master keys.
 - 2. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Nickel silver or brass.

2.9 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; stainless steel.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Burns Manufacturing Incorporated.
 - c. Don-Jo Mfg., Inc.
 - d. Forms+Surfaces.
 - e. Hager Companies.
 - f. Hiawatha, Inc; a division of the Activar Construction Products Group.
 - g. INOX by Unison Hardware, Inc.
 - h. Rockwood Manufacturing Company; an ASSA ABLOY Group company.
 - i. Trimco.
- B. Flat Push Plates: With square corners and beveled edges; secured with exposed screws.
 - 1. Thickness: 0.050 inch (1.3 mm).
 - 2. Size: 4 inches wide by 16 inches high (102 mm wide by 406 mm high).
- C. Straight Door Pulls:
 - 1. Type: 3/4-inch (19-mm) constant-diameter pull.
 - 2. Mounting: Surface applied with concealed fasteners or through bolted with oval-head machine screws and countersunk washers (cover with push plate).
 - 3. Minimum Clearance: 1-1/2 inches (38 mm) from face of door.
 - 4. Overall Length: 9 inches (229 mm).

2.10 ACCESSORIES FOR PAIRS OF DOORS

- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release.
- B. Flat Overlapping Astragals: BHMA A156.22; flat aluminum or stainless-steel metal bar, surface mounted on face of door with screws; minimum 1/8 inch thick by 2 inches wide by full height of door.

2.11 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of

door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

- B. Closers shall not be seen on the public side or hallway side of the door. The appropriate drop plate or mounting plates will be used as conditions dictate.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Corbin Russwin, Inc.; an ASSA ABLOY Group company.
 - c. DORMA USA, Inc.
 - d. Hager Companies.
 - e. Norton Door Controls; an ASSA ABLOY Group company.
 - f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - g. SARGENT Manufacturing Company; ASSA ABLOY.
 - h. Yale Security Inc; an ASSA ABLOY Group company.
- C. Surface Closer with Cover: Grade 1; Modern type with mechanism enclosed in cover.
 - 1. Mounting: Hinge side; parallel arm where required.
 - 2. Type: Regular arm with dead stop where required.
 - 3. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.
 - 4. Cover Material: Aluminum or molded plastic.
 - 5. Closing Power Adjustment: At least 35 percent more than minimum tested value.

2.12 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hager Companies.
 - b. M-D Building Products, Inc.
 - c. National Guard Products, Inc.
 - d. Pemko Manufacturing Co.
 - e. Reese Enterprises, Inc.
 - f. Sealeze.
 - g. Zero International, Inc.
- B. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg, as follows:
 - 1. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.

- C. Rigid, Housed, Perimeter Gasketing: Sponge silicone, sponge neoprene, silicone bulb, polyurethane bulb, or vinyl bulb gasket material held in place by housing; fastened to frame stop with screws.
 - 1. Housing Material: Aluminum or stainless steel.
- D. Door Sweeps: Neoprene, vinyl, polyurethane, or silicone gasket material held in place by flat housing or flange; surface mounted to face of door with screws.
 - 1. Housing or Flange Material: Aluminum or stainless steel.

2.13 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hager Companies.
 - b. M-D Building Products, Inc.
 - c. National Guard Products, Inc.
 - d. Pemko Manufacturing Co.
 - e. Reese Enterprises, Inc.
 - f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - g. Sealeze.
 - h. Zero International, Inc.
- B. Saddle Thresholds:
 - 1. Type: Smooth or fluted top, barrier free.
 - 2. Base Metal: Aluminum or stainless steel.

2.14 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Burns Manufacturing Incorporated.
 - c. Don-Jo Mfg., Inc.
 - d. Hager Companies.
 - e. Hiawatha, Inc; a division of the Activar Construction Products Group.
 - f. Inpro Corporation.

- g. Pawling Corporation.
- h. Rockwood Manufacturing Company; an ASSA ABLOY Group company.
- i. Trimco.

B. Kick Plates: 8 inches high by door width with allowance for frame stops.

2.15 AUXILIARY DOOR HARDWARE

- A. Auxiliary Hardware: BHMA A156.16.
- B. Silencers for Metal Door Frames: Grade 1; neoprene or rubber; minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

2.16 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
 - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 - 2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 - 3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.17 FINISHES

- A. Provide finishes complying with BHMA A156.18. Unless otherwise noted, provide stainless steel (630).
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 1. Replace construction cores with permanent cores as indicated in keying schedule.
- E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- F. Perimeter Gasketing: Apply to head, jamb, and meeting stiles forming seal between door and frame.
 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- G. Door Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Owner may engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DEMONSTRATION

- A. Engage Installer to train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

END OF SECTION 087111

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for steel unless otherwise indicated.
 - 2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ClarkDietrich.
 - b. Jaimes Industries.
 - c. MarinoWARE.
 - d. MRI Steel Framing, LLC.
 - e. SCAFCO Steel Stud Company.
 - f. Steel Construction Systems.

2. Minimum Base-Steel Thickness: 0.032 inches (33 mil/20 gauge).
3. Depth: 7/8 inch.

2.2 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Direct Furring:
 1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- C. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION 092216

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Steel and iron.
 - 2. Galvanized metal.
 - 3. Wood.

1.3 DEFINITIONS

- A. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Behr Paint Company; Behr Process Corporation.
 - 2. Benjamin Moore & Co.
 - 3. California Paints.
 - 4. Coronado Paint; Benjamin Moore & Co.
 - 5. Kelly-Moore Paint Company Inc.
 - 6. PPG Paints.
 - 7. Pratt & Lambert.
 - 8. Sherwin-Williams Company (The).
 - 9. Valspar Corporation (The).

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As selected by Owner from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

- D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- E. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
 - 2. Sand surfaces that will be exposed to view, and dust off.
 - 3. Prime edges, ends, faces, undersides, and backsides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Steel and Iron Substrates:
 - 1. Quick-Dry Enamel System:
 - a. Prime Coat: Primer, alkyd, quick dry, for metal.
 - b. Intermediate Coat: Alkyd, quick dry, matching topcoat.
 - c. Topcoat: Alkyd, quick dry, semi-gloss (Gloss Level 5).
- B. Galvanized-Metal Substrates:
 - 1. Latex System:
 - a. Prime Coat: Primer, galvanized, cementitious or water based.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Topcoat: Latex, exterior, semi-gloss (Gloss Level 5).
- C. Wood Substrates:
 - 1. Latex System:
 - a. Prime Coat: Primer, latex for exterior wood.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5).

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete masonry units (CMUs).
 - 2. Steel and iron.
 - 3. Galvanized metal.
 - 4. Wood.

1.3 DEFINITIONS

- A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Behr Paint Company; Behr Process Corporation.
 - 2. Benjamin Moore & Co.
 - 3. California Paints.
 - 4. Coronado Paint; Benjamin Moore & Co.
 - 5. Kelly-Moore Paint Company Inc.
 - 6. PPG Paints.
 - 7. Pratt & Lambert.
 - 8. Sherwin-Williams Company (The).
 - 9. Valspar Corporation (The).

2.2 PAINT, GENERAL

- A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As selected by Owner from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Masonry (Clay and CMUs): 12 percent.
 2. Wood: 15 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Wood Substrates:
1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations.
1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner reserves the right to engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. CMU Substrates:
 - 1. Epoxy System:
 - a. Block Filler: Block filler, epoxy.
 - b. Intermediate Coat: Epoxy, matching topcoat.
 - c. Topcoat: Epoxy, semi-gloss (Gloss Level 5).
- B. Steel Substrates:
 - 1. Latex System, Alkyd Primer:
 - a. Prime Coat: Primer, alkyd, quick dry, for metal.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, semi-gloss (Gloss Level 5).

C. Galvanized-Metal Substrates:

1. Latex System:

- a. Prime Coat: Primer, galvanized, cementitious.
- b. Intermediate Coat: Latex, interior, matching topcoat.
- c. Topcoat: Latex, interior, semi-gloss (Gloss Level 5).

D. Wood Substrates:

1. Latex System:

- a. Prime Coat: Primer, latex, for interior wood.
- b. Intermediate Coat: Latex, interior, matching topcoat.
- c. Topcoat: Latex, interior, semi-gloss (Gloss Level 5).

END OF SECTION 099123

SECTION 099300 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Primers
2. Wood stains.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.
2. Include preparation requirements and application instructions.
3. Indicate VOC content.

B. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

C. Samples for Verification: Sample for each type of finish system and in each color and gloss of finish required on representative samples of actual wood substrates.

1. Size: 8 inches square or 8 inches long.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. of each material and color applied.

1.4 MOCKUPS

- A. Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 10 sq. ft.
 - 2. Final approval of stain color selections will be based on mockups.
 - a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures of less than 5 deg F above the dew point, or to damp or wet surfaces.
- C. Do not apply exterior finishes in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Behr Paint Company; Behr Process Corporation.
2. Benjamin Moore & Co.
3. Coronado Paint; Benjamin Moore & Co.
4. PPG Paints.
5. Pratt & Lambert.
6. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
7. Sherwin-Williams Company (The).

2.2 SOURCE LIMITATIONS

- A. Source Limitations: Obtain each coating product from single source from single manufacturer.

2.3 MATERIALS, GENERAL

- A. Material Compatibility:
 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
- B. Stain Colors: As selected by Architect from manufacturer's full range.

2.4 WOOD STAINS

- A. Stain, Exterior, Solvent Based, Semitransparent: Solvent-based, oil or oil/alkyd, semitransparent, pigmented stain for new wood surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.
 1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
- B. Exterior Wood Substrates:
 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Prime edges, ends, faces, undersides, and backsides of wood.
 3. Countersink steel nails, if used, and fill with putty or plastic wood filler tinted to final color. Sand smooth when dried.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions.
 1. Use applicators and techniques suited for finish and substrate indicated.
 2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
 3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 EXTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood Substrates, Exposed Framing:
 - 1. Semitransparent Stain System:
 - a. Prime Coat: Stain, exterior, solvent based, semitransparent, matching topcoat.
 - b. Topcoat: Stain, exterior, solvent based, semitransparent.

END OF SECTION 099300

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available typestyles and graphic symbols.
- D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
 - 1. Room-Identification Signs: Full-size Sample.
 - 2. Full-size Samples, if approved, will be returned to Contractor for use in Project.
- E. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer of products or an entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify locations of anchorage devices, if provided, embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Signs: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACE Sign Systems, Inc.
 - b. Advance Corporation.
 - c. Allen Industries Architectural Signage.
 - d. APCO Graphics, Inc.
 - e. ASE, Inc.
 - f. ASI Sign Systems, Inc.
 - g. Best Sign Systems, Inc.
 - h. Clarke Systems.
 - i. Cosco.
 - j. Diskey Architectural Signage Inc.
 - k. Inpro Corporation.
 - l. Mohawk Sign Systems.
 - m. Nelson-Harkins Industries.
 - n. Poblocki Sign Company, LLC.
 - o. Seton Identification Products.
 - p. Signature Signs, Inc.
 - q. Signs & Decal Corp.
 - r. Stamprite Supersine; a division of Stamp Rite Inc.
 - s. Vista System.
 - t. Vomar Products, Inc.
 2. Laminated-Sheet Sign: Photopolymer or sandblasted polymer face sheet with raised graphics laminated over subsurface graphics to acrylic backing sheet to produce composite sheet.
 - a. Composite-Sheet Thickness: Manufacturer's standard for size of sign, but not less than 0.125 inch.
 - b. Surface-Applied Graphics: Applied vinyl film.
 - c. Subsurface Graphics: Reverse halftone, dot-screen image, or etch image.
 - d. Color(s): As selected by Architect.
 3. Sign-Panel Perimeter: Finish edges smooth.
 - a. Edge Condition: Square cut.
 - b. Corner Condition in Elevation: Square.
 4. Mounting: Manufacturer's standard method for substrates indicated. Surface mounted to wall with two-face tape, hook-and-loop tape, or magnetic tape.
 5. Text and Typeface: Accessible raised characters and Braille as selected by Building Operator from manufacturer's full range and variable content as

scheduled. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 SIGN MATERIALS

- A. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- B. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters or images as indicated on Drawings.
- C. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.
- C. Hook-and-Loop Tape: Manufacturer's standard two-part tape consisting of hooked part on sign back and looped side on mounting surface.
- D. Magnetic Tape: Manufacturer's standard magnetic tape with adhesive on one side.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

- B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.
- C. Subsurface-Etched Graphics: Reverse etch back face of clear face-sheet material. Fill resulting copy with manufacturer's standard enamel. Apply opaque manufacturer's standard background color coating over enamel-filled copy.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls and according to the accessibility standard.
- C. Mounting Methods:
 - 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
 - 2. Hook-and-Loop Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply sign component of two-part tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage; push to engage tape adhesive. Keep tape strips 0.250 inch away from edges to prevent visibility at sign edges when sign is initially installed or reinstalled. Apply

substrate component of tape to substrate in locations aligning with tape on back of sign; push and rub well to fully engage tape adhesive to substrate.

3. Magnetic Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423.16

SECTION 102113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid-plastic toilet compartments configured as toilet enclosures and urinal screens.
- B. Related Requirements:
 - 1. Section 102800 "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories mounted on toilet compartments.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.
- B. Shop Drawings: For toilet compartments.
 - 1. Include plans, elevations, sections, details, and attachment details.
 - 2. Show locations of centerlines of toilet fixtures.
 - 3. Show locations of floor drains.
- C. Samples for Initial Selection: For each type of toilet compartment material indicated.
 - 1. Include Samples of hardware and accessories involving material and color selection.
- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for toilet compartments, prepared on 6-inch- square Samples of same thickness and material indicated for Work.
- E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of toilet compartment.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Accurate Partitions Corp., an ASI Group Company.
 2. AJW Architectural Products.
 3. Ampco by AJW.
 4. Bradley Corporation.
 5. General Partitions Mfg. Corp.
 6. Global Partitions Corp., an ASI Group Company.
 7. Hadrian Manufacturing Inc.
 8. Marlite.
 9. Scranton Products.

10. Weis-Robart Partitions, Inc.
 - B. Toilet-Enclosure Style: Overhead braced.
 - C. Urinal-Screen Style: Wall hung in length required to obstruct line of sight to urinal.
 - D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges and with homogenous color and pattern throughout thickness of material.
 1. Color and Texture: One color and texture in each room. Provide basis of design product in colors and textures indicated by toilet compartment manufacturer's designations on Drawings, or as selected by Architect from manufacturer's full range of options.
 - E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.
 - F. Brackets (Fittings):
 1. Full-Height (Continuous) Type: Manufacturer's standard design; extruded aluminum or stainless steel.

2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.
 1. Hinges: Manufacturer's minimum 0.062-inch- thick stainless-steel continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door. Mount with through-bolts.
 2. Latch and Keeper: Manufacturer's heavy-duty surface-mounted cast-stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
 3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless-steel hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount with through-bolts.
 4. Door Pull: Manufacturer's heavy-duty cast-stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221.
- C. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless-Steel Castings: ASTM A 743/A 743M.

2.5 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- wide, in-swinging doors for standard toilet compartments and 36-inch- wide, out-swinging doors with a minimum 32-inch- wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch.
 - b. Panels and Walls: 1 inch.
 - 2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
 - a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113.19

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Public-use washroom accessories.
 2. Child care accessories.
 3. Underlavatory guards.
 4. Custodial accessories.

1.2 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 3. Include electrical characteristics.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
1. Identify locations using room designations indicated.
 2. Identify accessories using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, visible silver spoilage defects.
 - 2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS**2.1 PERFORMANCE REQUIREMENTS**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 MANUFACTURERS

- A. Manufacturers: Provide basis of design accessories as indicated on Drawings, or a comparable product by one of the following:
 - a. American Specialties, Inc.
 - b. Bobrick Washroom Equipment, Inc.
 - c. Bradley Corporation.

2.3 PUBLIC-USE WASHROOM ACCESSORIES

- A. Source Limitations: Obtain each type of public-use washroom accessory from single source from single manufacturer.
- B. Toilet Tissue (Roll) Dispenser (TTD):
 - 1. Description: Double-roll dispenser.
 - 2. Mounting: Surface mounted.
 - 3. Operation: Noncontrol delivery with standard spindle.
 - 4. Capacity: Designed for 5-inch diameter tissue rolls.
 - 5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
- C. Automatic Paper Towel (Roll) Dispenser (PTD):

1. Description: Automatic motion sensing mechanism with user-adjustable delay and paper towel length; battery powered.
 2. Mounting: Surface mounted.
 3. Minimum Capacity: 8-inch- wide, 800-foot- long roll.
 4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
 5. Lockset: Tumbler type.
- D. Waste Receptacle (WR):
1. Mounting: Surface mounted.
 2. Minimum Capacity: 20 gallons.
 3. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
 4. Liner: Reusable vinyl liner.
- E. Automatic Soap Dispenser (SD):
1. Description: Automatic dispenser with infrared sensor to detect presence of hands; battery powered; designed for dispensing soap in liquid or lotion form.
 2. Mounting: Surface mounted.
 3. Capacity: 30 oz..
 4. Materials: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
 5. Refill Indicator: Window type.
 6. Low Battery Indicator: LED indicator.
- F. Grab Bar (GB):
1. Mounting: Flanges with concealed fasteners.
 2. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin).
 3. Outside Diameter: 1-1/2 inches.
 4. Configuration and Length: Straight, lengths as indicated on Drawings.
- G. Feminine Napkin Disposal Unit (FND):
1. Mounting: Surface mounted.
 2. Door or Cover: Self-closing, disposal-opening cover.
 3. Receptacle Liner: Disposable paper liners.
 4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
- H. Mirror Unit (MR):
1. Frame: Stainless steel channel frame.
 - a. Corners: Welded and ground smooth.
 2. Size: 24 by 36 inches, unless otherwise noted.

3. Hangers: Manufacturer's standard rigid, tamper and theft resistant.

2.4 ADULT AND CHILDCARE ACCESSORIES

A. Baby-Changing Station (CS):

1. Description: Horizontal unit that opens by folding down from stored position.
 - a. Engineered to support minimum of 500-lb static load when opened.
2. Mounting: Surface Mounted.
3. Operation: By pneumatic shock-absorbing mechanism. Height adjustment controls are electrically operated.
4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin), exterior shell; HDPE interior in manufacturer's standard color.

2.5 UNDERLAVATORY GUARDS

A. Underlavatory Guard:

1. Manufacturers: Subject to compliance with requirements, provide one of the following:
 - a. Buckaroos, Inc.
 - b. Plumberex Specialty Products, Inc.
 - c. Truebro by IPS Corporation.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

2.6 CUSTODIAL ACCESSORIES

A. Custodial Mop and Broom Holder (MBH):

1. Description: Unit with holders.
2. Length: 36 inches.
3. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.7 MATERIALS

- ### **A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch- minimum nominal thickness unless otherwise indicated.**

- B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch- minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.
- G. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.8 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 - 1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

- B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers, and mounting brackets for fire extinguishers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher.
- B. Product Schedule: For fire extinguishers.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
 - b. Faulty operation of valves or release levers.
2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet indicated.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated; Tyco International.
 - c. Babcock-Davis.
 - d. Badger Fire Protection.
 - e. Buckeye Fire Equipment Company.
 - f. Fire End & Croker Corporation.
 - g. Guardian Fire Equipment, Inc.
 - h. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - i. Kidde Residential and Commercial Division.
 - j. Larsens Manufacturing Company.
 - k. MOON American.
 - l. Nystrom, Inc.
 - m. Oval Fire Products Corporation.
 - n. Potter Roemer LLC.
 - o. Pyro-Chem; Tyco Fire Suppression & Building Products.
 - p. Strike First Corporation of America (The).
 2. Valves: Manufacturer's standard.
 3. Handles and Levers: Manufacturer's standard.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.
- B. Multipurpose Dry-Chemical Type in Aluminum Container: UL-rated 2-A:10-B:C, 5-lb (2.3-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-aluminum container.

2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.
1. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.
- B. Identification: If required, lettering complying with Owner's requests for letter style, size, spacing, and location.
1. If required, identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
 - a. Orientation: As directed by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers in locations indicated and in compliance with requirements of authorities having jurisdiction.
1. Mounting Brackets: Top of fire extinguisher to be at 42 inches (1067 mm) above finished floor.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

SECTION 116800 – PLAYGROUND EQUIPMENT

PART 1 - GENERAL

A. DESCRIPTION:

1. Work included: Provide playground equipment as indicated on the drawings, including but not limited to the following:
 - a. Play Structures and Apparatus

B. QUALITY ASSURANCE

1. Manufacturer's Qualifications: Provide playground equipment and manufactured by a firm with a minimum of 10 years experience in manufacturing equipment that is similar to that indicated and that has a record of successful performance.
2. Installer Qualifications:
 - a. The contractor shall have a minimum of five (5) years experience related to the work indicated by these specifications. Submit a list of a minimum of five (5) projects attached to the bid, along with project amounts, names and telephone numbers of Owner's Representative.
 - b. Contractor is to be a certified installer of product specified.\
 - c. Engage an experienced installer who is approved by manufacturer for both installation and service of the type of equipment required for this Project.
 - d. Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and material manufacturer's recommended methods of installation and who shall direct all work performed under this section.
 - e. Installer shall be certified by the manufacturer for their playground equipment installation.
 - f. All crew leaders shall be Certified Playground Safety Inspectors.
3. All products, equipment and installation shall meet the standards of U.S. Consumer Products Safety Commission, Handbook for Public Playground Safety and ASTM 1487-07a-e1 Standards. All manufacturer's product data shall indicate compliance with these requirements.
4. Manufacturer shall be ISO 9001/2008 certified.
5. Manufacturer shall show IPEMA certification of compliance for each component that the product conforms with the requirements of ASTM F1487-07ae1.
6. All equipment shall be manufactured from one source, including all accessories, fittings and fastenings.

7. Design Concept: The drawings indicate the size, profiles and dimensional requirements of the playground equipment required and are based on the specific type indicated. Equipment by other manufacturers may be considered provided deviations in dimensions and profiles are minor and are submitted for approval to the Project Architect a minimum of 5 days prior to bid date, and do not change the design concept as judged by the Project Architect. The burden of proof of equality is on the proposer.

C. SUBMITTALS:

1. Submit manufacturer's product data and installation for approval by the Project Architect prior to fabrication. Submit shop drawings and product data showing exact types of equipment, configurations and colors as indicated on drawings and specified. Colors shall be selected by the Project Architect.

D. PRODUCT HANDLING:

1. Materials shall be packed, loaded, shipped, unloaded, stored and protected in a manner which will avoid abuse, damage and defacement.

PART 2 - PRODUCTS

A. MATERIALS:

1. Playground equipment basis of design complying with the project requirements shall be manufactured by PlayWorld Systems or Owner approved equal.
2. Playground Equipment – General System Specifications
 - a. The uprights shall be factory drilled to ensure accurate placement of components and ease of installation. Field drilling and measuring are not required. All uprights shall receive factory installed aluminum post caps and shall be shipped with a factory applied label indicating proper surfacing level.
 - b. Steel Tubing: All tubing used to manufacture components shall be an electrical resistance welded, cold rolled, high strength steel tubing. The exterior coating will consist of an in line hot-dipped uniform zinc galvanizing, chromate conversion, and acrylic over-coating. The interior coating will consist of a special organic acrylic modified polyester.
 - c. Powder Coat Finish: Shall be an electrostatically applied custom formula of TGIC polyester powder. All components will be free of sharp edges and excess weld spatter and shall be cleaned in a six stage bath system with an iron phosphate wash, as a rust inhibitor, and a sealer to prevent flash rusting before coating. In addition, all welds shall be protectively coated with ZRP, a zinc rich primer that forms a rust-resistant barrier layer over each weld prior to application of the powder coating. The powder coating shall have a super tough finish with maximum exterior durability and will have superior adhesion characteristics.
 - d. Hardware: All nuts, bolts, screws, inserts, and lockwashers used in the assembly of all play equipment, shall be stainless steel, yellow dichromate plated steel, blue-

- coat plated steel, mechanically galvanized or powder coated/yellow dichromate plated steel. All primary fasteners shall be 300 series stainless steel.
- e. Rotomolded Pieces: Shall be manufactured from linear low-density polyethylene material. Polyethylene shall be linear low-density material with UV stabilized color and an anti-static compound additive.
 - g. All decks and components shall connect to support posts by means of a through-bolt connection for strong, durable connections. Deck/Collar attachments shall not be acceptable.
3. Play Structure - Provide equipment type and configuration as shown on drawings or the approved equivalent.
 4. Concrete – Refer to Section 03 30 00 – Concrete Work.
 5. Model names and numbers indicated on equipment schedule on drawings referring to a specific manufacturer are included for comparison purposes only. Equivalent products, meeting project requirements shall be judged by comparison with these products for approval by the Project Architect.
 6. List specific equipment and detailed characteristics.
 - a. Playground Equipment
 1. Manufacturer: Playworld Systems or Owner approved equal
 2. Models:
 - a. Challenger product #: 350-1734
 - b. ZoomTrax with Disc Seat, Product #: ZZXX1138
 - c. Community Corner, Product #: 500-2306
 - d. Unity – SpinR, Product #: ZZXX0349
 - e. Unity Basket Swing, Product # 350-Basket
 3. Colors: Standard colors to be selected by the Owner
 4. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790

PART 3 - EXECUTION

A. INSTALLATION

1. Comply with the manufacturer's written instructions and as indicated on the drawings and these specifications. All products and equipment shall be installed to comply with referenced safety standards and all applicable codes and regulations.
2. Community Participation: There will be community group volunteers participating with the installation of the play equipment. A certified playground installer shall act as the supervisor and is required to be on site to direct volunteers with the daily activities.
3. Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.. Anchor vertical frames in excavation minimum four foot below grade to a depth and diameter indicated by manufacturer's instructions. Set posts in concrete.

4. Post Set with Concrete Footing. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
5. Embedded Items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
6. Install all equipment plumb, level and secure. Adjust hardware and moving parts; test for proper operation and lubricate where necessary.

B. FIELD QUALITY CONTROL

1. Manufacturer's Field Service: Engage a factory-authorized service representative to supervise community group volunteers, inspect components, assemblies, and equipment installations, including connections.
2. Inspections: For playground equipment and components at final completion and to certify compliance with ASTM F 1487 and CPSC No. 325.

C. PROTECTION:

Protect furnishings from other construction related activity. Wrap with plastic to protect finish.

D. CLEAN-UP:

1. Upon completion of the work all excess materials and debris which has not previously been cleaned up shall be removed from the site or disposed of as directed by the Architect.
2. Protect work and materials from damage due to operations by other contractors, trades and trespassers. Maintain protection during installation and maintenance periods.
 - a. Treat, repair or replace damaged work as directed.

E. WARRANTY:

1. Playground Equipment Warranty. Manufacturer shall offer the following warranties on the materials and components of its system:
 - a. Playground equipment uprights, hardware, and bolting system shall be guaranteed against structural failure/defects under normal use and service, for the lifetime of the structure. Such warranty shall cover the material replacement of the equipment.
 - b. Playground equipment slides and other rotationally molded parts shall be guaranteed against breakage and splitting for 15 years.
 - c. Metal decks, pipes, rails, loops and ladders shall be warranted against structural failure for a minimum of 15 years.

END OF SECTION 116800

SECTION 129300 - SITE FURNISHINGS

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 work of this section.

1.2 SUMMARY

- A. Extent and location of the site furnishings are shown on the drawings.
 - 1. Pickleball posts and nets
 - 2. Basketball Pole
 - 3. Bench Swings -N.I.C.
 - 4. Benches -N.I.C.
 - 5. Dog waste stations
 - 6. Waste receptacles
 - 7. Archway Sign -N.I.C.
 - 8. Cantilevered Pergola -N.I.C.
 - 9. Waste receptacles
 - 10. Signage -N.I.C.
 - 11. Bicycle repair station -N.I.C.
 - 12. Outdoor Exercise equipment -N.I.C.
 - 13. Splash Pad

1.3 QUALITY ASSURANCE

- A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.
 - 1. Manufacturing Standards: Provide site furnishings as complete units produced by a single manufacturer, including any appurtenances.
 - 2. ODOT Item 499 Concrete, General
 - 3. ODOT Item 511 Concrete for Structures

1.4 JOB CONDITIONS

- A. Delivery, storage, and handling.
 - 1. Handle and store to prevent damage, or soiling, or breakage.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Subject to compliance with requirements, furnish products of the following or approved equal equipment:
1. Pickleball posts and net
 - a. Manufacturer: Vermont
 - b. Model: Square pickleball posts and net package with flip top steel ground sockets, brass winder, heavy duty 22' x 3' net twisted 2.5mm twisted HDPP twine, # TN50335.
 - c. Color: Black powder coated square steel posts
 - d. Supplier: Vermont Sports 866-861-9095
 2. Basketball pole
 - a. Manufacturer: Bison
 - b. Model: Original Ultimate Playground Basketball System with 42"x60" steel backboard, model # BA871-BK
 - c. Supplier: DWA Recreation, Inc. 800-762-7936.
 3. Bench Swing and Frame
 - a. Manufacturer: Landscape Forms
 - b. Model: SF5567-001: Custom U-Frame Structure - powder coated steel and stainless steel hardware
 - c. Model: SF5567-002: Parc-View Swing powder coated steel supports, seat slats, and swing arms,
 - d. Color: TBD, custom swing limiter, and stainless steel hardware
 - e. Color: Green or black as approved by Owner.
 - f. Supplier: Landscape Forms 800-521-2546.
 4. Benches
 - a. Manufacturer: Uline
 - b. Model: Plaza Bench H-4337C, 6' Metal Frame backed bench 70.50 in., cast aluminum ends and legs and side arms with recycled plastic planks.
 - c. Color: Frame to be powder coated black with Cedar resinwood seat and back.
 - d. Supplier: Uline 800-295-5510.
 5. Dog Waste Station
 - a. Manufacturer: Dog-On-It Parks
 - b. Model: Complete dog waste station, single pull, model 7408S7408S
 - c. Colors: Black as approved by the Owner
 - d. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790
 6. Waste Receptacle
 - a. Manufacturer: Wabash Valley
 - b. Model: Walden WDTR-32-P with dome lid
 - c. Colors: Black powder coat as approved by the Owner
 - d. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790
 7. Archway Sign

- a. Manufacturer: Coverwork Recreational Architecture
 - b. Model: Steelworx Custom premanufactured 13'-8" tall x 10' wide Archway Sign.
 - c. Colors: Black and green powder coat as approved by the Owner
 - d. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790
8. Cantilevered Pergola
- a. Manufacturer: Coverwork Recreational Architecture
 - b. Model: Steelworx Radius Cantilevered Pergola 8'x16'.
 - c. Colors: Burgandy/Tan/ Brown (Tan lettering)
 - d. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790
9. Main Park Sign (Monument Sign)
- a. Manufacturer: VackerSign 877-487-3101
 - b. Model: Routed bi-color ¾" thick HDPE park entrance sign, standard shape 9, lettering and one (1) logo insert.
 - c. Colors: Burgandy background, tan border and white lettering as approved by the Owner
 - d. Supplier: VackerSign 877-487-3101
10. Bike Repair Station:
- a. Manufacturer: Dero
 - b. Model: 1 Bike Fixit Plus repair station
 - c. Color: Powdered coated black finish
 - d. Supplier: Dero 800-295-5510.
11. Outdoor Exercise equipment
- a. Manufacturer: Greenfields Outdoor Fitness 888-315-9037.
 - b. Models: (1) Elliptical cross trainer, SHP503; (2) 2-person accessible chest press SGR048AW; (3) Leg Extension & Curl UBX298
 - c. Color: Powdered coated black finish
 - d. Supplier: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790
12. Splash Pad
- a. Manufacturer: Aquatix.
 - b. Models: 1195542-02-01
 - c. Color: Standard powdered coated and stainless steel, Owner to approve colors
 - d. Supplier: Penchura, 330-842-0133
13. LWCF Sign
- a. Manufacturer: ODNR.
- The contractor shall purchase the acknowledgment sign from ODNR. The price per sign is \$100.00 (includes shipping and handling) and can be ordered by e-mailing timothy.robinson@dnr.ohio.gov. Please provide your project number, 39-01541, the number of signs needed (one is usually sufficient), mailing address (no PO boxes), contact name and phone number. Sign(s) will be sent to you with an invoice

requesting payment upon receipt. Signs are made of recycled plastic, measure 13.5 X 15.5 inches per detail.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install as per manufacturer specifications and Contract Documents.
 - 1. Installation is to include any saw-cutting of existing pavements, footers, excavating for footers, and all appurtenances required to install site furnishings as per manufacturer's specifications and Contract Documents.
 - 2. Locate and layout all site furnishings and obtain Architect's or Owner's acceptance prior to installation.
 - 3. Submit product shop drawings and color choices to Owner for approval prior to ordering furnishings.
 - 4. Furnishing Installation
 - a. Pole footers are to be a minimum of 48" deep and 24" in diameter. Concrete is to be as per ODOT Item 499.
 - b. Post footers are to be a minimum of 42" deep and 24"-30" in diameter. Concrete is to be as per ODOT Item 499.
- B. Furnishing installation
 - 1. Waste Receptacle, Dog Waste Station and Signage:
 - 1) To be installed with concrete footer a minimum of 36" deep and 12" in diameter. Concrete is to be as per ODOT Item 499.
 - 2. Bench, bike rack and bike repair station:
 - 1) Assemble and surface mount to walk with manufacturer specified anchors.
 - 3. Monument Sign
 - 1) Contractor to coordinate sign fabrication with sign supplier and provide proof for Owner approval prior to manufacturing.
 - 2) Install sign to column with aluminum brackets on to 2"x" embedded galvanized steel post per manufacturer's specifications and detail.
 - 4. Archway Sign and Curved Metal Arbor
 - 1) Contractor to provide and submit final stamped engineered drawings with structure, footers and design calculations from the manufacturer to the Township for review and permit. Contractor shall be responsible for all review and permit fees.
 - 2) Install post footers per manufacturer's specifications.
 - 3) Assemble arbor complete per manufacturer's drawings and specifications.

5. Splash Pad

- 1) Contractor to obtain final stamped shop drawings from the manufacturer
- 2) Install pad and post footers per manufacturer's specifications
- 3) Piping installation to be coordinated with the restroom contractor for plumbing and electrical work.
- 4) Assemble splash pad complete per manufacturer's drawings and specifications.

3.2 PROTECTION:

- A. Protect work and materials from damage from construction related activity, trades and trespassers. Wrap with plastic to protect finishes. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged work as directed.

3.3 CLEAN-UP:

Upon completion of the work all excess materials and debris which has not previously been cleaned up shall be removed from the site or disposed of as directed by the Architect.

END OF SECTION 129300

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. **(Refer to the plan set general notes for specific project requirements regarding the Mass fill, Earth Fill and the Topsoil, these will supersede the below conflicting requirements)**
- 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.

1.2 RELATED DOCUMENTS AND SECTIONS

- A. Section 013319 – Field Testing Reporting
- B. Section 030000 - Concrete Work
- C. Specific Project Requirements

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, Product Data and Samples.
- 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:

1.5 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
- B. Regulatory Requirements
- C. Certifications

1.7 PROJECT CONDITIONS

- A. 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 himself, however, by actual examination on the site of the Work, as to the existing elevations and contours, and the amount of work required.
- B. 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 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 013319 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 EMBANKMENTS

- A. See General Notes page for this project for backfill and embankment requirements.
- B. The Notes in the General Notes are specific for this project.

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 of either: (1) Special Backfill Material; (2) Class B concrete; whichever is ordered by the Engineer.
- B. 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.

3.12 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.
- H. Embankment shall be placed and compacted in layers until the density is not less than the percentage of maximum dry density indicated in the following table determined by ASTM D-698.

EMBANKMENT SOIL COMPACTION REQUIREMENTS

Maximum Laboratory Dry Weight <u>Pounds/Cubic Foot</u>	Minimum Compaction Requirements Percent Laboratory <u>Maximum</u>
90-104.9	102
105-119.9	100
120 and more	98

- 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 compactive 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.

END OF SECTION 310000

SECTION 312333 - UNDERGROUND CONDUIT INSTALLATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Construction Drawings and General Provisions of this Contract including the General and Supplementary Conditions, Specific Project Requirements, Proposal, and all referenced standard specifications apply to work defined in this section.

1.2 DESCRIPTION

- A. This work shall consist of the construction or reconstruction of underground pipe conduits in accordance with these specifications and in reasonable close conformance to the lines and grades shown on the detailed plans or as otherwise established by the Engineer.
- B. This work shall include excavating for the conduit, fittings, and appurtenances; clearing and grubbing and removal of all materials necessary for placement of the conduit except any items paid for separately; furnishing and placing bedding and backfill as required; constructing and subsequently removing all necessary cofferdams, cribs and sheeting; pumping and dewatering; making all conduit joints as required; installing all necessary conduit; joining to existing and proposed appurtenances as required; performing leakage tests as required; restoration of all disturbed facilities and surfaces. The work shall also include the maintenance of existing flow and service to facilities being modified. Procedures for such maintenance shall be as approved by the Engineer prior to any work commencing.

PART 2 - MATERIALS

2.1 CONDUIT

- A. All conduit utilized shall be of one type and size specified in the proposal meeting the requirements of the detailed material specification.
- B. Shop drawings, catalog cuts, and test certifications may be required by the Engineer for all conduit, fittings, and appurtenances.
- C. Aggregate for the bedding and backfill shall conform to the requirements of the plan detail or as modified in writing by the Engineer. All aggregates shall conform to ODOT 703 for soundness and gradation.
- D. All other materials utilized as part of this work shall meet their respective ASTM requirements.

PART 3 - EXECUTION

3.1 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

A. Pavement, Sidewalks, and Curbing

1. 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.
2. For non-reinforced concrete, the saw cut shall be completely through concrete.
3. For reinforced concrete, the saw cut shall be completely through the steel and concrete.
4. If the concrete is coated with a bituminous surface or other material, the saw cut shall be as specified above.

B. Manholes, Catch Basins, and Inlets

1. Existing drainage structures and sanitary manholes designated by the Engineer to be removed shall be completely removed.
2. Manholes 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 backfill material in accordance with Section 312323.13 - Compacted Backfill.
3. Live sewers connected to structures removed or abandoned shall be rebuilt through the area with new conduit. 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.
4. All castings salvaged from abandoned or removed structures shall remain the property of the Owner and shall be cleaned and transported by the Contractor to a nearby site designated by the Owner or incorporated in the work where called for on the drawings.

C. Guardrail and Fence

1. Where necessary, existing guardrail and fence shall be carefully dismantled and stored for reuse or for salvage by the Owner.
2. Posts and other materials not considered salvageable by the Engineer shall be disposed of by the Contractor.
3. 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.

3.2 METHOD OF EXCAVATION

- A. All excavation shall be in open cut unless otherwise permitted by the Engineer. Loosening of material by blasting will not be permitted without written authorization by the Owner specifying both the extent and location of the blasting to be done. If permission is granted the Contractor shall submit in writing his means and methods of blasting to the Owner for approval. Blasting shall not begin until the Owner issues written approval of the means and method of blasting.

- B. Excavation shall be made to undisturbed finish subgrade to the depth below the bottom of the conduit or structure as shown on the Contract Drawings details.
- C. Trenches shall be excavated with vertical sides from the bottom of the trench to one (1') foot above the top of the conduit from which point sides may slope to ground surface, except that, in streets or roadways, trenches shall be excavated with near vertical sides to the top of the trench. Width of trench in the vertical section shall be excavated only as wide as necessary to accommodate a safety box and to provide free working space on each side of the conduit or structure according to the size of the conduit or structure and the character of the ground. In every case there shall be sufficient space between the conduit or structure and the sides of the trench to make it possible to thoroughly ram the bedding around the conduit or structure and to secure tight conduit joints, but in no case more than twelve inches on either side of conduit. In no case, however, shall the width of the trench at the top of the conduit exceed the dimensions as shown on the contract drawings. In no case will it be permitted to excavate conduit trenches with sides sloping to the bottom.
- D. The trench bottom shall be firm and uniform for its full length. Should unstable material be encountered below plan subgrade, it shall be removed to a depth directed by the Engineer. Replacement of the additional excavation shall be with the specified bedding material or as otherwise directed by the Engineer.
- E. In the case the flow line is changed not to exceed one (1) foot or it becomes necessary to remove unstable material in an amount not to exceed one (1) foot, the same shall be done at one contract bid price or amount. When the flow line is lowered more than (1 foot) or if it becomes necessary to remove more than (1 foot) of unsuitable material below the bottom of the trench, compensation will be provided therefore in a supplemental agreement for the excavation and backfill beyond (1 foot).

3.3 UNAUTHORIZED EXCAVATIONS

- A. All excavations carried outside of the lines and grades given or specified, together with the disposal of such material, and all excavations and other work resulting from slides, cave-ins, swellings or upheavals shall be at the Contractor's own cost and expense. All spaces resulting from unauthorized excavations or from slides or cave-ins shall be refilled at the Contractor's expense with suitable material as specified in ODOT Item 203, "Roadway Excavation and Embankment" or Section 312323.13, "Compacted Backfill" in designated areas shown on the contract drawings or specified under this Section. Compaction requirements shall be in accordance with these specifications.

3.4 SHEETING AND SHORING

- A. The Contractor shall be responsible for supporting and maintaining all excavations required even to the extent of sheeting or shoring the sides and ends of excavations with timber or other satisfactory supports. If the sheeting, braces, shores, stringers, waling timbers, or other supports are not properly placed or are insufficient, the Contractor shall provide additional or stronger supports. The requirements of sheeting or shoring or of the addition of supports shall not relieve the Contractor of his responsibility for their sufficiency. All trench protection and sheeting and shoring must conform to the regulations of both the Ohio State Industrial Commission (OSIC) and the Federal Occupational Safety and Health

Act (OSHA) and will be subject to their respective inspections. All orders of OSIC and OSHA representatives must be complied with by the Contractor.

- B. All sheeting and shoring shall be removed where and when required and, upon its removal, all voids filled. If any sheeting or shoring is ordered to be left in place, it shall be cut-off as directed. In compensation for the sheeting and shoring left in place, if any, shall be by prior written change order.

3.5 REMOVAL OF WATER

- A. All conduit shall be installed in a dry and stable trench. The Contractor may pump or otherwise remove any water, sewage, or other liquid that may be found or may accumulate in the trench.
- B. If, in the opinion of the Contractor, dewatering pumps and equipment are required to maintain a dry and stable trench, suitably sized pumps shall be provided to meet the requirements. The manner and spacing of well points shall be at the Contractor's discretion.
- C. Excess water shall not be considered reason for undercut of trench bottom.
- D. The Contractor shall maintain the pumps for the duration of their need including a satisfactory discharge outlet. Power for the pumps shall be electric unless otherwise approved by the Engineer. Noise abatement may be required for any on-site generators in residential areas.

3.6 BEDDING FOR LAYING CONDUIT

- A. Bedding shall conform to the requirements of the plan detail unless otherwise modified by the Engineer.
- B. All granular bedding material shall be compacted to 95 percent of maximum laboratory dry density.
- C. All pipe bedding shall be of the gradation(s) specified and be limestone. Slag may not be used and gravel may be used with permission of the Engineer.

3.7 LAYING CONDUIT

- A. Except as otherwise permitted by the Engineer, all conduit shall be laid starting at the outlet end. Pressure conduits may be laid from either direction however the joints shall be such that the bell is upgrade or toward normal pressure.
- B. Line and grade for gravity conduits shall be established by the use of sufficient means to maintain acceptable installation tolerances and allow for reasonable checking observation by the Engineer.
- C. Line and grade shall be established and maintained over a length of fifty (50) feet minimum. Cut sheets establishing grade at fifty (50) foot intervals shall be provided to the Engineer prior to beginning work.

- D. The Contractor shall provide sufficient equipment and workers to safely handle and lay all conduit included as part of this work. All storage of materials shall be in a manner as to avoid damage to either surface prior to placement.
- E. The Contractor shall inspect each piece of conduit prior to placement in the trench and any unsatisfactory conduit shall be rejected.
- F. Conduit shall not be laid in water, mud, or any otherwise unsuitable trench. The conduit shall not be pushed into or allowed to fall to the bottom of the trench. Handling of the conduit shall be in conformance to the manufacturer's recommendations.
- G. The conduit shall be kept clean and any open ends of installed conduit shall be closed when work is not in progress.
- H. Jointing of the conduit shall be in accordance to the requirements of the manufacturers and as required by the specification material type. Any deviation from these acceptable methods requires approval of the Engineer.
- I. Testing of joints, where required, shall be done in accordance with the Specification for Testing. Should any section fail to meet test requirements, the Contractor shall make suitable corrections, at their cost, until the requirements are met.

3.8 SERVICE CONNECTIONS

- A. In general, and as called for on the drawings, as required or as ordered, provision shall be made in the sewers for service connections by inserting a wye branch for each service connection with a branch size called for by the contract drawings but never less than six (6) inch, in the sewer at location shown, where required or ordered, for sewers to ten (10) feet in depth. For sewers exceeding ten (10) feet in depth, or 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%). Risers are to be encased in sonotube filled with No. 57 Limestone as shown on the contract drawings.
- B. The location of service connections is shown in a general way on the contract drawings. The Owner may also increase the number of connections or delete some connections as the sewer is being built, or increase the size of connections when it deems such advisable.

3.9 FINAL BACKFILL

- A. Final backfill shall be installed from the top of the Pipe Embedment to the final grade. Final backfill of all conduit trenches shall conform to the requirements of the plans and details.
- B. Unless otherwise directed, all forms, bracing and lumber shall be removed during backfilling and the cavities and voids resulting from the removal shall be backfilled and compacted to 100% of Standard Proctor.
- C. The Contractor must use special care in placing backfill so as to avoid injuring or moving the conduit or structure when compacting the backfill.
- D. In areas used for temporary maintenance of traffic the top layer of final backfill from the elevation of the existing subbase base interface to the existing or proposed surface(s), shall be ODOT Item 304 Aggregate Base to provide a temporary surface traffic course.
- E. Should after settlement occur, the Contractor must add and compact additional material.
- F. Machine mounted mechanical tamper shall be used for backfill compaction. Flooding, jetting or puddling of backfill will not be permitted.
- G. Excavated material in excess of that needed for backfilling and all unsuitable material shall be disposed of by the Contractor at his own expense and the cost of such disposal shall be included in the unit or lump sum prices bid.

3.10 TESTING AND ACCEPTANCE

- A. Prior to final acceptance of the conduit or the placing of the conduit into service, testing and/or televising may be required.
- B. For all sanitary, water, or other pressured conduits, pressure testing shall be required in accordance to the specifications contained herein. Televising shall be required for all sanitary sewer and may be required for storm sewers as outlined or required by plan note.
- C. Final television inspection of conduit shall be performed by an experienced company and in a format satisfactory to the Owner. Televising shall be done in the presence of the Engineer unless so waived. The Engineer shall be provided with unedited video tapes and two (2) copies of the video log.
- D. Televising shall not be done until all known repairs are completed and the line has been suitably flushed.

3.11 SITE RESTORATION

- A. Restoration of the disturbed project area shall begin immediately after backfilling has been completed. All excess material, debris, and excavation shall be disposed of by the Contractor.
- B. Restoration of paved surfaces and of seeded areas shall be done as soon as conditions permit. The manner in which this work shall be done is defined in other specifications or the contract plans.
- C. While payment for site restoration may be included in other items, final acceptance of the underground conduit shall not occur until all work is complete. Where no separate pay items exist for restoration work, the Engineer may determine an appropriate value for this work to be retained until its completion.

END OF SECTION 312333

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 his entry, and to the satisfaction of the Engineer, the Ohio Department of Transportation, the County Engineer, City Engineer, 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 321216 - ASPHALT CONCRETE PAVING AND MATERIALS

SECTION 1 - MATERIALS

- 1.1 The asphalt concrete mixture and installation thereof shall meet Ohio Department of Transportation (ODOT) Specifications except as modified in these specifications.
- 1.2 In the ODOT Specifications substitute "Engineer" for "Department" (except as stated below in reference to ODOT 403 for Department VA testing and acceptance).
- 1.3 No steel slag shall be used as coarse or fine aggregate for any asphalt concrete.
- 1.4 All asphalt cement utilized on this project shall meet AASHTO Provisional Standard MP1 or any superseding AASHTO specification for performance graded asphalt cement binder in conformance with PG 64-22.
- 1.5 The following exceptions shall be made for the Asphalt Concrete:
 - A. The coarse aggregate material shall be only limestone
- 1.6 Except where designated otherwise in the plans or specifications all asphalt concrete mixes shall be designed for medium traffic volumes. Where light or heavy traffic pavements are designated in the plan, the contractor shall use an asphalt concrete mix designed for such traffic conditions.
- 1.7 Acceptance of the mixture will be based upon the certification that the mixture was produced according to the approved JMF within the production control and composition tolerances of the specifications. The Contractor shall hire and pay for an independent testing lab approved by the Engineer to perform all sampling, testing, monitoring, analysis and certification required by the Laboratory, Monitoring Team or Department in ODOT 403 and 441. All work by the independent laboratory shall be performed by personnel with ODOT Level II Bituminous Concrete certification.
- 1.8 ODOT 401.20 - "Asphalt Binder Price Adjustment" shall not apply to this contract.
- 1.9 Monument box and valve box risers shall be East Jordan Iron Works No. 8626, No. 8631, or approved equal. The Contractor shall follow the manufacturer's recommended installation procedure. New manhole frames and grate or frame and cover shall be EJIW 1710.
- 1.10 Brick used for manhole, catch basin, or inlet basin castings adjusted to grade under ODOT 611.10 Method D.1. shall be red shale or clay sewer brick meeting the requirements of ASTM C32 sewer brick, grade SM.
- 1.11 Risers used for manhole castings adjusted to grade under ODOT 611.10 Method D.2. shall be manufactured by Manhole Systems, Model MS-101TB, or approved equal.
- 1.12 All inlets and manholes shall be adjusted to grade after installation of the intermediate course(s), if any and prior to installation of the surface course.

- 1.13 All materials delivered to this project must have been weighed on a platform scale with electronic imprinter to show gross, tare, and net weights. No payment will be made for materials which are not correctly weighed as necessary. Material weight shall not exceed the current legal allowable limit.
- 1.14 Unless specified elsewhere in the specifications, material for berms shall be limestone only. Recycled concrete and asphalt concrete will not be permitted.

SECTION 2 - PAVING EQUIPMENT

- 2.1 All spreading equipment shall be self propelled. The Contractor shall identify the make and model of the paving machine that will be used for the intermediate and surface courses for approval prior to the pre-construction meeting.
- 2.2 All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working order at all times. The Contractor shall be prepared to furnish proof of certification that all equipment to be used on the project has been calibrated within the past six (6) months.

SECTION 3 - GENERAL - PAVING

- 3.1 All paving shall be done on a single-lane basis.
- 3.2 If traffic loop detectors are encountered and broken, the Contractor is to repair as per local specifications. The cost for this work will be paid under the loop detector replacement bid item, if any; at negotiated unit prices; or by time and materials as directed by the Engineer.
- 3.3 Tack coat, Item 407, shall be applied at the rate of from 0.05 to 0.15 gallons per square yard as appropriate for the surface conditions with sand cover if required.
- 3.4 Asphalt driveway aprons shall be matched to new pavement with 24" transition sections or as shown on the drawings or required by the Engineer. The Contractor shall install apron wedge as required in the detailed drawings.
- 3.5 Unless otherwise shown on the drawings, jointing of new to existing pavement shall be by milled butt joints six (6) feet in width (or as shown on the plans) from edge of pavement to edge of pavement. Depth of this milled area shall equal the total of subsequent intermediate course and surface course as specified.
- 3.6 One (1) copy of each hauled/weighed material truck load ticket (plant ticket) for materials incorporated in this project shall be provided to the project representative daily. All bulk materials delivered to this project must have been weighed on a platform scale with electronic imprinter to show gross, tar and net weights. No payment will be made for materials which are not correctly weighed as necessary. Material weight shall not exceed the current legal allowable limit. If a partial load is used, the Contractor's foreman and the project representative shall confer and come to an agreement as to what portion of the

product was used. The percent of material of this load, as reported by the project representative, is what shall be recorded as utilized.

- 3.7 For variable depth courses where tonnage tickets are used for determining quantities for payment, the conversion to cubic yards shall be number of tons verified and approved by the Engineer divided by 2.00 regardless of the actual density of the mix.
- 3.8 Positive drainage is to exist subsequent to the completion of the surface course. The Contractor shall take any necessary measures to assure positive drainage of the surface course. It shall be the responsibility of the Contractor to repair any low/puddled areas at his own cost by milling out the affected areas to a minimum depth equal to the nominal depth of the course being repaired and replacing with the specified asphalt concrete to grades that will correct the drainage problem.
- 3.9 Surface tolerances for all completed surface courses shall be as noted in ODOT 401.19. This tolerance shall apply regardless of whether or not an intermediate course is installed.
- 3.10 At the direction of the Engineer, periodic weight checks of asphalt concrete in loaded trucks shall be made by the Contractor and verified by the Engineer.
- 3.11 All quality control testing data performed on material incorporated into this project shall be forwarded to the Engineer for review as soon as it is available.
- 3.12 Quantity verification (but not necessarily payment quantity) for all asphalt concrete incorporated into the work shall be by weight tickets as produced by the plant or supplier or other means approved by the Engineer. Tack coat shall be verified by a ticket filled out and signed by the Contractor's tack truck driver based on weights taken or observations of level indicators. All verification tickets are required to be submitted to the Engineer on the day the material is incorporated into the work; however, the Engineer may, at his sole discretion, accept verification tickets for any items up to seven (7) calendar days subsequent to the work being performed. **After that date additional verification tickets for material will not be accepted for consideration of payment.**
- 3.13 No work is to be performed without the presence of the Engineer or his designated Project Representative. Forty-eight (48) hour advance notice of work shall be given to the Engineer and Owner by the Contractor.
- 3.14 All edges of surface courses abutting curbs or other appurtenances shall be sealed with hot AC-20.
- 3.15 The asphalt concrete, intermediate or surface course work will conform to ODOT Items 448-1 – Intermediate and Surfaces Courses and 448-2 – Intermediate Course. The paving foreman, at the Engineer's request, will be required to correctly calculate the asphalt concrete "yield." "Yield" is defined as the rate of material used, in cubic yards, in proportion to the area paved. The Contractor must be aware if he is under or over plan quantities for the area in question.

END OF SECTION 321216

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 321800 PLAYGROUND GRASS RESILIENT SURFACING:

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of this contract, including general and supplementary conditions and other division 1 specification sections apply to this section.

1.2 DESCRIPTION OF WORK

- A. Playground Turf Grass, impact attenuating safety surface resilient surface systems for surfaces under and around playground equipment including but not limited to the furnishing and installing an artificial grass safety surface over a shock pad and compacted base. Finished product shall be seamed to provide a resilient, continuous surface over the entirety of the project surface. Work includes for all labor, materials, tools, equipment, and applicable taxes to perform all work and services for the installation of the surface.

1.3 REFERENCE SPECIFICATIONS AND STANDARDS

- A. Materials and methods of construction shall comply with the latest provisions of the following standards:
 - I. ASTM F 1292-04 “Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment”.
 - II. ASTM D2859 “Flammability Standard”.
 - III. ASTM F1951-99: “Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.”
 - IV. Third Party laboratory testing that demonstrates the product can withstand 10,000 Lisport Cycles

1.4 SUBMITTALS

No alternate product must be submitted with prior approval packages a minimum of ten (10) days prior to bid date. Submittal packages shall include but not be limited to:

- A. Laboratory Test Reports: Materials certificates certifying each material item complies with, or exceeds, specified requirements. Certificates of compliance must be signed by materials producer and contractor.

- B. Product Verification: Delivery slip for each material shipment, including turf and infill material.
- C. Warranties: Product and maintenance warranties must be provided to owner prior to installation.
- D. Field test inspection reports and samples for material including impact attenuation, permeability, and flammability.
- E. Playground Grass Surface Installer Qualifications: A list of ten (10) playground surfacing projects completed with a similar product within the last five (5) years. List shall include names of project representatives and respective telephone numbers. This list shall also contain projects which require the same level of difficulty: e.g. number of poles and cutouts, transitions, and other special requirements. These ten (10) projects shall have been contracted and installed by the company bidding the job.
- F. Product Substitution Submittals: Contractor shall provide the following material for Playground Grass material substitution.
 - I. At least one project in excess of 5,000 square feet and completed in the two (2) years.
 - II. Two 1'x1' product samples and one pound of infill material.
 - III. Product warranty and guarantee from manufacturer warranting against all defects for a 10 year period.
 - IV. A written guarantee from manufacturer for workmanship.
 - V. Impact attenuation (per fall height requirements), permeability, and flammability test results from independent approved and certified testing laboratories.
 - VI. The artificial grass installer/contractor will provide a maintenance procedure for the installed surface.

1.5 TESTING OF MATERIALS

- A. The following are test results from an independent testing laboratory which must also be submitted:
 - I. Impact Attenuation: ASTM 1292-04: Impact attenuation test results will be provided. These test results shall be certified and submitted on the letterhead of an independent testing lab. Impact attenuation test results shall meet or exceed Consumer Product Safety Commission Guidelines for impact attenuation (G-max and Head Injury Criterion "H.I.C."). Test results must be administered and evaluated under the same test and these results must be shown for three drops at each required temperature: 32^o, 72^o, 120^o; yield less than 200 G's and less than 1,000 H.I.C. Only test results from ASTM testing approved laboratories, F8 committee will be acceptable.

Approved testing laboratories are TSI and Detroit Testing.

- II. Permeability: Product shall meet or exceed a coefficient of permeability of 31” per hour.

NOTE: From a geotechnical standpoint, the permeability of a material is a measure of the velocity at which water will flow through the void spaces or pores under a given hydraulic gradient. The product shall handle a minimum of 20” of rainfall per hour.

- III. Flammability (PILL test)

NOTE: To assure compliance with a, b, and c installation shall be provided by an approved installer, who has at least five successful installs.

1.6 WORKMANSHIP AND QUALITY ASSURANCE

- A. The artificial grass is to be installed per manufacturer’s specifications.
- B. All artificial grass and components shall be provided by a single source.

1.7 DELIVERY AND STORAGE OF MATERIALS

- A. Artificial grass will be delivered in rolls 15’ wide and wrapped in plastic.
- B. Products will be stored out of sight (as much as possible) and secured the same to prevent tampering.

1.8 GUARANTEE/WARRANTY OF THE MATERIAL AND WORKMANSHIP

- A. The artificial grass installed under this contract will be warranted for a period of fifteen (15) years for materials and covers the surface for wear, through deterioration and excessive fading/UV degradation. Vandalism and force majeure will not be covered. Written warranty must be submitted by the installer.
- B. When defective material or workmanship is discovered which will require repair or replacement, all such repair work or replacement work shall be done by the contractor at its own expense after written notification is given of such required repairs. However, if the contractor fails to comply with the requirements of the above guarantee within a reasonable time after notification is given, the repairs will be made by others at the contractor’s expense.
 - I. Any unsafe conditions that arise shall be secured and maintained by the installer until all required repairs or replacements have been completed.
 - II. All resurfacing will conform in kind and quality to the specifications set forth in the plans and specifications and will be free of defects in workmanship and material.

PART 2 - PRODUCTS

2.1 MATERIALS:

Impact attenuating Resilient safety surface shall be Perma-Turf 55oz. 2-Layer Synthetic Turf Playground System with either Brock Shock Pad or SBR Unitary Base or approved equal as manufactured by Pro-Techs Surfacing LLC 3840 Ridgewood Rd unit 4343 Copley, OH 44321 (330) 576-6058 and distributed by: Midstates Recreation, 1279 Hazelton-Etna Rd SW, Pataskala, Ohio 43062, 614-855-3790

Resilient safety surface shall have all of the following requirements independently and collectively:

- A. Tufted polyethylene grass fiber component with a polyethylene and polyester thatch layer, installed over a bacteria and fungi resistant expanded polypropylene panels with interlocking edges, or 100% post-consumer recycled, 3/8" shredded, SBR (styrene butadiene rubber) and high-grade single component aromatic polyurethane binder, and stone base drainage system.
- B. A complete synthetic grass system, consisting of a synthetic grass with a pile height of 1 1/4 inches long, 100% monofilament polyethylene fibers and polyethylene/polyester thatch layer, tufted on a 3/8" tufting machine with a minimum face weight of 55 ounces of yarn per square yard.
- C. The fibers shall include inert polyethylene fibers that are microbial resistant, and anti-glare Tufting: The tufting gauge will be 3/8", pile height 1.25".
- D. Synthetic turf products utilizing nylon blades or nylon thatch layers will not be acceptable. The system should be infilled with between 1.5 to 2.0 pounds per square foot of rounded silica sand or as specified by the Designer/Owner/Operator. Systems utilizing granular rubber products made of recycled tires infilled in the grass blades will not be acceptable. The system shall include a single, dimensionally stable, two-component primary backing of 9oz and have a minimum of 18 ounces of Ultra-Flo secondary polyurethane backing per square yard. The finished product shall also include perforations in a 2" by 2" pattern to ensure excellent surface drainage.
- E. The Perma-Turf 2-Layer Synthetic Turf System consists of:
 1. Perma-Turf 55
 - a. Face Weight: 55 oz.
 - b. Pile Height: 1.25"
 - c. Roll Width: 15' (180")
 - d. Yarn Color: Two-tone green with green/tan thatch, contact manufacturer for availability of other colors.
 - e. Yarn type: 8090 denier two-tone Polyethylene blades with a texturized polyester thatch layer.
 - f. Construction Details: Type - Tufted | Gauge: 3/8".

- g. Primary backing: single layer K-29 / 5 pic 9.1 oz/sy.
 - h. Secondary backing: min. 18 oz. Polyurethane with Ultra-Flo technology.
 - i. Perforations: Yes, 2x2 inches on center.
 - j. Infill requirements: Yes, 1.5lbs to 2lbs/sf of specified infill by Designer/Owner/Operator
 - k. Warranty: 10 years manufacturer's warranty
- F. Perma-Turf Playground Padding (manufactured by Brock) or Perma-Turf Unitary Base as manufactured by Pro-Techs Surfacing. The Perma-Turf Unitary Base surfacing layer consists of 100% post-consumer recycled, 3/8" shredded, SBR (styrene butadiene rubber) and high-grade ingle component aromatic polyurethane binder.
- G. The non-rubber infill shall be between 1.5 to 2.0 pounds per square foot of rounded silica sand or as specified by the Designer/Owner/Operator. No other infills will be accepted without prior written approval by the architect and/or owner.

PART 3 - EXECUTION

3.1 BASE REQUIREMENTS

- A. The base shall be angular clean or washed stone, leveled, and compacted at a depth of 3" to 4".

3.2 PREPARATION

- A. The perimeter of the area shall be defined with a composite nailer board, unless an acceptable surface for anchoring the turf currently exists. These nailer boards will be secured into concrete or blacktop or held in place with rebar.
- B. Cleaning: The entire surface shall be clean and free from any foreign and loose material.

3.3 INSTALLATION

- A. Unitary Base rubber installation
- B. Installer shall affix composite nailer boards with minimum dimension of 1" by 2" to be affixed to concrete substrates at minus 1/2" from top of adjacent curb/sidewalk using corrosion resistant bolts drilled into concrete. Nailer boards to be made of 100% PVC to be moisture, insect, and rot resistant. Rubber base layer should be poured to touch the primed equipment poles with no gaps between the posts and the rubber. Using a bristle brush, apply ample urethane primer to all curbing and or vertical substrates which the SBR Rubber Buffing surfacing system will contact. Be sure to apply primer immediately before placement of SBR Rubber Buffing surfacing system and no sooner.
- C. Using screed sticks and gauge poles, install the SBR Rubber Buffing surfacing system to 1/8" – 1/4" higher than required thickness. Using pool trowels, pull the SBR Rubber Buffing surfacing

system together using consistent pressure throughout. Repeat the process until all areas, including use zones, comply with the architectural plans and specification requirements.

- D. Brock Shock Pad installation Installer shall affix composite nailer boards with minimum dimension of 1" by 2" to be affixed to concrete substrates at minus ½" from top of adjacent curb/sidewalk using corrosion resistant bolts drilled into concrete. Nailer boards to be made of 100% PVC to be moisture, insect, and rot resistant.
- E. Requisite compliant subbase materials shall be installed within perimeter of nailer boards set at minus the thickness of the Brock pad from top of nailer board. Overlapping edge pad sheets will be installed, being cut around poles with offsetting of center seam over the runs of pad across the installation area. Standard duct tape or equivalent to be used to maintain placement of consecutive pads and prevent separation. Gaps of more than ½" between the pads and substrates or poles must be filled with rubber base material and left to cure before installing turf.
- F. Turf This is a 100% glued installation. Sewing of seams will not be permitted. The seaming tape and glue shall be intended for installation of outdoor synthetic turf surfaces. The adhesive must be a polyurethane-based adhesive, latex-based adhesives are not acceptable. Turf should be rolled out to acclimate before manipulation. Once turf has acclimated to the pad temperature, the turf edges should be rolled over and the selvedge cut off between the third and fourth seams and discarded.
- G. All cuts on the rolls should be at right angles unless dictated by pole placement. All turf is laid out on pad before seaming is started on one side and working towards the other side, starting with seams under equipment and working way out. Gaps between turf pieces should be no more than 1/8", and stretching and additional cuts should be done to achieve this spacing. State-of-the-art seaming is used for all seaming, with glue applied to seam tape evenly to one inch from both sides using glue box unless seam is less than 10 linear feet to prevent glue from skinning and not adhering to the turf. PL caulking is used around the poles in combination with the turf tape.
- H. Sandbags are used to compress seams for adhesion purposes.
- I. Infill: Infill can be rounded Silica play sand, T-Cool, Hydro-chill, Envirfill or some combination of these. Power broom the turf to open the yarns to allow for the infill to sink into the thatch layer. Infill is spread using a straight fertilizer spreader at a rate of 20 to 25 sq ft per bag. Turf is power broomed again after the infill has been fully installed. No infill should be showing above turf.
- J. Protection: Surface installer shall be responsible for the protection of the rubber surface during the installation process. Surface installer shall be responsible for the

protection of the surface during the curing period upon completion of the installation.

3.4 WARRANTY:

The bidder and/or the turf manufacturer must provide the following:

The turf manufacturer shall provide a warranty to the owner that covers defects in workmanship for one (1) year and materials for ten (10) years of the turf playground surfacing system from the date of Substantial Completion. A ten (10) year "UV stabilization" warranty shall be included in the warranty.

3.5 PROTECTION:

- A. Protect work and materials from damage from construction related activity, trades and trespassers. Fence area to protect finishes. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged work as directed.

3.6 CLEAN-UP:

- A. Upon completion of the work all excess materials and debris which has not previously been cleaned up shall be removed from the site or disposed of as directed by the Architect.

END OF SECTION 321800

SECTION 321823.43 – RECREATIONAL COURT SURFACING AND STRIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This work consists of pavement preparation, installation of a three coat system consisting of two (2) filler coats and one (1) finish coat; surface preparation, masking, hand painting, court striping, and cleanup.
- B. The Contractor shall provide all labor, materials, tools, and equipment to prepare the pavement for color coating and striping as shown on the plans and specified herein.

1.2 SUBMITTALS

- A. Comply with all provisions of the Shop Drawings and Submittals specifications.
- B. Product Data: For the following:
 - 1. Product information for color coating and striping material from a single manufacturer, for approval by the Owner's Representative.
 - 2. Color coating color palette from the manufacturer for color choice to be approved by the Owner's Representative.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Subject to compliance with requirements, surfacing filler, finish coats, and striping materials is to be provided from one of the following sources:
 - 1. Latex-ite, as manufactured by Latex-ite International, Inc., and available through Industrial Surface Sealer, Inc., Cleveland, Ohio (216) 341-2662;
 - 2. Plexipave as manufactured by California Products Corporation available through K&L Sealers, Inc., Strongsville, Ohio (440) 238-7920
 - 3. Nova Combination Surface as manufactured by NOVA Sports USA available through Site Technology, Inc. Stow, Ohio (330) 688-9800
 - 4. Or approved equal.
 - 5. Color coating materials and striping materials shall be from the same manufacturer.
 - 6. Court colors shall match the colors used on the existing adjacent courts.
- B. Striping material shall be white and be industry standard width.

PART 3 - EXECUTION

- A. All net post sleeves, center strap anchors, and fencing shall be installed prior to the application of any surfacing materials.

- B. The Contractor may remove existing fence, gates, and other appurtenances to facilitate ingress and egress of equipment, and materials and installation of the work.
- C. The areas to be treated shall be cleaned of all oils, dirt, or other foreign matter.
- D. The Contractor shall flood the pavement with water. Any surface irregularities shall be repaired prior to color coating as follows:
 - 1. Any area depressed by more than one-eighth (1/8") and less than one-fourth (1/4") shall be filled by the placement of one or more coats of undiluted acrylic resurfacer.
 - 2. Any areas high by more than one-eighth inch (1/8") shall be ground and then made smooth with one or more coats of acrylic resurfacer.
 - 3. Any area depressed by more than one-fourth inch (1/4") shall be ground to a minimum of one-inch (1") and new asphalt pavement surface course installed to the proper grade.
- E. New asphalt surfaces shall be allowed to cure for a minimum of fourteen (14) days with an optimal cure of thirty (30) days prior to application of color coating. New concrete shall be allowed to cure for a minimum of thirty (30) days prior to application of color coating.
- F. New concrete may be etched with a 10-15% solution of muriatic acid flushed with clean water and dried to provide the right amount of surface roughness.
- G. Do not apply coatings if rain is imminent or if ambient temperature is above 90 degrees F or below 50 degrees F.
- H. Before striping, the color coated surface shall be allowed to cure for the period recommended by the striping and color coating manufacturers.
- I. Lines shall be applied in accordance with the plans. Lines shall be tape masked and hand brushed with 100% coverage. Any splatterings shall be removed. Damage to the court color coatings caused by paint removed shall be repaired by the Contractor at no additional cost to the Owner.

END OF SECTION 321823.43

SECTION 323113 - CHAIN LINK FENCING AND GATES

PART 1 - GENERAL

1.1 SUMMARY

- A. This work consists of the supply and installation of galvanized chain link fencing with PVC coating as called out on the plans and details.

1.2 SUBMITTALS:

- A. Comply with all provisions of Section 013323, Shop Drawings and Submittals.
- B. Product Data: For the following:
 - 1. Submit manufacturer's technical data, and installation instructions for fencing, fabric, gates and accessories, for approval by the Owner's Representative.
 - 2. Samples for verification of PVC color in the form of 6" lengths of actual fabric wire to be used in color selection, for approval by the Owner's Representative.

0.1 QUALITY ASSURANCE

- A. Any subcontracted fence work shall be performed by a qualified firm specializing in fence work.

PART 2 - PRODUCTS

2.1 GENERAL:

- A. Dimensions indicated for pipe and roll-formed are outside dimensions, exclusive of coatings.
- B. Products: Subject to compliance with requirements, fence is to be provided from one of the following sources:
 - 1. Galvanized Steel Fencing and Fabric:
 - a. Chain Link Fence Company of Pennsylvania
 - b. Security Fabricators, Inc.

2.2 STEEL FABRIC:

- A. Fabric: Comply with Chain Link Manufacturer's Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 16' high. Wire size includes zinc coating with 2.0 oz. per square foot of surface, galvanized after weaving, or .4 oz. aluminized coating.

1. Basketball Court: 2" mesh, 9 gage; 8' high fencing.
2. Tennis Court: 1-3/4" mesh, 9 gage; 4' and 10' high fencing.

B. Selvage: Fabric shall be knuckled at both selvages.

C. Polyvinyl Chloride (PVC) Finish: Comply with ASTM F 668 2a and 2b, with core diameter (gage) measured prior to application of PVC coating, and including the zinc coating. PVC coating shall be thermally fused and bonded to the zinc coated steel core wire.

2.3 FRAMING AND ACCESSORIES:

A. Steel Framework, General: Galvanized Steel, ASTM A 120 or A 123 with not less than 1.8 oz. zinc per square foot of surface. All framework shall match fabric.

1. Fittings and Accessories: Galvanized Steel, ASTM A 153. All fittings and accessories shall match fabric.
2. Polyvinyl Chloride (PVC) Finish: Provide framework, fittings, and accessories with manufacturer's standard polyvinyl chloride (PVC) finish thermally bonded and adhered to a cured primer applied over zinc-coated steel, not less than 10 mils thick. Color shall match fabric.

B. End, Corner, and Pull Posts:

1. Up to 12' fabric height: 2.875" OD schedule 40 pipe weighing 5.79 pounds per linear foot, galvanized inside and out.

C. Line Posts:

1. 5' to 12' fabric height: 2.375" OD schedule 40 pipe weighing 3.65 pounds per linear foot, galvanized inside and out.
2. Up to 4' fabric height: 1.9" OD schedule 40 pipe weighing 2.75 pounds per linear foot, galvanized inside and out.

D. Top Mid-rail and Bottom Rail: In twenty-one or twenty-four foot lengths with expansion type couplings, approximately 6" long, for each joint. Provide means for attaching top and bottom rail securely to each gate corner, pull and end post.

1. 1.66" OD pipe, 2.27 pounds per linear foot.
2. Mid-Rail: Same as top and bottom rail and used when fence fabric is 10' and higher.
3. Provide manufacturer's standard galvanized steel rail end cup for each end.

E. Tension Wire: 7 gage, coated coil spring wire.

1. Locate at bottom of fabric if bottom rail is not specified.
- F. Fabric Ties: 9-gage aluminum wire.
- G. Hog Rings: 11 gage galvanized steel.
- H. Post Brace Assembly: Manufacturer’s standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 0.375” diameter rod and adjustable tightner.
- I. Post and line Caps: Provide weather tight closure cap for each post. Provide line caps with loop to receive tension wire or top rail.
- J. Tension or Stretcher Bar: One-piece lengths equal to full height of fabric, with minimum cross-section 3/16” x 3/4”. Provide one for each gate and end post, and two for each corner and pull post.
- K. Tension or Stretcher Bar Bands: Space not over 15” o.c., to secure bars to end, corner, pull, and gate posts.
- L. Concrete for footers: ODOT items 499 and 511 (Class C, F, or S).

2.4 SWING GATES

- A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding for rigid connections, providing security against removal or breakage connections. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware and accessories. Space frame members maximum of 8” apart unless otherwise indicated.
1. Provide same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical edges and at top and bottom edges. Attach stretcher bars to gate frame at not more than 15” on center.
 2. Install diagonal cross bracing consisting of 3/8” diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist.
 3. Fabricate perimeter frames of minimum 1.90” OD pipe.
 4. All gates with a 6’ opening or larger shall be double swing.
- B. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

<u>Leaf Width</u>	<u>Gate Post</u>	<u>lbs./lin. ft.</u>
Up to 6’	2.875” OD Pipe	5.79
Over 6’ to 13’	4.000” OD Pipe	9.11
Over 13’ to 18’	6.625” OD Pipe	18.97
Over 18’	8.625” OD Pipe	28.55

- C. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:
1. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180-degree gate opening.
 2. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
 3. Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Do not begin installation and erection before final grading is completed, unless otherwise permitted.
1. Fabric shall be applied to the 'security' side of framework. For sports facilities the 'security' side is the playing side of the framework. For other applications, the 'security' side is the outside of the framework.
- B. Excavation: Drill or hand excavate (using posthole digger) holes for posts to diameters and spacings shown.
1. Posts shall be spaced a maximum of 10' on center.
 2. If not indicated on drawings, excavate holes for each post to minimum diameters as recommended by fence manufacturer, but not less than 4 times largest cross-section of post.
 3. Unless otherwise indicated, excavate hole depths approximately 3" lower than post bottom, with bottom of posts set not less than 36" below finish grade surface.
- C. Setting Posts: Center and align posts in holes 3" above bottom of excavation.
1. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hole in position during placement and finishing operations.
 - a. Unless otherwise indicated, extend concrete footings 2" above grade and trowel to a crown to shed water.
- D. Top Rails: Run rail continuously through post caps, bending to radius for curved runs. Provide one expansion coupling for every five couplings.

- E. Mid-Rails: Provide mid-rails as indicated. Install in one piece between posts, using line rail clamps necessary.
- F. Bottom Rail: Provide as indicated. Install in one piece between posts using line rail clamps where necessary.
- G. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- H. Tension Wire: Install tension wire at bottom of fabric. Fasten fabric to tension wire using hog rings 24" on center.
- I. Fabric: Leave approximately 1" between finish grade and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.
- J. Tension or Stretcher Bars: Thread through and clamp to fabric and secure to posts with metal bands spaced 15" on center.
- K. Swing Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
- L. Tie Wires: Tie fabric to line posts, with wire ties spaced 12" on center. Tie fabric to rails and braces, with wire ties spaced 24" on center. Tie fabric to tension wires, with hog rings space 24" on center.
- M. Fasteners: Use 5/16" x 1-1/4" galvanized carriage bolts with hex nut. Install so head of carriage bolt is on the 'secure' side of the fence.

END OF SECTION 32 31 13

SECTION 329219 - SEEDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Installation of seeded areas shall be to the extent shown on Contract Drawings and 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.

1.3 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 their 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 1/2" in any dimension and any other extraneous or toxic matter harmful to plant growth.

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.

- C. 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:

1. Lawn Seed Mix

<u>Common Name</u>	<u>Proportion by Weight</u>
Creeping Red Fescue (This shall be a blend, of 3 improved varieties; recommended variety is Boreal, Cindy Lou or Rose)	65%
Perennial Rye (This shall be a blend of 3 improved varieties; recommended varieties are Allsport, Prosport, Wilmington, TeeLee, Private or Derby Xtreme)	20%
Kentucky Bluegrass blend	15%

2. Basin Bottom Damp Mowable Seed Mix

<u>Common Name</u>	<u>Proportion by Weight</u>
Tall fescue	45%
Poa Trivialis	25%
Fine textured Perennial Rye	10%
Salty Alkaligrass	10%
Red Top	5%
Reed Canarygrass	5%

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.

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.
- B. 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.
- C. 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.
- D. 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.
- E. 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.
- F. 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.

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 329219

SECTION 329300.23 - TREES, SHRUBS, AND GROUND COVER

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 this Section.

1.2 DESCRIPTION OF WORK

- A. Installation of trees, shrubs, and ground covers shall be to the extent shown on Contract Drawings and shall include supplying all plant material indicated on the plans, plant mix, soil conditioning materials, mulching materials, guying and staking, watering and the incorporation of these materials into the work as specified.

1.3 QUALITY ASSURANCE

- A. Landscaping shall be done by a single firm specializing in landscape work.
- B. Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.
- C. All plant material shall conform to ANSI Z60.1 "American Standard for Nursery Stock"; and State of Ohio, Department of Transportation, "Construction and Material Specifications", current edition.
- D. All plant material shall be labeled with a securely attached waterproof tag indicating species and size.
- E. All tree trunks shall be wrapped prior to leaving the nursery to protect the trunk from injury during transport. Wrapping shall stay on until planting is completed and removed after the tree is planted.
- F. All plant material shall be provided with protective covering (tarping) during transport to reduce desiccation.
- G. The Contractor shall have soils tests done at his expense by a State approved soils testing laboratory to determine amendments to the existing soils. Copies of the soils tests shall be provided to the Owner's Representative prior to planting the plant materials for review and approval.
 - 1. Soils tests shall determine percent organic matter, pH, buffer pH, available phosphorus, exchangeable potassium, calcium, magnesium, Cation Exchange Capacity (CEC), and percent base saturation with recommendations for nitrogen, phosphate, potash, magnesium and lime based on plant type and use.

- H. Plants may be subject to inspection and approval by the Owner's Representative at the place of growth or holding yard for conformity to specification requirements as to quality, size and variety. Notify Owner's Representative prior to transport of plant material to the site.

1.4 JOB 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. All plants shall be guaranteed for the entire maintenance period covered by the Maintenance Bond.

1.5 PRE-BID SUBSTITUTIONS

- A. Every reasonable effort shall be made to find the material specified by the Owner's Representative. The landscape contractor is responsible for qualifying his/her proposal to document any plant suitability or availability problems. The landscape contractor may offer substitutions to the landscape architect for his/her consideration. The landscape contractor will notify the landscape architect if there are known diseases or insect resistant species that can be substituted for a selected pest-prone plant.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

- A. All plant material shall be of the quantity, size, genus, species, and variety shown, and conforming to ANSI Z60.1, "American Standard for Nursery Stock". Provide healthy, vigorous stock, nursery grown, free of disease, insects, eggs, larvae, and defects such as sun-scald, injuries, abrasion or disfigurement.
- B. All plant material shall be of typical proportion and form for the species.
- C. Provide freshly dug trees and shrubs.
- D. Provide ground cover plants and other plant materials as specified on the drawings.

2.2 OTHER PRODUCTS

- A. Mulch shall be double shredded hardwood, free of deleterious materials.
- B. Soil amendments shall conform to the soils tests.
- C. Organic matter shall consist of composted leaves, composted sludge, or other approved material. Peat moss is not an acceptable material.

PART 3 - EXECUTION

3.1 PLANTING PREPARATION

- A. All planting shall be done during the proper planting season for each species. Planting shall not be done under extreme wet, cold or dry conditions. Planting adjacent to heavily treated streets shall only be done in the spring.
- B. All fall planted B&B trees shall have a minimum diameter root ball increased in size to that of the minimum diameter required for the next larger caliper size.
- C. Deliver trees and shrubs after preparation for planting has been completed, and plant immediately. If planting is delayed more than 6 hours after delivery, set plant material in shade, protect from weather and mechanical damage and keep roots moist by covering with mulch, burlap, or other acceptable means of retaining moisture. No plants shall be stored more than 2 weeks unless with approval of Owner's Representative. Do not remove container grown stock from containers until planting time.
- D. Layout individual tree and shrub locations and areas for multiple plantings. Stake locations and outline areas and secure Owner's Representative's approval prior to start of planting. Make adjustments as directed by the Owner's Representative.
- E. Planting beds shall be installed after lawn areas have been brought to finish grade and fine graded, but not seeded.

3.2 TREE PLANTING

- A. Excavate pits with flared sides and with bottom of pit at the same depth as the rootball. An auger shall not be used to dig planting pits.
- B. For balled and burlapped plants and container plants, pits shall be two and one-half times greater in diameter than the ball and the same depth as the ball.
- C. Dispose of any unsuitable subsoil. Plant mix shall consist of one-third existing soil which is free of debris, sticks, rubbish and stones greater than 1"; and organic matter. Add amendments as per the soils test requirements.
- D. For balled and burlapped material, set tree ball on bottom of pit, centered, and so the flare of the trunk sits at the same grade as it was in the nursery, when settled. Peel

back burlap, cut first two rings of wire. When set, place additional plant mix around base and sides of ball, and work each layer to settle plant mix and eliminate voids and air pockets. Water after placing final layer of plant mix.

- E. For container plants, remove plant from container and loosen rootball. Make 4 – 5 cuts $\frac{3}{4}$ the length of the rootball with a sharp knife. Spread out root mass and place on bottom of pit, centered, so the flare of the trunk sits at the same grade as it was in the nursery when settled. When set, place additional plant mix around base and sides of ball and work to settle plant mix and eliminate voids and air pockets. Water thoroughly.
- F. Form a 3” high dish of backfill around the planting area to allow for mulching, as per detail.
- G. Provide mulch to a uniform depth of 2”. Do not touch mulch to trunk of plant.
- H. Guy and stake trees immediately after planting, if indicated on the drawings. Remove wrapping around tree trunks.

3.3 PLANTING BEDS

- A. Loosen subgrade of planting bed areas to a minimum depth of 12" using a culti-mulcher or similar equipment. Remove stones greater than 1” in any dimension, remove sticks, rubbish, and any other extraneous matter. Planting soil mixture shall be the same as plant mix in the tree planting section. Remove all stones greater than 1” in any dimension in plant mix. Remove sticks, rubbish and any other extraneous matter. Soil amendments apply here as well.
- B. Spread planting soil mixture to a depth of 12" to meet line, grades, and elevations shown after light rolling and settlement. Place approximately 1/2 the total amount of planting soil required. Thoroughly mix into loosened subgrade to create a transition layer, then place remainder of plant soil.
- C. Set container grown stock as specified for balled and burlapped stock, except remove container and loosen root system. Plants, when settled, must be set at the same elevation as when in the container.
- D. Set bare root stock on cushion of planting soil mixture. Spread out roots without tangling or turning up to surface. Cut injured roots clean; do not break roots. Carefully work backfill around roots by hand, and puddle with water until plant mix layers are completely saturated. Plumb before backfilling and maintain plumb while working plant mix around roots and placing layers of soil mixture above roots. Plants, when settled, must be set at the same elevation as they were in the nursery.
- E. Form a 3” saucer of backfill around the planting area, as per detail. Mulch planted areas to a uniform depth of 2" and finish level with adjacent grades. Do not touch mulch to trunk of plant.
- F. Space ground cover plants as indicated on the planting plan. Dig holes large enough

for spreading of roots, and backfill with planting soil mixture. Eliminate air pockets. Water thoroughly after planting, taking care not to cover crowns of plants with wet soils. Mulch areas between plants to a uniform depth of 2".

- G. Newly planted trees and shrubs shall be pruned in accordance with supplier's recommendations. All pruning must be done by experienced personnel.

3.4 CONTAINED PLANTER BEDS

A. Drainage

1. Install drainage material and structures in all planting areas as per plan. Areas to be planted must be clean of extraneous material and debris. Insure that planter drains are operable and free of debris. The landscape architect may review the installation of the drainage systems prior to placing any backfill mixes.
2. Install filter fabric above drainage material. Make sure filter fabric does not slip during the backfill installation.

- B. Planting soil mixture shall consist of 2 parts topsoil, 1-part organic matter and 1-part inorganic soil additive.

C. Soil Placement

1. Place soil in 12" layers and lightly tamp to eliminate air pockets and minimize settling. Care should be taken in placing soil so as to not compact and restrict drainage. Due to anticipated settling, soil fill may exceed final grade.
2. Prior to planting, the landscape contractor shall regrade and repair any areas which settle or are uneven.

- D. Planting Operations: Sections for plant materials and planting execution shall apply. Set plants 2" below top of the planter wall to allow for mulching.

- E. Bracing Operations: See drawings for bracing techniques. In some cases, galvanized steel eye bolts can be imbedded into the sides of the planter to allow the connection of guy wires.

3.5 LANDSCAPE WATERING

- A. The Contractor shall furnish water for watering plants on a weekly basis in absence of 1 ½" rainfall. All plant material shall be thoroughly watered throughout the period of establishment.

- B. Saturate the root zone and mulched area of each plant without causing run-off. During the period from May 15 to September 15, the Contractor shall install one Tree Gator or approved equal drip irrigation bag with each tree planted. Use upright for deciduous trees and flat for evergreen trees. After completion of planting trees,

the Contractor shall remove tape from drip irrigation bags and fill with water. Shrubs and trees too small to accept drip irrigation bags shall be watered by other means approved by the Owner.

- C. The Contractor shall water plant material at least once a week through-out the period of establishment, unless there has been adequate rainfall. An average of 1-½” rainfall per week shall be considered adequate to suspend watering, at the Owner’s Representative’s direction.
- D. The Contractor shall conduct an inspection of the trunk surrounded by and the area beneath each TreeGator irrigation bag on a bi-weekly basis. If any evidence of pests or disease is noticed, the Owner’s Representative shall be notified in writing.

3.6 PERIOD OF ESTABLISHMENT

- A. Before final inspection, all plants shall be in place and under the care of the Contractor for a period of establishment. This period shall begin immediately upon completion of the planting operations and shall continue until October 1st. In no case shall it be less than one growing season, June 1 to October 1.
- B. During this period of establishment, follow all horticultural practices that will ensure the vigor and growth of the transplanted material. This includes watering, remulching, restaking, guying and cultivating. Weeding shall be performed either manually or by chemical control. If there is evidence of deer damage, then a deer inhibitor shall be applied.
- C. On or about September 14 the Owner’s Representative will inspect the planting and supply the Contractor with a list of missing and dead plants and those that have died back beyond normal pruning lines. Replant as required in accordance with the specifications of the original material. However, plants replaced and planted in the Fall, that die before or during the Spring planting season, shall be replaced immediately.
- D. The Contractor is responsible for removing all stakes and guy wires from all plants approximately one year after final acceptance of the planting. The Owner’s Representative shall be notified prior to removal

END OF SECTION 329300.23

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 Richard Washington, L.A., at Verdantas, LLC, 8150 Sterling Court, Mentor, OH 44060, at V0000041545@verdantas.com.

2 - GEOTECHNICAL REPORT

- 2.1 A Geotechnical Subsurface Investigation dated December 16, 2024 by CT Consultants, Inc. 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.

3 - INSURANCE

- 3.1 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.
- 3.2 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
- 3.3 The Certificate of Insurance shall name the Owner, Verdantas, LLC, CT Consultants, Inc., Ohio Department of Natural Resources, Ohio Public Facilities Commission, Treasurer of the State of Ohio and the State of Ohio as Additional Insured..

4 - WORKING HOURS

- 4.1 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.

5 - PROJECT COMPLETION

- 5.1 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.

6 - OPINION OF PROBABLE CONSTRUCTION COSTS

- 6.1 Base Bid – Site Improvements - \$3,060,000.00
- 6.2 Alternate – Playground - \$496,000.00

7 - USE OF SMALL, MINORITY AND WOMEN VEDORS

- 7.1 Contractor is required to take all necessary steps identified in 2 C.F.R. § 200.321(b)(1)-(6) to ensure that small and minority businesses, women's business enterprises, and labor surplus area firms are used when possible as sources of supplies, equipment, construction, and services.

8 - DRUG-FREE WORKPLACE PROGRAM

- 8.1 In accordance with Ohio Revised Code §153.03 and 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") Drug-Free Workplace Program ("DFWP") or a comparable program approved by the OBWC.

9 - ETHICS & CONFLICT OF INTEREST

- 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 - EMPLOYMENT NONDISCRIMINATION

- 10.1 The Contractor agrees to both of the following:

- (A) That, in the hiring of employees for the performance of work under the contract or any subcontract, no contractor, subcontractor, or any person acting on a contractor's or subcontractor's behalf, by reason of race, creed, sex, disability or military status as defined in Section 4112.01 of the ORC, or color, shall discriminate against any citizen of the state in the employment of labor or workers who is qualified and available to perform the work to which the employment relates;
- (B) That no contractor, subcontractor, or any person on a contractor's or subcontractor's behalf, in any manner, shall discriminate against or intimidate any employee hired for the performance of work under the contract on account of race, creed, sex, disability or military status as defined in Section 4112.01 of the ORC, national origin or ancestry.

11 - AFFIRMATIVE ACTION

- 11.1 The Contractor shall have a written affirmative action program for the employment and effective utilization of economically disadvantaged persons, as referred to in Division (E)(1) of Section 122.71 of the ORC. Annually, each such contractor shall be required to file a description of the affirmative action program and a progress report on its implementation with the Equal Opportunity Office of the Department of Administrative Services.

12 - RECORDS

- 12.1 The Ohio Department of Natural Resources, the state auditor, or any of their duly authorized representatives shall have access to any books, documents, papers, and records of the Contractor for the purpose of making audit, examination, excerpts, and transcriptions. LAND & WATER CONSERVATION FUND ACKNOWLEDGMENT SIGN.

13 - LAND & WATER CONSERVATION FUND ACKNOWLEDGMENT SIGN.

- 13.1 Public acknowledgment of LWCF funding assistance on the Project site is required. Such acknowledgment will emphasize the federal-state-local partnership role in creating new high-quality recreation areas and facilities.
- 13.2 LWCF signs must not be smaller than 9 X 12 inches. The color combinations for LWCF signs used should be the following: background – either white or tan, mountain – green, road into the mountain – white or tan, leaves by the name “Land and Water Conservation Fund” – green, the color within the outer circular band – green or the color of the background. Lettering color and method of sign construction may be determined by the project. Signs must be permanent.



- 13.3 A permanent sign must be installed or included on another sign at the Project site or at the main entrance to the park. The LWCF symbol shown above may also be displayed at entrances or other appropriate on-site locations or park literature. For logo artwork go to <https://www.nps.gov/subjects/lwcf/lwcf-manual.htm> .
- 13.4 If an existing LWCF acknowledgment sign from an earlier LWCF grant project is already posted at the funded park, the Project Sponsor is not required to post an additional sign. A photograph of the existing sign should be submitted with the final reimbursement request
- 13.5 The Project Sponsor may obtain the sign on its own or may purchase sign(s) from ODNR. The price per sign is \$100.00 (includes shipping and handling) and can be ordered by e-mailing timothy.robinson@dnr.ohio.gov. Please provide your project number, the number of signs needed (one is usually sufficient), mailing address (no PO boxes), contact name and phone number. Sign(s) will be sent to you with an invoice requesting payment upon receipt. Signs are made of recycled plastic, measure 13.5 X 15.5 inches.

END OF SECTION

SECTION 8
PREVAILING WAGE RATES

PREVAILING WAGES

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 the prevailing wage established by the Ohio Department of Commerce Division of Industrial Compliance (<https://wagehour.com.ohio.gov/w3/webwh.nsf/wrlogin/?openform>). This shall occur regardless of any contractual relationship which may be said to exist between the Contractor or any Subcontractor and such individual.

The Prevailing Wage Determination Schedule for this project is attached. If the Contractor needs a wage determination for any trade not included herein, he shall contact the Owner's Prevailing Wage Coordinator.

Prevailing Wage Determination Cover Letter

County: 

Determination Date:

Expiration Date:

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

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

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

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

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

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

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

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

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

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

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

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

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

wh1500

PREVAILING WAGE THRESHOLD LEVELS IMPORTANT NOTICE

Before advertising for bids, contracting, or undertaking construction with its own forces, to construct a public improvement, the Public Authority shall have the Ohio Department of Commerce-Division of Industrial Compliance, Bureau of Wage and Hour Administration determine the prevailing rates of wages for workers employed on the public improvement. The wage determination must be included in the project specifications and printed on the bidding blanks where work is done by contract.

“New” construction threshold for <i>Building Construction</i>:	\$250,000
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“Reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting” threshold level for <i>Building Construction</i>:	\$75,000
---	-----------------

As of January 1, 2024:

“New” construction that involves <i>roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction</i> threshold level has been adjusted to:	\$98,974
---	-----------------

“Reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting” that involves <i>roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction</i> threshold level has been adjusted to:	\$29,653
---	-----------------

- A) Thresholds are to be adjusted biennially by the Director of the Ohio Department of Commerce.
- B) Biennial adjustments to threshold levels are made according to the Building Cost for Skilled Labor Index published by McGraw-Hill's Engineering News-Record, but may not increase or decrease more than 3% for any year.

If there are questions concerning this notification, please contact:

Bureau of Wage and Hour Administration
6606 Tussing Road, PO Box 4009
Reynoldsburg, Ohio 43068-9009
Phone: 614-644-2239
Fax: 614-728-8639
www.com.ohio.gov



Prevailing Wage Contractor Responsibilities



This is a summary of prevailing wage contractors' responsibilities. For more detailed information please refer to [Chapter 4115 of the Ohio Revised Code](#)

Expand All Sections

General Information



Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$250,000 for new construction or \$75,000 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting.

Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$98,974 for new construction that involves roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction or \$29,653 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting of a public improvement that involves roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction.

a. Thresholds are to be adjusted biennially by the Administrator of Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration

b. Biennial adjustments to threshold levels are made according to the Price Deflator for Construction Index, United States Department of Commerce, Bureau of the Census*, but may not increase or decrease more than 3% for any year

Penalties for violation



Violators are to be assessed the wages owed, plus a penalty of 100% of the wages owed.

Intentional Violations



If an intentional violation is determined to have occurred, the contractor is prohibited from contracting directly or indirectly with any public authority for the construction of a public improvement. Intentional violation means "a willful, knowing, or deliberate disregard for any provision" of the prevailing wage law and includes but is not limited to the following actions:

- Intentional failure to submit payroll reports as required, or knowingly submitting false or erroneous reports.
- Intentional misclassification of employees for the purpose of reducing wages.
- Intentional misclassification of employees as independent contractors or as apprentices.
- Intentional failure to pay the prevailing wage.
- Intentional failure to comply with the allowable ratio of apprentices to skilled workers as required by the regulations established by Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration.

- Intentionally employing an officer, of a contractor or subcontractor, that is known to be prohibited from contracting, directly or indirectly, with a public authority.

Responsibilities



A. Pay the prevailing rate of wages as shown in the wage rate schedules issued by the Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration, for the classification of work being performed.

1. Wage rate schedules include all modifications, corrections, escalations, or reductions to wage rates issued for the project.
2. Overtime must be paid at time and one-half the employee's base hourly rate. Fringe benefits are paid at straight time rate for all hours including overtime.
3. Prevailing wages must be paid in full without any deduction for food, lodging, transportation, use of tools, etc.; unless, the employee has voluntarily consented to these deductions in writing. The public authority and the Director of Ohio Department of Commerce, Division of Industrial Compliance and Labor, Bureau of Wage and Hour Administration - must approve these deductions as fair and reasonable. Consent and approval must be obtained before starting the project.

B. Use of Apprentices and Helpers cannot exceed the ratios permitted in the wage rate schedules.

1. Apprentices must be registered with the U.S. Department of Labor Bureau of Apprenticeship and Training.
2. Contractors must provide the Prevailing Wage Coordinator a copy of the Apprenticeship Agreement for each apprentice on the project.

C. Keep full and accurate payroll records available for inspection by any authorized representative of the Ohio Department of Commerce, Division of Industrial Compliance, and Labor, Bureau of Wage and Hour Administration or the contracting public authority, including the Prevailing Wage Coordinator. Records should include but are not limited to:

1. Time cards, time sheets, daily work records, etc.
2. Payroll ledger\journals and canceled checks\check register.
3. Fringe benefit records must include program, address, account number, & canceled checks.

4. Records made in connection with the public improvement must not be removed from the State for one year following the completion of the project.

5. Out-of-State Corporations must submit to the Ohio Secretary of State the full name and address of their Statutory Agent in Ohio.

D. Prevailing Wage Rate Schedule must be posted on the job site where it is accessible to all employees.

E. Prior to submitting the initial payroll report, supply the Prevailing Wage Coordinator with your project dates to schedule reporting of your payrolls.

F. Supply the Prevailing Wage Coordinator a list of all subcontractors including the name, address, and telephone number for each.

1. Contractors are responsible for their subcontractors' compliance with requirements of Chapter 4115 of the Ohio Revised Code.

G. Before employees start work on the project, supply them with written notification of their job classification, prevailing wage rate, fringe benefit amounts, and the name of the Prevailing Wage Coordinator for the project. A copy of the completed signed notification should be submitted to Prevailing Wage Coordinator.

H. Supply all subcontractors with the Prevailing Wage Rates and changes.

I. Submit certified payrolls within two (2) weeks after the initial pay period. Payrolls must include the following information:

1. Employees' names, addresses, and social security numbers.

a. Corporate officers/owners/partners and any salaried personnel who do physical work on the project are considered employees. All rate and reporting requirements are applicable to these individuals.

2. Employees' work classification.

a. Be specific about the laborers and/or operators (Group)

b. For all apprentices, show level/year and percent of journeyman's rate

3. Hours worked on the project for each employee.

a. The number of hours worked in each day and the total number of hours worked each week.

4. Hourly rate for each employee.

a. The minimum rate paid must be the wage rate for the appropriate classification. The Department's Wage Rate Schedule sets this rate.

b. All overtime worked is to be paid at time and one-half for all hours worked more than forty (40) per week.

5. Where fringes are paid into a bona fide plan instead of cash, list each benefit and amount per hour paid to program for each employee.

a. When the amount contributed to the fringe benefit plan and the total number of hours worked by the employee on all projects for the year are documented, the hourly amount is calculated by dividing the total contribution of the employer by the total number of hours worked by the employee.

b. When the amount contributed to the fringe benefit is documented but not the total hours worked, the hourly amount is calculated by dividing the total yearly contribution by 2080.

6. Gross amount earned on all projects during the pay period.

7. Total deductions from employee's wages.

8. Net amount paid.

J. The reports shall be certified by the contractor, subcontractor, or duly appointed agent stating that the payroll is correct and complete; and that the wage rates shown are not less than those required by the O.R.C. 4115.

K. Provide a Final Affidavit to the Prevailing Wage Coordinator upon the completion of the project.

INSTRUCTIONS FOR PREPARING CERTIFIED PAYROLL REPORTS

General:

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

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

Certified Payroll Heading:

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

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

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

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

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

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

Page indicator: number of pages included in the report.

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

Payroll Information by column:

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

Certified Payroll Report

Report for: Check if Subcontractor¹⁾ Contract No: _____ Payroll No: _____

Company:¹⁾ _____ If Sub, GC/Prime Contractor Name: _____ Project Name & Location: _____ Week Ending: _____

Address: _____ Public Authority (Owner): _____ Sheet:²⁾ _____ of _____

City, State, Zip _____

Phone No: _____

1. Employee Name, Address, & SS# (Last 4 digits if permitted)	2. Work Class ³⁾	3. Prevailing Wage Project		4. Total Hours	5. Base Rate	6. Project Gross	7. Fringes:				8. Total Hrs for all Jobs			9. Total Gross on All Jobs			10. Total Deductions		11. Net Pay on All Jobs			
		Hours Worked - Day & Date					H&W	Pens	Vac	Hol	Other	Total	Total	Total	Total	Total	Total					
PW.10																						
		OT																				
		ST																				
		OT																				
		ST																				
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		OT																				
		ST																				
		OT																				

1) By signing below, I certify that: (1) I pay, or supervise the payment of the employees shown above; (2) during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done; (3) the fringe benefits have been paid as indicated above; (4) no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissible deductions as defined in ORC Chapter 4115; and (5) apprentices are registered with the U.S. Dept. of Labor, Bureau of Apprenticeship and Training. I understand that the willful falsification of any of the above statements may subject the Contractor or Subcontractor to civil or criminal prosecution.

Type or Print Name and Title _____ Signature _____ Date _____

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

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:	
<p>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.</p>			
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		Health Insurance	
Life Insurance		Holiday	
Pension		Sick Pay	
Bonus		Training	
Other		TOTAL HOURLY FRINGES	
Contractor's Signature:		Date:	
Employee's Signature:		Date:	

<input type="checkbox"/> Union ↑	Classification	Wage Rate Type	Effective Date	Posted Date	
<input type="checkbox"/> Asbestos Local 207	Asbestos Worker	Commercial	08/06/2025	08/06/2025	View
<input type="checkbox"/> Asbestos Local 50 Heat & Frost Insulators	Asbestos Worker	Commercial	07/30/2025	07/30/2025	View
<input type="checkbox"/> Boilermaker Local 85	Boilermaker	Commercial	03/28/2012	03/28/2012	View
<input type="checkbox"/> Bricklayer Local 23 (Columbus Tile Finisher)	Bricklayer	Commercial	06/01/2025	05/28/2025	View
<input type="checkbox"/> Bricklayer Local 23 (Columbus Tile Setter)	Bricklayer	Commercial	06/01/2025	05/28/2025	View
<input type="checkbox"/> Bricklayer Local 23 (Columbus)	Bricklayer	Commercial	06/01/2025	05/28/2025	View
<input type="checkbox"/> Bricklayer Local 23 Heavy Hwy (A)	Bricklayer	Commercial	06/05/2024	06/05/2024	View
<input type="checkbox"/> Bricklayer Local 23 Heavy Hwy (B)	Bricklayer	Commercial	06/05/2024	06/05/2024	View
<input type="checkbox"/> Carpenter & Pile Driver Local 200	Carpenter	Commercial	05/07/2025	05/07/2025	View
<input type="checkbox"/> Carpenter & Piledriver SC District HevHwy	Carpenter	Commercial	07/09/2025	07/09/2025	View
<input type="checkbox"/> Carpenter Millwright Local 1090 Columbus	Carpenter	Commercial	05/13/2025	05/13/2025	View
<input type="checkbox"/> Cement Mason Local 132 (Columbus)	Cement Mason	Commercial	06/04/2025	06/04/2025	View
<input type="checkbox"/> Cement Mason Local 132 Hev Hwy (Columbus)	Cement Mason	Commercial	05/01/2025	04/30/2025	View
<input type="checkbox"/> Electrical Local 683 Inside	Electrical	Commercial	08/13/2025	08/13/2025	View
<input type="checkbox"/> Electrical Local 683 Inside Lt Commercial South West	Electrical	Commercial	08/13/2025	08/13/2025	View
<input type="checkbox"/> Electrical Local 683 Voice Data Video	Electrical	Commercial	08/13/2025	08/13/2025	View
<input type="checkbox"/> Electrical Local 71 High Tension Pipe Type Cable	Electrical	Commercial	01/06/2025	12/31/2024	View

	Union ↑	Classification	Wage Rate Type	Effective Date	Posted Date	
<input type="checkbox"/>	Electrical Local 71 Outside (Central OH Chapter)	Electrical	Commercial	06/04/2025	06/04/2025	View
<input type="checkbox"/>	Electrical Local 71 Outside Utility Power	Electrical	Commercial	01/06/2025	12/31/2024	View
<input type="checkbox"/>	Electrical Local 71 Underground Residential Distribution	Electrical	Commercial	01/06/2025	12/31/2024	View
<input type="checkbox"/>	Electrical Local 71 Voice Data Video Outside	Electrical	Commercial	03/06/2024	03/06/2024	View
<input type="checkbox"/>	Elevator Local 37	Elevator	Commercial	01/01/2024	12/27/2023	View
<input type="checkbox"/>	Glazier Local 372	Glazier	Commercial	11/12/2025	11/12/2025	View
<input type="checkbox"/>	Ironworker Local 172	Ironworker	Commercial	11/05/2025	11/05/2025	View
<input type="checkbox"/>	Labor HevHwy 3	Laborer	Commercial	06/11/2025	06/11/2025	View
<input type="checkbox"/>	Labor Local 574	Laborer	Commercial	05/21/2025	05/21/2025	View
<input type="checkbox"/>	Operating Engineers - Building Local 18 - Zone III	Operating Engineer	Commercial	05/01/2025	04/30/2025	View
<input type="checkbox"/>	Operating Engineers - HevHwy Zone II	Operating Engineer	Commercial	05/01/2025	04/30/2025	View
<input type="checkbox"/>	Painter Local 1275	Painter	Commercial	11/12/2025	11/12/2025	View
<input type="checkbox"/>	Painter Local 1275 Drywall	Painter	Commercial	10/29/2025	10/29/2025	View
<input type="checkbox"/>	Painter Local 1275 HevHwy	Painter	Commercial	11/12/2025	11/12/2025	View
<input type="checkbox"/>	Painter Local 1275 Industrial	Painter	Commercial	11/12/2025	11/12/2025	View
<input type="checkbox"/>	Painter Local 639 Sign and Display	Painter	Commercial	06/18/2025	06/18/2025	View
<input type="checkbox"/>	Painter Local 639 Zone 2 Sign	Painter	Commercial	05/28/2025	05/28/2025	View
<input type="checkbox"/>	Plasterer Local 132 (Columbus)	Plasterer	Commercial	06/01/2025	05/28/2025	View
<input type="checkbox"/>	Plumber Pipefitter Local 189	Plumber Pipefitter	Commercial	08/21/2024	08/21/2024	View
<input type="checkbox"/>	Roofer Local 86	Roofer	Commercial	09/03/2025	09/03/2025	View
<input type="checkbox"/>	Sheet Metal Local 24 (Columbus)	Sheet Metal Worker	Commercial	06/11/2025	06/11/2025	View
<input type="checkbox"/>	Sprinkler Fitter Local 669	Sprinkler Fitter	Commercial	08/06/2025	08/06/2025	View
<input type="checkbox"/>	Truck Driver Locals 20,40,92,100,175,284,348,377,637,697,908,957 - Bldg & HevHwy Class 1	Truck Driver	Commercial	05/28/2025	05/28/2025	View
<input type="checkbox"/>	Truck Driver Locals 20,40,92,100,175,284,348,377,637,697,908,957 - Bldg & HevHwy Class 2	Truck Driver	Commercial	05/28/2025	05/28/2025	View

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Asbestos Local 207	LCN01-2025ib	Asbestos Worker	08/06/2025	08/06/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Asbestos Abatement	\$32.50	\$10.95	\$7.25	\$0.75	\$3.75	\$0.00	\$0.05	\$0.00	\$0.00	\$55.25	\$71.50
Trainee	Percent	BHR									
Trainee	67.690000	\$22.00	\$10.95	\$1.90	\$0.75	\$1.00	\$0.00	\$0.05	\$0.00	\$36.65	\$47.65

Special Calculation Note

Other: Drug Testing

Ratio

3 Journeymen to 1 Trainee

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Ashtabula*, Athens, Auglaize, Brown, Butler*, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Delaware, Erie*, Fairfield, Fayette, Franklin, Geauga, Greene, Guernsey, Hamilton, Hardin, Harrison, Highland, Hocking, Holmes, Huron, Knox, Lake, Licking, Logan, Lorain, Madison, Mahoning, Marion, Medina, Miami, Montgomery, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Portage, Preble, Richland, Ross, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Vinton, Warren*, Wayne

Special Jurisdictional Note

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

Butler County: (townships of Fairfield, Hanover, Liberty, Milford, Morgan, Oxford, Ripley, Ross, St. Clair, Union & Wayne) (Lemon & Madison)

Erie County: (post offices & townships of Berlin, Berlin Heights, Birmingham, Florence, Huron, Milan, Shinrock & Vermilion)

Warren County: (townships of: Deerfield, Hamilton, Harlan, Salem, Union & Washington) (Clear Creek, Franklin, Mossie, Turtle Creek & Wayne)

Details

An Abatement Journeyman is anyone who has more than 600 hours in the Asbestos Abatement field.

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

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

An Official State of Ohio site. [Here's how you know](#)

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Asbestos Local 50 Heat & Frost Insulators	LCN02-2025ib	Asbestos Worker	07/30/2025	07/30/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Asbestos Insulation Mechanic	\$40.56	\$9.55	\$9.60	\$0.55	\$0.00	\$4.75	\$0.00	\$0.00	\$0.00	\$65.01	\$85.29
Firestop Technician	\$40.56	\$9.55	\$9.60	\$0.55	\$0.00	\$4.75	\$0.00	\$0.00	\$0.00	\$65.01	\$85.29
Apprentice	Percent	BHR									
1st year	63.630000	\$25.81	\$9.55	\$4.52	\$0.50	\$0.00	\$0.50	\$0.00	\$0.00	\$40.88	\$53.78
2nd year	74.230000	\$30.11	\$9.55	\$4.52	\$0.50	\$0.00	\$0.85	\$0.00	\$0.00	\$45.53	\$60.59
3rd year	84.830000	\$34.41	\$9.55	\$6.76	\$0.50	\$0.00	\$1.25	\$0.00	\$0.00	\$52.47	\$69.67
4th year	90.130000	\$36.56	\$9.55	\$6.76	\$0.50	\$0.00	\$1.50	\$0.00	\$0.00	\$54.87	\$73.15

Special Calculation Note

Ratio

1 Journeymen to 1 Apprentice
 4 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note)

Athens, Auglaize, Butler*, Champaign, Clark, Clinton, Crawford, Darke, Delaware, Fairfield, Fayette, Franklin, Greene, Guernsey, Hardin, Hocking, Knox, Licking, Logan, Madison, Marion, Miami, Montgomery, Morgan, Morrow, Muskingum, Noble, Pery, Pickaway, Preble, Ross, Shelby, Union, Vinton, Warren*

Special Jurisdictional Note

Butler County: Townships of Lemon and Madison.
 Warren County: Township of Clear Creek, Franklin, Massie, Turtle Creek and Wayne

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Boilermaker Local 85	LCN01-2012kp	Boilermaker	03/28/2012	03/28/2012

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Boilermaker	\$31.01	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$54.19	\$69.70	
Apprentice	Percent	BHR										
1st 6 months	70.000000	\$21.71	\$6.97	\$0.25	\$0.35	\$0.00	\$0.25	\$2.09	\$0.00	\$0.00	\$31.62	\$42.47
2nd 6 months	72.500000	\$22.48	\$6.97	\$0.25	\$0.35	\$0.00	\$0.25	\$2.09	\$0.00	\$0.00	\$32.39	\$43.63
3rd 6 months	75.000000	\$23.26	\$6.97	\$0.25	\$0.35	\$0.00	\$0.25	\$2.09	\$0.00	\$0.00	\$33.17	\$44.80
4th 6 months	77.500000	\$24.03	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$47.21	\$59.23
5th 6 months	80.000000	\$24.81	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$47.99	\$60.39
6th 6 months	85.000000	\$26.36	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$49.54	\$62.72
7th 6 months	90.000000	\$27.91	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$51.09	\$65.04
8th 6 months	95.000000	\$29.46	\$6.97	\$10.77	\$0.35	\$0.00	\$3.00	\$2.09	\$0.00	\$0.00	\$52.64	\$67.37

Special Calculation Note

No special calculations for this skilled craft wage rate are required at this time.

Ratio

5 Journeymen to 1 Apprentice 10 Journeymen to 2 Apprentice 15 Journeymen to 3 Apprentice Helpers will be referred in the event that apprentices are NOT available.

Jurisdiction (* denotes special jurisdictional note)

Allen, Ashland, Auglaize, Crawford, Darke, Defiance, Delaware, Erie, Fulton, Hancock, Hardin, Henry, Huron, Knox, Logan, Lucas, Marion, Mercer, Morrow, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Shelby, Union, Van Wert, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Bricklayer Local 23 (Columbus Tile Finisher)	LCN01-2025ib	Bricklayer	06/01/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Bricklayer Tile Marble Finisher	\$31.75	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$44.76	\$60.64
Terrazzo Finisher	\$32.00	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$45.01	\$61.01
Floor Grinder	\$32.25	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$45.26	\$61.39
Base Grinder	\$32.50	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$45.51	\$61.76
Apprentice	Percent	BHR									
1st Year	70.000000	\$22.23	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$35.24	\$46.35
2nd Year	80.000000	\$25.40	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$38.41	\$51.11
3rd Year	90.000000	\$28.58	\$8.72	\$3.24	\$0.55	\$0.00	\$0.50	\$0.00	\$0.00	\$41.59	\$55.87
Apprentice Improver	50.000000	\$15.88	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15.88	\$23.81

Special Calculation Note

Ratio

1-2 Journeymen to 1 Apprentice 3-5 Journeymen to 2 Apprentice Crews larger than 5: 4 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Athens, Coshocton, Delaware, Fairfield, Fayette, Franklin, Guernsey, Hocking, Jackson, Knox, Licking, Madison, Meigs, Morgan, Muskingum, Noble, Perry, Pickaway, Pike, Ross, Union, Vinton, Washington

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Bricklayer Local 23 (Columbus Tile Setter)	LCN01-2025ib	Bricklayer	06/01/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Bricklayer Tile Setter	\$33.89	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$52.69	\$69.64
Marble Mason	\$33.89	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$52.69	\$69.64
Terrazzo Worker	\$34.14	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$52.94	\$70.01
Terrazzo Worker, Installation	\$34.14	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$52.94	\$70.01
Apprentice	Percent	BHR									
1st Year	70.000000	\$23.72	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$42.52	\$54.38
2nd Year	80.000000	\$27.11	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$45.91	\$59.47
3rd Year	90.000000	\$30.50	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$49.30	\$64.55
4th Year	95.000000	\$32.20	\$9.47	\$7.40	\$0.68	\$0.00	\$1.25	\$0.00	\$0.00	\$51.00	\$67.09

Special Calculation Note

Ratio

1 - 3 Journeyman to 1 Apprentice 4 - 8 Journeyman to 2 Apprentice 9 - 13 Journeyman to 3 Apprentice 14 - 18 Journeyman to 4 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Athens, Coshocton, Delaware, Fairfield, Fayette, Franklin, Guernsey, Hocking, Jackson, Knox, Licking, Madison, Meigs, Morgan, Muskingum, Noble, Perry, Pickaway, Pike, Ross, Union, Vinton, Washington

Special Jurisdictional Note

Noble County: (Townships of Beaver, Buffalo, Seneca & Wayne)

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Bricklayer Local 23 (Columbus)	LCN01-2025ib	Bricklayer	06/01/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Bricklayer	\$37.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$58.86	\$77.54
Lay Out Man	\$37.85	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$59.36	\$78.29
Saw Man	\$37.85	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$59.36	\$78.29
Stone & Cement Mason	\$37.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$58.86	\$77.54
Pointer Caulker Cleaner Block Stone	\$37.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$58.86	\$77.54
Plaster	\$37.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$58.86	\$77.54
Swing Stage (Ground Floors thru 23 Floors)	\$38.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$59.86	\$79.04
Swing Stage (24th Floors and Above)	\$39.35	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$60.86	\$80.54
Apprentice Bricklayers & Stone & Pointer Caulker Cleaner	Percent	BHR									
1st Year	70.000000	\$26.15	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$47.66	\$60.73
2nd Year	80.000000	\$29.88	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$51.39	\$66.33
3rd Year	90.000000	\$33.62	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$55.13	\$71.93
4th Year	95.000000	\$35.48	\$10.48	\$9.04	\$0.74	\$0.00	\$1.25	\$0.00	\$0.00	\$56.99	\$74.73
MASON TRAINEES											
1-90 Days	50.020000	\$18.68	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$18.68	\$28.02
90-365 Days	50.020000	\$18.68	\$10.48	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$29.16	\$38.50
2nd Year	55.000000	\$20.54	\$10.48	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.02	\$41.29

Special Calculation Note

No special calculations for this skilled craft wage rate are required at this time.

Ratio

REQUIRED RATIO 1-2 Journeyman to 1 Apprentice 3- 6 Journeyman to 2 Apprentice 7-10 Journeyman to 3 Apprentice 1-15 Journeyman to 4 Apprentice MASON TRAINEE REQUIRED RATIO 1 Apprentice permits 1 Mason Trainee 2 Apprentice permits 1 Mason Trainee 3 Apprentice permits 2 Mason Trainee 4 Apprentice permits 2 Mason Trainee

Jurisdiction (* denotes special jurisdictional note)

Delaware, Franklin, Madison, Pickaway, Union

Special Jurisdictional Note

Details

MASON TRAINEE: duties shall be to work in all aspects of Masonry construction taking direction from the employer and the Journeyman Bricklayer & Stone Mason's working on the job. MASON TRAINEE may work on job site only when a registered apprentice is on job and the ratios in above table will be strictly enforced. Above Journeyman Rate: Brick Power Saw Pay \$.50 Designated layout person \$.50 Swingstage Work \$1.00 at start, and additional \$2.00 at 24th floor

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Bricklayer Local 23 Heavy Hwy (A)	LCN01-2024ib	Bricklayer	06/05/2024	06/05/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Cement Mason Bricklayer Sewer Water Works A	\$33.39	\$10.00	\$9.53	\$0.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.45	\$70.15
Apprentice	Percent	BHR									
1st year	70.000000	\$23.37	\$10.00	\$9.53	\$0.53	\$0.00	\$0.00	\$0.00	\$0.00	\$43.43	\$55.12
2nd year	80.000000	\$26.71	\$10.00	\$9.53	\$0.53	\$0.00	\$0.00	\$0.00	\$0.00	\$46.77	\$60.13
3rd year	90.000000	\$30.05	\$10.00	\$9.53	\$0.53	\$0.00	\$0.00	\$0.00	\$0.00	\$50.11	\$65.14

Special Calculation Note

NOT FOR BUILDING CONSTRUCTION.

Ratio

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

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Geauga, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

(A) Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site Heavy Construction, Airport Construction Or Railroad Construction Work. (B) Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work ,Pollution Control,Sewer Plant, Waste Plant, & Water Treatment Facilities, Construction.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Bricklayer Local 23 Heavy Hwy (B)	LCN01-2024ib	Bricklayer	06/05/2024	06/05/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Cement Mason Bricklayer Power Plants Tunnels Amusement Parks B	\$34.39	\$10.00	\$9.52	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.45	\$71.65
Apprentice	Percent	BHR									
1st year	70.000000	\$24.07	\$10.00	\$9.52	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$44.13	\$56.17
2nd year	80.000000	\$27.51	\$10.00	\$9.52	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$47.57	\$61.33
3rd year	90.000000	\$30.95	\$10.00	\$9.52	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$51.01	\$66.49

Special Calculation Note

NOT FOR BUILDING CONSTRUCTION.

Ratio

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

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Geauga, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

(A) Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site Heavy Construction, Airport Construction Or Railroad Construction Work. (B) Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work ,Pollution Control,Sewer Plant, Waste Plant, & Water Treatment Facilities, Construction.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Carpenter & Pile Driver Local 200	LCN01-2025ib	Carpenter	05/07/2025	05/07/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Carpenter	\$35.94	\$8.85	\$10.78	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$59.69	\$77.66	
Pile Driver	\$35.69	\$8.85	\$10.78	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$59.44	\$77.29	
Apprentice paid at % of their rate above	Percent	BHR										
1st 6 months	70.000000	\$25.16	\$8.85	\$2.00	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$40.13	\$52.71
2nd 6 months	70.000000	\$25.16	\$8.85	\$2.00	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$40.13	\$52.71
3rd 6 months	80.000000	\$28.75	\$8.85	\$8.62	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$50.34	\$64.72
4th 6 months	80.000000	\$28.75	\$8.85	\$8.62	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$50.34	\$64.72
5th 6 months	90.000000	\$32.35	\$8.85	\$9.70	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$55.02	\$71.19
6th 6 months	90.000000	\$32.35	\$8.85	\$9.70	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$55.02	\$71.19
7th 6 months	95.000000	\$34.14	\$8.85	\$10.24	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$57.35	\$74.42
8th 6 months	95.000000	\$34.14	\$8.85	\$10.24	\$0.70	\$0.00	\$3.26	\$0.16	\$0.00	\$0.00	\$57.35	\$74.42

Special Calculation Note

Other is UBC National Fund.

Ratio

1 Journeyman to 1 Apprentice Thereafter 2 Journeyman to 1 Apprentice The first carpenter on the job shall be a journeyman. The second carpenter employed may be an apprentice carpenter. After one (1) journeyman and one (1) apprentice are employed, each employer shall employ a ratio of one (1) apprentice, when available, to two (2) journeyman.

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Franklin, Guernsey, Licking, Madison, Marion, Muskingum, Morgan, Noble, Perry, Pickaway, Union

Special Jurisdictional Note

Details

CARPENTERS duties shall include but not limited to the milling, fashioning, joining, assembling, erecting, fastening, or dismantling of scaffolding and of material of wood, plastic, metal, fiber, cork and composition, and all other substitute materials. The handling, cleaning, erecting, installing and dismantling of machinery, equipment and all materials used by carpenters. The building and setting of all concrete forms and decking, and dismantling the same; the setting of templates for anchor bolts for structural members and for machinery, and the placing, leveling and bracing of these bolts; the making of all forms for bulkheads, figures, post, balusters and ornaments. The erection and installation of cooling towers assembled onsite. The building of all barricades and handling of rough lumber and drywall. The installation of all required blocking and all toilet accessories, including but not limited to grab bars, napkin dispensers and receptacles, mirrors and soap dispensers. The installation of metal studs and the welding of studs and other fastenings to receive material being applied by carpenters. The installation of all material used in drywall construction such as plasterboard, transite and other composition boards. The installation of carpet, artificial turf, wood and Resilient floors shall consist of and include the laying of all special designs of wood, wood block, wood composition, cork, linoleum, asphalt, mastic, plastic and rubber tile, whether nailed or laid in, or with linoleum paste or glue compositions. The installation of garage and overhead doors. The installation of fixtures, cabinets, shelving, racks, louvers, etc. The assembling and setting of all seats in theaters, halls, churches, schools, auditoriums, grandstands and other buildings. Our claim of jurisdiction, therefore, extends over the following subdivisions of the trade. Carpenters and Joiners; Bridge, Dock and Wharf Carpenters, Divers, Underpinners, Timbermen and Core Drillers; Shipwrights, Boat Builders, Ship Carpenters, Joiners and Caulkers, Cabinet Makers, Bench Hands, Stair Builders; Millmen; Wood and Resilient Floor Layers and Finishers; Carpet Layers; Shinglers; Siders; Insulators; Acoustic and Drywall Applicators; Shorers and House Movers; Loggers; Lumber and Sawmill Workers; Furniture Workers; Reed and Rattan Workers; Shingle Weavers; Casket and Coffin Makers; Box Makers; Railroad Carpenters; and Car Builders, regardless of material used; and all those engaged in the operation of woodworking or other machinery required in the fashioning, milling or manufacturing of products used in the trade, or engaged as helpers to any of the above divisions or subdivisions, and the handling, erecting and installing of material on any of the above divisions or subdivisions; burning welding, rigging and the use of any instrument or tool for layout work incidental to the trade. When the term "Carpenter" and "Joiner" is used, it shall mean all the subdivisions of the trade. PILEDRIVER: Where piling is used in the construction and repair of all wharves, docks, piers, trestles, caissons, cofferdams, the erection of all sea walls and breakwaters. The placing of all walling, bumper guards of wood or metal. The framing, boring, drilling or burning of all holes in the same, all tie and hog rods in connection with Piledrivers work. The driving, bracing, plumbing, cutting-off and capping of all piling whether wood, steel sheeting, metal pipe piling, composite or concrete. The heading and splicing of wood piling and the making of woodsheet piling. The welding, cutting or burning of any metal and wood piling and shoring and underpinning in connection with Piledriver work. The loading and unloading of all piling and other material used in connection with Piledrivers work. The loading, unloading, erecting, framing, dismantling, moving and handling of all drivers, derrick, cranes and other piledriving equipment used in the work. Drilling in piling or drilled in caissons where a steel liner is used. All machinery used for handling spuds or anchors on floating equipment used in our work shall be operated by our members. Where swing lines or derricks are used, members shall be used as watchmen. All underwater and marine work on all bulkheads, wharves, docks, shipyards, caissons, piers, bridges, pipeline work, viaducts, marine cable and trestles, as well as salvage and reclamation work where divers are employed. All clamming work that is done by floating derricks.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Carpenter & Piledriver SC District HevHwy	LCR01-20251b	Carpenter	07/09/2025	07/09/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Journeyman	\$35.69	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$59.09	\$76.94	
Apprentice	Percent	BHR										
1st 6 months	70.000000	\$24.98	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$48.38	\$60.87
2nd 6 months	70.000000	\$24.98	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$48.38	\$60.87
3rd 6 months	80.000000	\$28.55	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$51.95	\$66.23
4th 6 months	80.000000	\$28.55	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$51.95	\$66.23
5th 6 months	90.000000	\$32.12	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$55.52	\$71.58
6th 6 months	90.000000	\$32.12	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$55.52	\$71.58
7th 6 months	95.000000	\$33.91	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$57.31	\$74.26
8th 6 months	95.000000	\$33.91	\$8.85	\$10.78	\$0.70	\$0.00	\$2.91	\$0.16	\$0.00	\$0.00	\$57.31	\$74.26

Special Calculation Note

Other: UBC National Fund

When the contractor furnishes the necessary underwater gear for the diver, the diver shall be paid one and one half (1 & 1/2) times the journeyman rate for the time spent in the water.

Ratio

1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

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, Washington

Special Jurisdictional Note

Details

**Highway Construction, Airport Construction, Heavy Construction but not limited to: Tunnels, subways, drainage projects, flood control, reservoirs

Railroad Construction, Sewer Waterworks & Utility Construction but not limited to: storm sewers, waterlines, gas lines

Industrial & Building site, Power Plant, Amusement Park, Athletic stadium site, Sewer and Water Plants.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Carpenter Millwright Local 1090 Columbus	LCN01-2025ib	Carpenter	05/13/2025	05/13/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Carpenter Millwright	\$35.59	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$0.00	\$63.49	\$81.29
Apprentice	Percent	BHR									
1st 6 months	70.000000	\$24.91	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$52.81	\$65.27
2nd 6 months	70.000000	\$24.91	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$52.81	\$65.27
3rd 6 months	80.000000	\$28.47	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$56.37	\$70.61
4th 6 months	80.000000	\$28.47	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$56.37	\$70.61
5th 6 months	90.000000	\$32.03	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$59.93	\$75.95
6th 6 months	90.000000	\$32.03	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$59.93	\$75.95
7th 6 months	95.000000	\$33.81	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$61.71	\$78.62
8th 6 months	95.000000	\$33.81	\$8.85	\$10.99	\$0.70	\$0.00	\$7.20	\$0.16	\$0.00	\$61.71	\$78.62

Special Calculation Note

Other is for UBC National Fund.

Ratio

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Franklin, Guernsey, Licking, Madison, Marion, Morgan, Muskingum, Noble, Perry, Pickaway, Union

Special Jurisdictional Note

Details

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

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Cement Mason Local 132 (Columbus)	LCN01-2025ib	Cement Mason	06/04/2025	06/04/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Cement Mason	\$35.12	\$8.90	\$4.65	\$0.75	\$0.00	\$3.10	\$0.06	\$0.00	\$0.00	\$52.58	\$70.14
Apprentice	Percent	BHR									
1st Year	70.000000	\$24.58	\$8.90	\$4.65	\$0.75	\$0.00	\$3.10	\$0.06	\$0.00	\$42.04	\$54.34
2nd Year	80.000000	\$28.10	\$8.90	\$4.65	\$0.75	\$0.00	\$3.10	\$0.06	\$0.00	\$45.56	\$59.60
3rd Year	90.000000	\$31.61	\$8.90	\$4.65	\$0.75	\$0.00	\$3.10	\$0.06	\$0.00	\$49.07	\$64.87

Special Calculation Note

Other: International Training Fund

Ratio

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Ashland, Coshocton, Crawford, Delaware, Fairfield, Fayette, Franklin, Guernsey, Hocking, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Richland, Ross, Union, Vinton, Wyandot

Special Jurisdictional Note

Details

Working on swing stage, slip scaffold, window jack scaffold, scissor lifts, and aerial lifts shall receive the following rates: \$.50 above the regular rate for heights up to fifty (50) feet above grade level \$1.00 above the regular rate for heights over fifty (50) feet above grade level

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Cement Mason Local 132 Hev Hwy (Columbus)	LCN01-2025ib	Cement Mason	05/01/2025	04/30/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Cement Mason	\$37.29	\$9.00	\$7.65	\$0.75	\$0.00	\$2.40	\$0.07	\$0.00	\$0.00	\$57.16	\$75.81
Apprentice	Percent	BHR									
1st Year	70.000000	\$26.10	\$9.00	\$7.65	\$0.75	\$0.00	\$2.40	\$0.07	\$0.00	\$45.97	\$59.02
2nd Year	80.000000	\$29.83	\$9.00	\$7.65	\$0.75	\$0.00	\$2.40	\$0.07	\$0.00	\$49.70	\$64.62
3rd Year	90.000000	\$33.56	\$9.00	\$7.65	\$0.75	\$0.00	\$2.40	\$0.07	\$0.00	\$53.43	\$70.21

Special Calculation Note

Other: International Training Fund

Ratio

1 Journeyman to 1 Apprentice 2 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note)

Ashland, Athens, Coshocton, Crawford, Delaware, Fairfield, Fayette, Franklin, Guernsey, Hocking, Knox, Licking, Madison, Marion, Meigs, Monroe, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Richland, Ross, Union, Vinton, Washington, Wyandot

Special Jurisdictional Note

Details

Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site, Heavy Construction, Airport Construction Or Railroad Construction Work, Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work, Pollution Control, Sewer Plant, Waste & Water Plant, Water Treatment Facilities Construction.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 683 Inside	LCN02-20251b	Electrical	08/13/2025	08/13/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Electrician	\$43.00	\$12.15	\$8.81	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$69.37	\$90.87
Welding	\$44.00	\$12.15	\$8.84	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$70.40	\$92.40
Medium Voltage Splicing	\$44.00	\$12.15	\$8.84	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$70.40	\$92.40
Over 100 feet	\$64.50	\$12.15	\$9.46	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$91.52	\$123.77
Level 1 CW 0 to 2000 hours	\$15.29	\$6.83	\$0.46	\$0.92	\$0.00	\$0.46	\$0.10	\$0.00	\$0.00	\$24.06	\$31.71
Level 2 CW 2001 to 4000 hours	\$16.25	\$6.83	\$0.49	\$0.92	\$0.00	\$0.49	\$0.10	\$0.00	\$0.00	\$25.08	\$33.21
Level 3 CW 4001 to 6000 hours	\$17.20	\$6.83	\$0.52	\$0.92	\$0.00	\$0.52	\$0.10	\$0.00	\$0.00	\$26.09	\$34.69
Level 4 CW 6001 to 8000 hours	\$19.12	\$6.83	\$0.57	\$0.92	\$0.00	\$0.57	\$0.10	\$0.00	\$0.00	\$28.11	\$37.67
Level 1 CE 8001 to 10000 hours	\$21.03	\$6.83	\$0.63	\$0.92	\$0.00	\$0.63	\$0.10	\$0.00	\$0.00	\$30.14	\$40.66
Level 2 CE 10,001 to 12,000 hours	\$22.94	\$6.83	\$0.69	\$0.92	\$0.00	\$0.69	\$0.10	\$0.00	\$0.00	\$32.17	\$43.64
Level 3 CE 12,001 to 14,000 hours	\$28.67	\$6.83	\$0.86	\$0.92	\$0.00	\$0.86	\$0.10	\$0.00	\$0.00	\$38.24	\$52.58
Apprentice	Percent	BHR									
0-1000 hrs 1st Period	50.000000	\$21.50	\$12.15	\$4.41	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$39.22	\$49.97
1001-2000 hrs 2nd Period	55.000000	\$23.65	\$12.15	\$4.85	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$41.81	\$53.63
2001-3500 hrs 3rd Period	60.000000	\$25.80	\$12.15	\$5.28	\$1.16	\$0.00	\$2.55	\$0.00	\$0.00	\$46.94	\$59.84
3501-5000 hrs 4th Period	65.000000	\$27.95	\$12.15	\$5.73	\$1.16	\$0.00	\$2.76	\$0.00	\$0.00	\$49.75	\$63.73
5001-6500 hrs 5th Period	70.000000	\$30.10	\$12.15	\$6.16	\$1.16	\$0.00	\$2.98	\$0.00	\$0.00	\$52.55	\$67.60
6501-8000 hrs 6th Period	80.000000	\$34.40	\$12.15	\$7.05	\$1.16	\$0.00	\$3.40	\$0.00	\$0.00	\$58.16	\$75.36

Special Calculation Note

Other for CW/CE: Education Fund

Ratio

1 to 3 Journeymen to 2 Apprentices
 4 to 6 Journeymen to 4 Apprentices

Construction Wireman and Construction Electrician Ratio:

1 Journeymen to 4 (CW/CE) Employees

An Inside Journeyman Wireman is required on the project at the 5th worker or when apprentices are used.

Jurisdiction (* denotes special jurisdictional note)

Champaign, Clark, Delaware, Fairfield, Franklin, Madison, Pickaway*, Union

Special Jurisdictional Note

In Pickaway County the following townships: Circleville, Darby, Harrison, Jackson, Madison, Monroe, Muhlenberg, Scioto, Walnut, Washington.

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 683 Inside Lt Commercial South West	LCN02-2025ib	Electrical	08/13/2025	08/13/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Electrician	\$43.00	\$12.15	\$8.81	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$69.37	\$90.87
Welding	\$44.00	\$12.15	\$8.84	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$70.40	\$92.40
Medium Voltage Splicing	\$44.00	\$12.15	\$8.84	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$70.40	\$92.40
Over 100 feet	\$64.50	\$12.15	\$9.46	\$1.16	\$0.00	\$4.25	\$0.00	\$0.00	\$0.00	\$91.52	\$123.77
Level 1 CW 0 to 2000 hours	\$15.29	\$6.83	\$0.46	\$0.92	\$0.00	\$0.46	\$0.10	\$0.00	\$0.00	\$24.06	\$31.71
Level 2 CW 2001 to 4000 hours	\$16.25	\$6.83	\$0.49	\$0.92	\$0.00	\$0.49	\$0.10	\$0.00	\$0.00	\$25.08	\$33.21
Level 3 CW 4001 to 6000 hours	\$17.20	\$6.83	\$0.52	\$0.92	\$0.00	\$0.52	\$0.10	\$0.00	\$0.00	\$26.09	\$34.69
Level 4 CW 6001 to 8000 hours	\$19.12	\$6.83	\$0.57	\$0.92	\$0.00	\$0.57	\$0.10	\$0.00	\$0.00	\$28.11	\$37.67
Level 1 CE 8001 to 10000 hours	\$21.03	\$6.83	\$0.63	\$0.92	\$0.00	\$0.63	\$0.10	\$0.00	\$0.00	\$30.14	\$40.66
Level 2 CE 10,001 to 12,000 hours	\$22.94	\$6.83	\$0.69	\$0.92	\$0.00	\$0.69	\$0.10	\$0.00	\$0.00	\$32.17	\$43.64
Level 3 CE 12,001 to 14,000 hours	\$28.67	\$6.83	\$0.86	\$0.92	\$0.00	\$0.86	\$0.10	\$0.00	\$0.00	\$38.24	\$52.58
Apprentice	Percent	BHR									
0-1000 hrs 1st Period	50.000000	\$21.50	\$12.15	\$4.41	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$39.22	\$49.97
1001-2000 hrs 2nd Period	55.000000	\$23.65	\$12.15	\$4.85	\$1.16	\$0.00	\$0.00	\$0.00	\$0.00	\$41.81	\$53.63
2001-3500 hrs 3rd Period	60.000000	\$25.80	\$12.15	\$5.28	\$1.16	\$0.00	\$2.55	\$0.00	\$0.00	\$46.94	\$59.84
3501-5000 hrs 4th Period	65.000000	\$27.95	\$12.15	\$5.73	\$1.16	\$0.00	\$2.76	\$0.00	\$0.00	\$49.75	\$63.73
5001-6500 hrs 5th Period	70.000000	\$30.10	\$12.15	\$6.16	\$1.16	\$0.00	\$2.98	\$0.00	\$0.00	\$52.55	\$67.60
6501-8000 hrs 6th Period	80.000000	\$34.40	\$12.15	\$7.05	\$1.16	\$0.00	\$3.40	\$0.00	\$0.00	\$58.16	\$75.36

Special Calculation Note

Other for CW/CE: Education Fund

Ratio

1 to 3 Journeymen to 2 Apprentices
 4 to 6 Journeymen to 4 Apprentices

Construction Wireman and Construction Electrician Ratio:

1 Journeymen to 4 (CW/CE) Employees

An Inside Journeyman Wireman is required on the project at the 5th worker or when apprentices are used.

Jurisdiction (* denotes special jurisdictional note)

Champaign, Clark, Delaware, Fairfield, Franklin, Madison, Pickaway*, Union

Special Jurisdictional Note

In Pickaway County the following townships: Circleville, Darby, Harrison, Jackson, Madison, Monroe, Muhlenberg, Scioto, Walnut, Washington.

Details

The scope of work for the light commercial agreement shall apply to the following facilities not to exceed 200,000 square feet; office buildings, shopping centers, auto sales agencies and garages, churches, funeral homes, nursing homes, hotels, retail and wholesale facilities, small stand-alone manufacturing facilities when free standing and not part of a larger facility (not to exceed 50,000 square fee), solar projects (500 panels or less) unless otherwise covered under the agreement, lighting retrofits (when not associated with remodels involving branch re-circuiting) lighting retrofits shall be defined as the changing of lamps and ballasts in existing light fixtures and shall also include the one for one replacement of existing fixtures, warehouses, gas stations, food service centers, restaurants, entertainment facilities, hospitals, clinics, motels, residential buildings.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 683 Voice Data Video	LCN01-2025ib	Electrical	08/13/2025	08/13/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Electrical Installer Technician B	\$32.00	\$10.62	\$4.46	\$0.80	\$0.00	\$3.00	\$0.74	\$0.00	\$0.00	\$51.62	\$67.62
Installer Technician A	\$33.50	\$10.62	\$4.51	\$0.80	\$0.00	\$3.00	\$0.77	\$0.00	\$0.00	\$53.20	\$69.95
Cable Puller	\$16.00	\$10.62	\$0.48	\$0.80	\$0.00	\$3.00	\$0.37	\$0.00	\$0.00	\$31.27	\$39.27
Apprentices	Percent	BHR									
1st Period 0 - 1000 hours	60.000000	\$19.20	\$10.62	\$4.08	\$0.80	\$3.00	\$0.44	\$0.00	\$0.00	\$38.14	\$47.74
2nd Period 1001 - 2000 hours	65.000000	\$20.80	\$10.62	\$4.12	\$0.80	\$3.00	\$0.48	\$0.00	\$0.00	\$39.82	\$50.22
3rd Period 2001 - 3000 hours	70.000000	\$22.40	\$10.62	\$4.17	\$0.80	\$3.00	\$0.52	\$0.00	\$0.00	\$41.51	\$52.71
4th Period 3001 - 4000 hours	75.000000	\$24.00	\$10.62	\$4.22	\$0.80	\$3.00	\$0.55	\$0.00	\$0.00	\$43.19	\$55.19
5th Period 4001 - 5000 hours	80.000000	\$25.60	\$10.62	\$4.27	\$0.80	\$3.00	\$0.59	\$0.00	\$0.00	\$44.88	\$57.68
6th Period 5001 - 6000 hours	85.000000	\$27.20	\$10.62	\$4.32	\$0.80	\$3.00	\$0.63	\$0.00	\$0.00	\$46.57	\$60.17

Special Calculation Note

Other is Holiday Pay

Ratio

1 Apprentice for every 1 Installer Technician
Cable Pullers can only be employed after an apprentice is employed on the job

Jurisdiction (* denotes special jurisdictional note)

Champaign, Clark, Delaware, Fairfield, Franklin, Madison, Pickaway*, Union

Special Jurisdictional Note

In Pickaway County the following townships: Circleville, Darby, Harrison, Jackson, Madison, Monroe, Muhlenberg, Scioto, Walnut, Washington.

Details

An employee who is required to wear an electronic device after hours will receive an additional 1.00 per hour for all hours worked.

HOLIDAYS: Memorial Day, 4th of July, Labor Day, Thanksgiving Day, Christmas Day, New Years Day.

The following work is EXCLUDED from the Teledata Technician work scope: - Installation of computer systems in industrial applications such as assembly lines, robotics, computer controller manufacturing systems. - Installation of conduit &/or raceways shall be installed by Inside Wireman . On sites where there is no Inside Wireman employed, the Teledata Technician may install raceway, or conduit not greater than 10 foot. - Fire Alarm work is excluded on all new construction sites or wherever the fire alarm system is installed in conduit - All HVAC control work. TECHNICIAN (A) is a Technician B who holds a current Technician Certification from BICSI (Building Industry Consulting Service International, Inc.)

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

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 71 High Tension Pipe Type Cable	LCN02-2024ib	Electrical	01/06/2025	12/31/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Electrical Lineman	\$52.94	\$7.50	\$1.59	\$0.53	\$0.00	\$12.71	\$0.75	\$0.00	\$0.00	\$76.02	\$102.49	
Certified Lineman Welder	\$52.94	\$7.50	\$1.59	\$0.53	\$0.00	\$12.71	\$0.75	\$0.00	\$0.00	\$76.02	\$102.49	
Certified Cable Splicer	\$52.94	\$7.50	\$1.59	\$0.53	\$0.00	\$12.71	\$0.75	\$0.00	\$0.00	\$76.02	\$102.49	
Operator A	\$47.43	\$7.50	\$1.42	\$0.47	\$0.00	\$11.38	\$0.75	\$0.00	\$0.00	\$68.95	\$92.67	
Operator B	\$41.99	\$7.50	\$1.26	\$0.42	\$0.00	\$10.08	\$0.75	\$0.00	\$0.00	\$62.00	\$83.00	
Operator C	\$33.74	\$7.50	\$1.01	\$0.34	\$0.00	\$8.10	\$0.75	\$0.00	\$0.00	\$51.44	\$68.31	
Groundman 0-12 months Exp	\$26.47	\$7.50	\$0.79	\$0.26	\$0.00	\$6.35	\$0.75	\$0.00	\$0.00	\$42.12	\$55.36	
Groundman 0-12 months Exp w/CDL	\$29.12	\$7.50	\$0.87	\$0.29	\$0.00	\$6.99	\$0.75	\$0.00	\$0.00	\$45.52	\$60.08	
Groundman 1 yr or more	\$29.12	\$7.50	\$0.87	\$0.29	\$0.00	\$6.99	\$0.75	\$0.00	\$0.00	\$45.52	\$60.08	
Groundman 1 yr or more w/CDL	\$34.41	\$7.50	\$1.03	\$0.34	\$0.00	\$8.26	\$0.75	\$0.00	\$0.00	\$52.29	\$69.50	
Equipment Mechanic A	\$41.99	\$7.50	\$1.26	\$0.42	\$0.00	\$10.08	\$0.75	\$0.00	\$0.00	\$62.00	\$83.00	
Equipment Mechanic B	\$37.86	\$7.50	\$1.14	\$0.38	\$0.00	\$9.09	\$0.75	\$0.00	\$0.00	\$56.72	\$75.65	
Equipment Mechanic C	\$33.74	\$7.50	\$1.01	\$0.34	\$0.00	\$8.10	\$0.75	\$0.00	\$0.00	\$51.44	\$68.31	
X-Ray Technician	\$52.94	\$7.50	\$1.59	\$0.53	\$0.00	\$12.71	\$0.75	\$0.00	\$0.00	\$76.02	\$102.49	
Apprentice	Percent	BHR										
1st 1000 hrs	60.000000	\$31.76	\$7.50	\$0.95	\$0.32	\$0.00	\$7.62	\$0.75	\$0.00	\$0.00	\$48.90	\$64.79
2nd 1000 hrs	65.000000	\$34.41	\$7.50	\$1.03	\$0.34	\$0.00	\$8.26	\$0.75	\$0.00	\$0.00	\$52.29	\$69.50
3rd 1000 hrs	70.000000	\$37.06	\$7.50	\$1.11	\$0.37	\$0.00	\$8.89	\$0.75	\$0.00	\$0.00	\$55.68	\$74.21
4th 1000 hrs	75.000000	\$39.71	\$7.50	\$1.19	\$0.40	\$0.00	\$9.53	\$0.75	\$0.00	\$0.00	\$59.08	\$78.93
5th 1000 hrs	80.000000	\$42.35	\$7.50	\$1.27	\$0.42	\$0.00	\$10.16	\$0.75	\$0.00	\$0.00	\$62.45	\$83.63
6th 1000 hrs	85.000000	\$45.00	\$7.50	\$1.35	\$0.45	\$0.00	\$10.80	\$0.75	\$0.00	\$0.00	\$65.85	\$88.35
7th 1000 hrs	90.000000	\$47.65	\$7.50	\$1.43	\$0.48	\$0.00	\$11.44	\$0.75	\$0.00	\$0.00	\$69.25	\$93.07

Special Calculation Note

Other is Health Retirement Account Operator "A" John Henry Rock Drill, D-6 (or equivalent) and above, Trackhoe Digger, (320 Track excavator), Cranes (greater than 25 tons and less than 45 tons), Operator "B" Cranes (greater than 6 tons and up to 25 tons), Backhoes, Road Tractor, Dozer up to D-5, Pressure Digger- wheeled or tracked, all Tension wire Stringing equipment. Operator "C" Trench, Backhoe, Riding type vibratory Compactor, Ground Rod Driver, Boom Truck (6 ton & below), Skid Steer Loaders, Material Handler. *All Operators of cranes 45 ton or larger shall be paid the journeyman rate of pay. \$0.30 is for Health Retirement Account.

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Delaware, Fairfield, Fayette, Franklin, Gallia, Geauga, Greene, Guernsey, Hamilton, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Portage, Preble, Richland, Ross, Scioto, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

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

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 71 Outside (Central OH Chapter)	LCN01-2025ib	Electrical	06/04/2025	06/04/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Electrical Lineman	\$46.03	\$7.50	\$1.38	\$0.46	\$0.00	\$9.20	\$0.50	\$0.00	\$0.00	\$65.07	\$88.09	
Traffic Signal & Lighting Journeyman	\$44.43	\$7.50	\$1.33	\$0.44	\$0.00	\$8.89	\$0.50	\$0.00	\$0.00	\$63.09	\$85.31	
Equipment Operator	\$40.44	\$7.50	\$1.21	\$0.40	\$0.00	\$8.09	\$0.50	\$0.00	\$0.00	\$58.14	\$78.36	
Groundman 0-12 months (W/O CDL)	\$24.52	\$7.50	\$0.74	\$0.25	\$0.00	\$4.90	\$0.50	\$0.00	\$0.00	\$38.41	\$50.67	
Groundman 0-12 Months W/CDL	\$26.78	\$7.50	\$0.80	\$0.27	\$0.00	\$5.36	\$0.50	\$0.00	\$0.00	\$41.21	\$54.60	
Groundman greater than 1 Year W/CDL	\$29.07	\$7.50	\$0.87	\$0.29	\$0.00	\$5.81	\$0.50	\$0.00	\$0.00	\$44.04	\$58.58	
Traffic Signal Apprentices												
1st 1,000 hours	\$26.66	\$7.50	\$0.80	\$0.27	\$0.00	\$5.33	\$0.50	\$0.00	\$0.00	\$41.06	\$54.39	
2nd 1,000 hours	\$28.88	\$7.50	\$0.87	\$0.29	\$0.00	\$5.78	\$0.50	\$0.00	\$0.00	\$43.82	\$58.26	
3rd 1,000 hours	\$31.10	\$7.50	\$0.93	\$0.31	\$0.00	\$6.22	\$0.50	\$0.00	\$0.00	\$46.56	\$62.11	
4th 1,000 hours	\$33.32	\$7.50	\$1.00	\$0.33	\$0.00	\$6.66	\$0.50	\$0.00	\$0.00	\$49.31	\$65.97	
5th 1,000 hours	\$35.54	\$7.50	\$1.07	\$0.36	\$0.00	\$7.11	\$0.50	\$0.00	\$0.00	\$52.08	\$69.85	
6th 1,000 hours	\$39.99	\$7.50	\$1.20	\$0.40	\$0.00	\$8.00	\$0.50	\$0.00	\$0.00	\$57.59	\$77.59	
Apprentice Lineman	Percent	BHR										
1st 1,000 Hours	60.000000	\$27.62	\$7.50	\$0.83	\$0.28	\$0.00	\$5.52	\$0.50	\$0.00	\$0.00	\$42.25	\$56.06
2nd 1,000 Hours	65.000000	\$29.92	\$7.50	\$0.90	\$0.30	\$0.00	\$5.98	\$0.50	\$0.00	\$0.00	\$45.10	\$60.06
3rd 1,000 Hours	70.000000	\$32.22	\$7.50	\$0.97	\$0.32	\$0.00	\$6.44	\$0.50	\$0.00	\$0.00	\$47.95	\$64.06
4th 1,000 Hours	75.000000	\$34.52	\$7.50	\$1.04	\$0.35	\$0.00	\$6.90	\$0.50	\$0.00	\$0.00	\$50.81	\$68.07
5th 1,000 Hours	80.000000	\$36.82	\$7.50	\$1.10	\$0.37	\$0.00	\$7.36	\$0.50	\$0.00	\$0.00	\$53.65	\$72.07
6th 1,000 Hours	85.000000	\$39.13	\$7.50	\$1.17	\$0.39	\$0.00	\$7.82	\$0.50	\$0.00	\$0.00	\$56.51	\$76.07
7th 1,000 Hours	90.000000	\$41.43	\$7.50	\$1.24	\$0.41	\$0.00	\$8.28	\$0.50	\$0.00	\$0.00	\$59.36	\$80.07

Special Calculation Note

Other is Health Reimbursement Account

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Athens, Coshocton, Crawford, Delaware, Fairfield, Fayette, Franklin, Gallia, Guernsey, Highland, Hocking, Jackson, Knox, Lawrence, Licking, Madison, Marion, Meigs, Monroe, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Richland, Ross, Scioto, Tuscarawas, Union, Vinton, Washington

Special Jurisdictional Note

Details

A groundman when directed shall assist a Journeyman Lineman, Traffic Signal and Lighting Journeyman or Equipment Operator in the performance of his/her work on the ground, including the use of hand tools. Under no circumstances shall this classification climb poles, towers, or work from an elevated platform or bucket truck. This classification shall not perform work normally assigned to an Apprentice. No more than three (3) Groundmen shall work alone. Jobs with more than three Groundmen shall be supervised by a Groundcrew Foreman, Journeyman Lineman, Journeyman Traffic Signal Technician or an Equipment Operator. Scope of Work: installation and maintenance of highway and street lighting, highway and street sign lighting, electronic message boards and traffic control systems, camera systems, traffic signal work, substation and line construction including overhead and underground projects for private and industrial work as in accordance with the IBEW Constitution. This Agreement includes the operation of all tools and equipment necessary for the installation of the above projects.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 71 Outside Utility Power	LCN01-2024ib	Electrical	01/06/2025	12/31/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Electrical Lineman	\$50.15	\$7.50	\$1.50	\$0.50	\$0.00	\$12.04	\$0.75	\$0.00	\$0.00	\$72.44	\$97.52	
Substation Technician	\$50.15	\$7.50	\$1.50	\$0.50	\$0.00	\$12.04	\$0.75	\$0.00	\$0.00	\$72.44	\$97.52	
Cable Splicer	\$52.52	\$7.50	\$1.58	\$0.52	\$0.00	\$12.60	\$0.75	\$0.00	\$0.00	\$75.47	\$101.73	
Operator A	\$44.95	\$7.50	\$1.35	\$0.45	\$0.00	\$10.79	\$0.75	\$0.00	\$0.00	\$65.79	\$88.27	
Operator B	\$39.73	\$7.50	\$1.19	\$0.40	\$0.00	\$9.53	\$0.75	\$0.00	\$0.00	\$59.10	\$78.97	
Operator C	\$31.89	\$7.50	\$0.96	\$0.32	\$0.00	\$7.65	\$0.75	\$0.00	\$0.00	\$49.07	\$65.02	
Groundman 0-12 months Exp	\$25.07	\$7.50	\$0.75	\$0.25	\$0.00	\$6.02	\$0.75	\$0.00	\$0.00	\$40.34	\$52.88	
Groundman 0-12 months Exp w/CDL	\$27.58	\$7.50	\$0.83	\$0.28	\$0.00	\$6.62	\$0.75	\$0.00	\$0.00	\$43.56	\$57.35	
Groundman 1 yr or more	\$27.58	\$7.50	\$0.83	\$0.28	\$0.00	\$6.62	\$0.75	\$0.00	\$0.00	\$43.56	\$57.35	
Groundman 1 yr or more w/CDL	\$32.60	\$7.50	\$0.98	\$0.33	\$0.00	\$7.82	\$0.75	\$0.00	\$0.00	\$49.98	\$66.28	
Equipment Mechanic A	\$39.73	\$7.50	\$1.19	\$0.40	\$0.00	\$9.54	\$0.75	\$0.00	\$0.00	\$59.11	\$78.98	
Equipment Mechanic B	\$35.82	\$7.50	\$1.07	\$0.36	\$0.00	\$8.60	\$0.75	\$0.00	\$0.00	\$54.10	\$72.01	
Equipment Mechanic C	\$31.89	\$7.50	\$0.96	\$0.32	\$0.00	\$7.65	\$0.75	\$0.00	\$0.00	\$49.07	\$65.02	
Line Truck w/uuger	\$35.16	\$7.50	\$1.05	\$0.35	\$0.00	\$8.44	\$0.75	\$0.00	\$0.00	\$53.25	\$70.83	
Apprentice	Percent	BHR										
1st 1000 hrs	60.000000	\$30.09	\$7.50	\$0.90	\$0.30	\$0.00	\$7.22	\$0.75	\$0.00	\$0.00	\$46.76	\$61.81
2nd 1000 hrs	65.000000	\$32.60	\$7.50	\$0.98	\$0.33	\$0.00	\$7.82	\$0.75	\$0.00	\$0.00	\$49.98	\$66.28
3rd 1000 hrs	70.000000	\$35.11	\$7.50	\$1.05	\$0.35	\$0.00	\$8.43	\$0.75	\$0.00	\$0.00	\$53.19	\$70.74
4th 1000 hrs	75.000000	\$37.61	\$7.50	\$1.13	\$0.38	\$0.00	\$9.03	\$0.75	\$0.00	\$0.00	\$56.40	\$75.21
5th 1000 hrs	80.000000	\$40.12	\$7.50	\$1.20	\$0.40	\$0.00	\$9.63	\$0.75	\$0.00	\$0.00	\$59.60	\$79.66
6th 1000 hrs	85.000000	\$42.63	\$7.50	\$1.28	\$0.43	\$0.00	\$10.23	\$0.75	\$0.00	\$0.00	\$62.82	\$84.13
7th 1000 hrs	90.000000	\$45.14	\$7.50	\$1.35	\$0.45	\$0.00	\$10.83	\$0.75	\$0.00	\$0.00	\$66.02	\$88.58

Special Calculation Note

Other is Health Reimbursement Account Operator "A" John Henry Rock Drill, D-6 (or equivalent) and above, Trackhoe Digger, (320 Track excavator), Cranes (greater then 25 tons and less than 45 tons), Operator "B" Cranes (greater than 6 tons and up to 25 tons), Backhoes, Road Tractor, Dozer up to D-5, Pressure Digger- wheeled or tracked, all Tension wire Stringing equipment. Operator "C" Trench, Backhoe, Riding type vibratory Compactor, Ground Rod Driver, Boom Truck (6 ton & below), Skid Steer Loaders, Material Handler.

Ratio

(1) Journeyman Lineman to (1) Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Delaware, Fairfield, Fayette, Franklin, Gallia, Geauga, Greene, Guernsey, Hamilton, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Portage, Preble, Richland, Ross, Scioto, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

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

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 71 Underground Residential Distribution	LCN02-2024ib	Electrical	01/06/2025	12/31/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
URD Electrician	\$38.05	\$7.50	\$1.14	\$0.38	\$0.00	\$9.13	\$0.75	\$0.00	\$0.00	\$56.95	\$75.98	
Equipment Operator A	\$34.04	\$7.50	\$1.02	\$0.34	\$0.00	\$8.17	\$0.75	\$0.00	\$0.00	\$51.82	\$68.84	
Equipment Operator B	\$31.26	\$7.50	\$0.94	\$0.31	\$0.00	\$7.50	\$0.75	\$0.00	\$0.00	\$48.26	\$63.89	
Directional Drill Locator	\$34.04	\$7.50	\$1.02	\$0.34	\$0.00	\$8.17	\$0.75	\$0.00	\$0.00	\$51.82	\$68.84	
Directional Drill Operator	\$31.26	\$7.50	\$0.94	\$0.31	\$0.00	\$7.50	\$0.75	\$0.00	\$0.00	\$48.26	\$63.89	
Groundman 0-12 months Exp	\$24.70	\$7.50	\$0.74	\$0.25	\$0.00	\$5.93	\$0.75	\$0.00	\$0.00	\$39.87	\$52.22	
Groundman 0-12 months Exp w/CDL	\$27.24	\$7.50	\$0.82	\$0.27	\$0.00	\$6.54	\$0.75	\$0.00	\$0.00	\$43.12	\$56.74	
Groundman 1 yr or more	\$27.24	\$7.50	\$0.82	\$0.27	\$0.00	\$6.54	\$0.75	\$0.00	\$0.00	\$43.12	\$56.74	
Groundman 1 yr or more w/CDL	\$32.26	\$7.50	\$0.97	\$0.32	\$0.00	\$7.74	\$0.75	\$0.00	\$0.00	\$49.54	\$65.67	
Apprentice	Percent	BHR										
1st 1000 hrs	80.000000	\$30.44	\$7.50	\$0.91	\$0.30	\$0.00	\$7.31	\$0.75	\$0.00	\$0.00	\$47.21	\$62.43
2nd 1000 hrs	85.000000	\$32.34	\$7.50	\$0.97	\$0.32	\$0.00	\$7.76	\$0.75	\$0.00	\$0.00	\$49.64	\$65.81
3rd 1000 hrs	90.000000	\$34.25	\$7.50	\$1.03	\$0.34	\$0.00	\$8.22	\$0.75	\$0.00	\$0.00	\$52.09	\$69.21
4th 1000 hrs	95.000000	\$36.15	\$7.50	\$1.08	\$0.36	\$0.00	\$8.68	\$0.75	\$0.00	\$0.00	\$54.52	\$72.59

Special Calculation Note

Other: Health Reimbursement Account

Ratio

(1) Journeyman Lineman to (1) Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Delaware, Fairfield, Fayette, Franklin, Gallia, Geauga, Greene, Guernsey, Hamilton, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Portage, Preble, Richland, Ross, Scioto, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

This work applies to projects designated for any outside Underground Residential Distribution construction work for electrical utilities, municipalities and rural electrification projects.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Electrical Local 71 Voice Data Video Outside	LCN02-2024ib	Electrical	03/06/2024	03/06/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Electrical Installer Technician I	\$35.39	\$7.25	\$1.06	\$0.00	\$0.00	\$1.77	\$0.00	\$0.00	\$0.00	\$45.47	\$63.17
Installer Technician II	\$33.37	\$7.25	\$1.00	\$0.00	\$0.00	\$1.67	\$0.00	\$0.00	\$0.00	\$43.29	\$59.98
Installer Repairman	\$33.37	\$7.25	\$1.00	\$0.00	\$0.00	\$1.67	\$0.00	\$0.00	\$0.00	\$43.29	\$59.98
Equipment Operator II	\$24.98	\$7.25	\$0.75	\$0.00	\$0.00	\$1.25	\$0.00	\$0.00	\$0.00	\$34.23	\$46.72
Cable Splicer	\$35.39	\$7.25	\$1.06	\$0.00	\$0.00	\$1.77	\$0.00	\$0.00	\$0.00	\$45.47	\$63.17
Ground Driver W/CDL	\$16.69	\$7.25	\$0.50	\$0.00	\$0.00	\$0.83	\$0.00	\$0.00	\$0.00	\$25.27	\$33.62
Groundman	\$14.57	\$7.25	\$0.44	\$0.00	\$0.00	\$0.73	\$0.00	\$0.00	\$0.00	\$22.99	\$30.28
Trainees	Percent	BHR									
Trainee F	50.010000	\$17.70	\$7.25	\$0.53	\$0.00	\$0.89	\$0.00	\$0.00	\$0.00	\$26.37	\$35.22
Trainee E	58.000000	\$20.53	\$7.25	\$0.62	\$0.00	\$1.03	\$0.00	\$0.00	\$0.00	\$29.43	\$39.69
Trainee D	66.000000	\$23.36	\$7.25	\$0.70	\$0.00	\$1.17	\$0.00	\$0.00	\$0.00	\$32.48	\$44.16
Trainee C	74.000000	\$26.19	\$7.25	\$0.79	\$0.00	\$1.31	\$0.00	\$0.00	\$0.00	\$35.54	\$48.63
Trainee B	82.000000	\$29.02	\$7.25	\$0.87	\$0.00	\$1.45	\$0.00	\$0.00	\$0.00	\$38.59	\$53.10
Trainee A	90.000000	\$31.85	\$7.25	\$0.96	\$0.00	\$1.59	\$0.00	\$0.00	\$0.00	\$41.65	\$57.58

Special Calculation Note

Ratio

1 Trainee to 1 Journeyman

Jurisdiction (* denotes special jurisdictional note)

Adams, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Delaware, Fairfield, Fayette, Franklin, Gallia, Geauga, Greene, Guernsey, Hamilton, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Portage, Preble, Richland, Ross, Scioto, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Vinton, Warren, Washington, Wayne

Special Jurisdictional Note

Details

Cable Splicer: Inspect and test lines or cables, analyze results, and evaluate transmission characteristics. Cover conductors with insulation or seal splices with moisture-proof covering. Install, splice, test, and repair cables using tools or mechanical equipment. This will include the splicing of fiber. **Installer Technician I:** Must know all aspects of telephone and cable work. This is to include aerial, underground, and manhole work. Must know how to climb and run bucket. Must have all the tools required to perform these tasks. Must be able to be responsible for the safety of the crew at all times. Must also have CDL license and have at least 5 years experience. **Installer Repairman:** Perform tasks of repairing, installing, and testing phone and CATV services. **Installer Technician II:** Have at least three years of telephone and CATV experience. Must have the knowledge of underground, aerial, and manhole work. Must be able to climb and operate bucket. Must have CDL. Must have all tools needed to perform these tasks. **Equipment Operator II:** Able to operate a digger derrick or bucket truck. Have at least 3 years of experience and must have a valid CDL license. **Groundman W/CDL:** Must have a valid CDL license and be able to perform tasks such as: climbing poles, pulling down guys, making up material, and getting appropriate tools for the job. Must have at least 5 year's experience. **Groundman:** Perform tasks such as: climbing poles, pulling down guys, making up material, and getting appropriate tools for the job. Experience 0-5 years.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Elevator Local 37	LCN01-2023ib	Elevator	01/01/2024	12/27/2023

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Elevator Mechanic	\$54.93	\$16.17	\$10.86	\$0.75	\$4.39	\$10.10	\$0.00	\$0.00	\$0.00	\$97.20	\$124.67
Helper	\$38.45	\$16.17	\$10.86	\$0.75	\$3.07	\$10.10	\$0.00	\$0.00	\$0.00	\$79.40	\$98.63
Apprentice	Percent	BHR									
Probationary Apprentice	50.010000	\$27.47	\$0.00	\$0.00	\$0.00	\$1.64	\$0.00	\$0.00	\$0.00	\$29.11	\$42.85
1st Year	55.000000	\$30.21	\$16.17	\$10.86	\$0.75	\$1.81	\$10.10	\$0.00	\$0.00	\$69.90	\$85.01
2nd Year	65.000000	\$35.70	\$16.17	\$10.86	\$0.75	\$2.14	\$10.10	\$0.00	\$0.00	\$75.72	\$93.58
3rd Year	70.000000	\$38.45	\$16.17	\$10.86	\$0.75	\$2.30	\$10.10	\$0.00	\$0.00	\$78.63	\$97.86
4th Year	80.000000	\$43.94	\$16.17	\$10.86	\$0.75	\$2.63	\$10.10	\$0.00	\$0.00	\$84.45	\$106.43
Assistant Mechanic	80.000000	\$43.94	\$16.17	\$10.86	\$0.75	\$3.51	\$10.10	\$0.00	\$0.00	\$85.33	\$107.31

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice** 1 Journeyman to 1 Helper** 1 Journeyman to 1 Assistant Mechanic**

Jurisdiction (* denotes special jurisdictional note)

Athens, Champaign, Clark, Delaware, Fairfield, Fayette, Franklin, Gallia, Guernsey, Hocking, Jackson, Knox, Lawrence, Licking, Logan, Madison, Marion, Meigs, Monroe*, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Ross, Union, Vinton

Special Jurisdictional Note

Monroe County is shared by both Local 37 and Local 6.

Details

**Art. 10 Par. 2 Apprentice Work Qualifications: Par 2- The total number of Helpers and Apprentices employed shall not exceed the number of Mechanics on any one job, except on jobs where two teams or more are working, one extra Helper or Apprentice may be employed for the first two teams and an extra Helper or Apprentice for each additional three teams. Further, the Company may use as many Helpers and Apprentices as best suits his convenience under the direction of a Mechanic in wrecking old plants and in handling and hoisting material, and on foundation work. When removing old and installing new cable on existing elevator installations, the Company may use two Helpers or Apprentices to one Mechanic.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Glazier Local 372	LCN01-2025ib	Glazier	11/12/2025	11/12/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Glazier	\$36.72	\$6.80	\$10.14	\$0.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.11	\$72.47	
Apprentice	Percent	BHR										
1st Year	70.000000	\$25.70	\$6.80	\$2.84	\$0.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.79	\$48.64
2nd Year	75.000000	\$27.54	\$6.80	\$2.84	\$0.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37.63	\$51.40
3rd Year	85.000000	\$31.21	\$6.80	\$6.55	\$0.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.01	\$60.61
4th Year	95.000000	\$34.88	\$6.80	\$6.55	\$0.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$48.68	\$66.12

Special Calculation Note

A premium of one dollar (\$1.00) per hour above regular hourly rate of pay shall be paid for each hour worked by every employee from any mechanical lift or scaffold, either suspended or supported including the Hex type scaffolding.

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Fayette*, Franklin, Hocking, Jackson, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Pike, Ross, Union, Vinton

Special Jurisdictional Note

Fayette County - locations west of State Route 62 ONLY.

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Ironworker Local 172	OCR01-2025ib	Ironworker	11/05/2025	11/05/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Ironworker	\$40.87	\$9.50	\$9.50	\$0.71	\$0.00	\$3.50	\$0.00	\$0.00	\$0.00	\$64.08	\$84.52
Rigger Welder Reinforcing Sheeter Fence Erector Machinery Mover	\$40.87	\$9.50	\$9.50	\$0.71	\$0.00	\$3.50	\$0.00	\$0.00	\$0.00	\$64.08	\$84.52
Apprentice	Percent	BHR									
1st Year 0-1500 Hours	70.000000	\$28.61	\$9.50	\$9.50	\$0.71	\$0.00	\$3.50	\$0.00	\$0.00	\$51.82	\$66.12
2nd Year 1501-3000 Hours	80.000000	\$32.70	\$9.50	\$9.50	\$0.71	\$0.00	\$3.50	\$0.00	\$0.00	\$55.91	\$72.25
3rd Year 3001-4500 Hours	90.020000	\$36.79	\$9.50	\$9.50	\$0.71	\$0.00	\$3.50	\$0.00	\$0.00	\$60.00	\$78.40

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Champaign*, Clark*, Crawford*, Delaware, Fairfield, Fayette*, Franklin, Hardin*, Highland*, Hocking, Jackson*, Knox, Licking, Logan*, Madison*, Marion, Morrow, Muskingum*, Perry, Pickaway, Pike, Ross, Union, Vinton, Wyandot*

Special Jurisdictional Note

Champaign County Twps included: Wayne, Rush, Goshen
 Clark County Twps included: Vienna, Catawba and portions of Harmony and Pleasant
 Crawford County Twps included: Bucyrus, Dallas, Jefferson, Jackson, Whetstone, Polk, Sandusky
 Fayette County Twps included: Paint, Marion, Perry, Madison, Wayne, Union
 Hardin County Twps included: McDonald, Taylorcreek, Hale, Dudley, Pleasant, Goshen, Blanchard, Lynn, Jackson, Buck, Cessna, Marion, Washington
 Highland County Twps included: Madison. Jackson County Twps included: Liberty, Washington, Milton, Jackson, Coal, Wilkesville
 Logan County Twps included: Monroe, Zane, Jefferson, Perry, Rush Creek, Bokes Creek
 Madison County Twps included: Range, Paint, Fairfield, Sommerford, Jefferson, Pike, Canaan, Pleasant, Oak Run, Union, Deer Creek, Monroe, Darby
 Muskingum County Twps include: Jackson, Licking, Hope Well, Newton, Clay, Cass, Muskingum falls, Springfield, Madison, Washington, Wayne, Brush Creek
 Pike County Twps included: Perry, Benton, Mifflin, Sunfish, Newton, Prebble, Pee Pee, Seal, Beaver, Jackson
 Wyandot County Twps included: Jackson, Marseilles, Mifflin, Pitt, Antrim

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Labor HevHwy 3	LCN02-2025ib	Laborer	06/11/2025	06/11/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Laborer Group 1	\$37.27	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$53.37	\$72.01
Group 2	\$37.44	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$53.54	\$72.26
Group 3	\$37.77	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$53.87	\$72.76
Group 4	\$38.22	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$54.32	\$73.43
Watch Person	\$32.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$48.10	\$64.10
Apprentice	Percent	BHR									
0-1000 hrs	80.000000	\$29.82	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$45.92	\$60.82
1001-2000 hrs	85.000000	\$31.68	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$47.78	\$63.62
2001-3000 hrs	90.000000	\$33.54	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$49.64	\$66.41
3001-4000 hrs	95.000000	\$35.41	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$51.51	\$69.21
More than 4000 hrs	100.000000	\$37.27	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$53.37	\$72.01

Special Calculation Note

Watchmen have no Apprentices. Tunnel Laborer rate with air-presurized add \$1.00 to the above wage rate. Commercial Driver's License – Any Laborer required to utilize a valid Commercial Driver's License (CDL), are in compliance with necessary FMCSA regulations and approved by the Contractor to operate a Commercial Motor Vehicle (CMV), shall be paid one dollar (\$1.00) per hour above the base rate for the entirety of their working shift.

Ratio

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Delaware, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Madison, Marion, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Paulding, Perry, Pickaway, Pike, Preble, Putnam, Richland, Ross, Scioto, Seneca, Shelby, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wyandot

Special Jurisdictional Note

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

Details

Group 1 Laborer (Construction); Plant Laborer or Yardman, Right-of-way Laborer, Landscape Laborer, Highway Lighting Worker, Signalization Worker, (Swimming) Pool Construction Laborer, Utility Man, *Bridge Man, Handyman, Joint Setter, Flagperson, Carpenter Helper, Waterproofing Laborer, Slurry Seal, Seal Coating, Surface Treatment or Road Mix Laborer, Riprap Laborer & Grouter, Asphalt Laborer, Dump Man (batch trucks), Guardrail & Fence Installer, Mesh Handler & Placer, Concrete Curing Applicator, Scaffold Erector, Sign Installer, Hazardous Waste (level D), Diver Helper, Zone Person and Traffic Control. *Bridge Man will perform work as per the October 31, 1949, memorandum on concrete forms, by and between the United Brotherhood of Carpenters and Joiners of America and the Laborers' International Union of North America, which states in; "the moving, cleaning, oiling and carrying to the next point of erection, and the stripping of forms which are not to be re-used, and forms on all flat arch work shall be done by members of the Laborers' International Union of North America." Group 2 Asphalt Raker, Screwwoman or Paver, Concrete Puddler, Kettle Man (pipeline), All Machine-Driven Tools (Gas, Electric, Air), Mason Tender, Brick Paver, Mortar Mixer, Skid Steer, Sheeting & Shoring Person, Surface Grinder Person, Screedperson, Water Blast, Hand Held Wand, Power Buggy or Power Wheelbarrow, Paint Striper, Plastic fusing Machine Operator, Rodding Machine Operator, Pug Mill Operator, Operator of All Vacuum Devices Wet or Dry, Handling of all Pumps 4 inches and under (gas, air or electric), Diver, Form Setter, Bottom Person, Welder Helper (pipeline), Concrete Saw Person, Cutting with Burning Torch, Pipe Layer, Hand Spiker (railroad), Underground Person (working in sewer and waterline, cleaning, repairing and reconditioning), Tunnel Laborer (without air), Caisson, Cofferdam (below 25 feet deep), Air Track and Wagon Drill, Sandblaster Nozzle Person, Hazardous Waste (level B), ***Lead Abatement, Hazardous Waste (level C) ***Includes the erecting of structures for the removal, including the encapsulation and containment of Lead abatement process. Group 3 Blast and Powder Person, Muckers will be defined as shovel men working directly with the miners, Wrencher (mechanical joints & utility pipeline), Yarner, Top Lander, Hazardous Waste (level A), Concrete Specialist, Curb Setter and Cutter, Grade Checker, Concrete Crew in Tunnels. Utility pipeline Tappers, Waterline, Caulker, Signal Person will receive the rate equal to the rate paid the Laborer classification for which the Laborer is signaling. Group 4 Miner, Welder, Gunite Nozzle Person A.) The Watchperson shall be responsible to patrol and maintain a safe traffic zone including but not limited to barrels, cones, signs, arrow boards, message boards etc. The responsibility of a watchperson is to see that the equipment, job and office trailer etc. are secure.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Labor Local 574	LCN02-2025ib	Laborer	05/21/2025	05/21/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Laborer Group 1	\$31.55	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$46.10	\$61.88	
Group 2	\$32.05	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$46.60	\$62.63	
Apprentice	Percent	BHR										
1st Year	70.020000	\$22.09	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$36.64	\$47.69
2nd Year	80.000000	\$25.24	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$39.79	\$52.41
3rd Year	90.020000	\$28.40	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$42.95	\$57.15
4th Year	95.000000	\$29.97	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$44.52	\$59.51
5th Year	100.000000	\$31.55	\$8.60	\$4.45	\$0.40	\$0.00	\$1.00	\$0.00	\$0.10	\$0.00	\$46.10	\$61.88

Special Calculation Note

No special calculations for this skilled craft wage rate are required at this time.

Ratio

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Hancock, Hardin, Marion, Seneca, Wyandot

Special Jurisdictional Note

Classification Description Group 1: General Laborer including but not limited to: Signalman, Watchman, Flagman, Tool Cribman, Carpenter Tenders, Finisher Tenders, Concrete Handler, Utility Construction Laborer, Guard Rail Erectors, Fence Installer, Caulker, Water Truck, Landscaper and irrigation, Hazardous Waste (Level A of Exhibit A), Swimming Pools, Pool Decks, Parking Garage and Surrounding Sidewalks, Mucker, Caisson Worker, Creosote Workers, Form Setter, Pumps (3 inch or under), Off-road Trucks, Skid Steer, Tamp Person Group 2: Pipelayer (Bottom person), Powder Men and Dynamite Blasters, Laser Beam Set-Up Man, Grade Checker, Concrete Saws, Fork Lift, Concrete Specialist, Vibrator and Hazardous Waste (Level B, C & D of Exhibit A), Mason Tender (Brick/Hod Carrier, Cement/ Concrete, Stone), Scaffold Builder, Mortar Mixer, Plasterer Tender, Gunite Operator Hazardous Waste Removal and Lead Abatement: Level A Only in established "safe zones" may consist of, from normal work clothes to normal skin protection such as gloves, face shields goggles, coveralls and occasionally respiratory protection. Level B Protective equipment includes a protective suit and an air purifying respirator (APR) with the appropriate filter canisters. The ensemble is used when the contaminants are reliably known not to be hazardous to the skin and not IDLH (Immediately Dangerous to Life or Health) and correct filter protection is available. Level C Protective equipment includes a chemically resistant splash suit and a SCBA or Airline Fed Respirator. This ensemble is required when the situation is very hazardous, such as oxygen deficient atmospheres, IDLH atmospheres, or confined space entries. Level D Protective equipment is required when the area has been determined to contain extremely toxic contaminants or contaminants unknown but may be expected to be extremely toxic and/or immediately dangerous to life and health.

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Operating Engineers - Building Local 18 - Zone III	LCN01-2025Ib	Operating Engineer	05/01/2025	04/30/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Operator Group A	\$45.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$62.74	\$85.66
Operator Group B	\$45.72	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$62.62	\$85.48
Operator Group C	\$44.68	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$61.58	\$83.92
Operator Group D	\$43.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$60.40	\$82.15
Operator Group E	\$38.04	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$54.94	\$73.96
Master Mechanic	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Lift Director	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Cranes & Mobile Concrete Pumps 150'-180'	\$46.34	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.24	\$86.41
Cranes & Mobile Concrete Pumps 180'-249'	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Cranes & Mobile Concrete Pumps 249' and over	\$47.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.99	\$87.54
Apprentice	Percent	BHR									
1st Year	50.000000	\$22.92	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$39.82	\$51.28
2nd Year	60.000000	\$27.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$44.40	\$58.16
3rd Year	70.000000	\$32.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$48.99	\$65.03
4th Year	80.000000	\$36.67	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$53.57	\$71.91
Field Mechanic Trainee											
1st Year	60.000000	\$27.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$44.40	\$58.16
2nd Year	70.000000	\$32.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$48.99	\$65.03
3rd Year	80.000000	\$36.67	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$53.57	\$71.91
4th Year	90.000000	\$41.26	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$58.16	\$78.78

Special Calculation Note

Other: Education & Safety Misc: National Training

Ratio

For every (3) Operating Engineer Journeymen employed by the company there may be employed (1) Registered Apprentice or trainee Engineer through the referral when they are available. An apprentice, while employed as part of a crew per Article VIII, paragraph 77, will not be subject to the apprenticeship ratios in this collective bargaining agreement

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Coshocton, Crawford, Darke, Defiance, Delaware, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Madison, Marion, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wyandot

Special Jurisdictional Note

Details

Note: There will be a 10% increase for the apprentices on top of the percentages listed above provided they are operating mobile equipment. Group A - Barrier Moving Machines; Boiler Operators or Compressor Operators, when compressor or boiler is mounted on crane (Piggyback Operation); Boom Trucks (all types); Cableways Cherry Pickers; Combination - Concrete Mixers & Towers; All Concrete Pumps with Booms; Cranes (all types); Compact Cranes, track or rubber over 4,000 pounds capacity; Cranes self-erecting, stationary, track or truck (all configurations); Derricks (all types); Draglines; Dredges (dipper, clam or suction) 3-man crew; Elevating Graders or Euclid Loaders; Floating Equipment; Forklift (rough terrain with winch/hoist); Gradalls; Helicopter Operators, hoisting building materials; Helicopter Winch Operators, hoisting building materials; Hoes (All types); Hoists (with two or more drums in use); Horizontal Directional Drill; Hydraulic Gantry (lift system); Laser Finishing Machines; Laser Screed and like equipment; Lift Slab or Panel Jack Operators; Locomotives (all types); Maintenance Operator/Technician (Mechanic Operator/Technician and/or Welder); Mixers, paving (multiple drum); Mobile Concrete Pumps, with booms; Panelboards, (all types on site); Pile Drivers; Power Shovels; Prentice Loader; Rail Tamper (with automatic lifting and aligning device); Rotary Drills (all), used on caissons for foundations and sub-structure; Side Booms; Slip Form Pavers; Straddle Carriers (Building Construction on site); Trench Machines (over 24" wide); Tug Boats. Group B - Articulating/end dumps (minus \$4.00/hour from Group B rate); Asphalt Pavers; Bobcat-type and/or skid steer loader with hoe attachment greater than 7000 lbs.; Bulldozers; CMI type Equipment; Concrete Saw, Vermeer-type; Endloaders; Hydro Milling Machine; Kolman-type Loaders (Dirt Loading); Lead Greasemen; Mucking Machines; Pettibone-Rail Equipment; Power Graders; Power Scoops; Power Scrapers; Push Cats, Rotomills (all), grinders and planers of all types. Group C - A-Frames; Air Compressors, Pressurizing Shafts or Tunnels; All Asphalt Rollers; Bobcat-type and/or Skid Steer Loader with or without attachments; Boilers (15 lbs. pressure and over); All Concrete Pumps (without booms with 5 inch system); Fork Lifts (except masonry); Highway Drills - all types (with integral power); Hoists (with one drum); House Elevators (except those automatic call button controlled); Buck Hoists, Transport Platforms, Construction Elevators; Hydro Vac/Excavator (when a second person is needed, the rate of pay will be "Class E"); Man Lifts; Material hoist/elevators; Mud Jacks; Pressure Grouting; Pump Operators (installing or operating Well Points or other types of Dewatering Systems); Pumps (4 inches and over discharge); Railroad Tie (Inserter/Remover); Rotovator (Lime-Soil Stabilizer); Submersible Pumps (4" and over discharge); Switch & Tie Tamper (without lifting and aligning device); Trench Machines (24" and under); Utility Operators. Group D - Backfillers and Tamper; Ballast Re-locator; Batch Plant Operators; Bar and Joint Installing Machines; Bull Floats; Burlap and Curing Machines; Clefplanes; Compressors, on building construction; Concrete Mixers, more than one bag capacity; Concrete Mixers, one bag capacity (side loaders); All Concrete Pumps (without boom with 4" or smaller system); Concrete Spreader; Conveyors, used for handling building materials; Crushers; Deckhands; Drum Fireman (in asphalt plants); Farm type tractors pulling attachments; Finishing Machines; Form Trenchers; Generators; Gunite Machines; Hydro-seeders; Pavement Breakers (hydraulic or cable); Post Drivers; Post Hole Diggers; Pressure Pumps (over 1/2" discharge); Road Widening Trenchers; Rollers (except asphalt); Self-propelled sub-graders; Shotcrete Machines; Tire Repairmen; Tractors, pulling sheepsfoot post roller or grader; VAC/ALLS; Vibratory Compactors, with integral power; Welders. Group E - Allen Screed Paver (concrete); Boilers (less than 15 lbs. pressure); Cranes-Compact, track or rubber (Under 4,000 pounds capacity); Directional Drill "Locator"; Fueling and greasing +\$3.00; Inboard/outboard Motor Boat Launches; Light Plant Operators; Masonry Fork Lifts; Oilers/Helpers; Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Signalperson, Submersible Pumps (under 4" discharge). Master Mechanics - Master Mechanic Cranes 150' - 180' - Boom & Jib 150 - 180 feet Cranes 180' - 249' - Boom & Jib 180 - 249 feet Cranes 250' and over - Boom & Jib 250 feet or over

Prevailing Wage Rates - Skilled Crafts

Details

Union Operating Engineers - Hwy Zone II	Change# LCN01-2025ib	Craft Operating Engineer	Effective Date 05/01/2025	Posted Date 04/30/2025
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Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECEP (*)	MISC (*)		
Operator Class A	\$45.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$62.74	\$85.66
Operator Class B	\$45.72	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$62.62	\$85.48
Operator Class C	\$44.68	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$61.58	\$83.92
Operator Class D	\$43.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$60.40	\$82.15
Operator Class E	\$38.04	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$54.94	\$73.96
Master Mechanic	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Lift Director	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Crane and Mobile Concrete Pump 150' - 179'	\$46.34	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.24	\$86.41
Crane and Mobile Concrete Pump 180' - 249'	\$46.84	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.74	\$87.16
Crane and Mobile Concrete Pump 250' and Ove	\$47.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.99	\$87.54
Apprentice	Percent	BHR									
1st Year	50.000000	\$22.92	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$39.82	\$51.28
2nd Year	60.000000	\$27.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$44.40	\$58.16
3rd Year	70.000000	\$32.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$48.99	\$65.03
4th Year	80.000000	\$36.67	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$53.57	\$71.91
Field Mech Trainee											
1st year	60.000000	\$27.50	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$44.40	\$58.16
2nd year	70.000000	\$32.09	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$48.99	\$65.03
3rd year	80.000000	\$36.67	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$53.57	\$71.91
4th year	90.000000	\$41.26	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.10	\$58.16	\$78.78

Special Calculation Note

Other: Education & Safety Fund Misc: National Training

Ratio

For every (3) Operating Engineer Journeymen employed by the company, there may be employed (1) Registered Apprentice or Trainee Engineer through the referral when they are available. An Apprentice, while employed as part of a crew per Article VIII, paragraph 68 will not be subject to the apprenticeship ratios in this collective bargaining agreement

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Coshocton, Crawford, Darke, Defiance, Delaware, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Lucas, Madison, Marion, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

**Apprentices will receive a 10% increase on top of the percentages listed above provided they are operating mobile equipment. Class A - Air Compressors on Steel Erection; Asphalt Plant Engineers (Cleveland District Only); Barrier Moving Machine; Boiler Operators, Compressor Operators, or Generators, when mounted on a rig; Boom Trucks (all types); Cableways; Cherry Pickers; Combination- Concrete Mixers & Towers; Concrete Plants (over 4 yd capacity); Concrete Pumps; Cranes (all types); Compact Cranes track or rubber over 4,000 pounds capacity; Cranes self-erecting stationary, track or truck; Derricks (all types); Draglines; Dredges dipper, clam or suction; Elevating Graders or Euclid Loaders; Floating Equipment (all types); Gradalls; Helicopter Crew (Operator- hoist or winch); Hoes (all types); Hoisting Engines; Hoisting Engines, on shaft or tunnel work; Hydraulic Gantry (lifting system); Industrial-type Tractors; Jet Engine Dryer (D8 or D9) diesel Tractors; Locomotives (standard gauge); Maintenance Operators/Technicians (class A); Mixers, paving (single or double drum); Mucking Machines; Multiple Scrapers; Piledriving Machines (all types); Power Shovels, Prentice Loader; Quad 9 (double pusher); Rail Tamper (with automatic lifting and aligning device); Refrigerating Machines (freezer operation); Rotary Drills, on caisson work; Rough Terrain Fork Lift with winch/hoist; Side Booms; Slip Form Pavers; Survey Crew Party Chiefs; Tower Derricks; Tree Shredders; Trench Machines (over 24" wide); Truck Mounted Concrete Pumps; Tug Boats; Tunnel Machines and /or Mining Machines; Wheel Excavators. Class B - Asphalt Pavers; Automatic Subgrade Machines, self-propelled (CMI-type); Bobcat-type and /or Skid Steer Loader with hoe attachment greater than 7000 lbs.; Boring Machine Operators (more than 48 inches); Bulldozers; Concrete Saws, Vermeer type; Endloaders; Horizontal Directional Drill (50,000 ft. lbs. thrust and over); Hydro Milling Machine; Kolman-type Loaders (production type-dirt); Lead Greasemen; Lighting and Traffic Signal Installation Equipment includes all groups or classifications; Maintenance Operators/Technicians, Class B; Material Transfer Equipment (shuttle buggy) Asphalt; Pettibone-Rail Equipment; Power Graders; Power Scrapers; Push Cats; Rotomills (all), Grinders and Planners of all types, Groovers (excluding walk-behinds); Trench Machines (24 inch wide and under). Class C - A-Frames; Air Compressors, on tunnel work (low Pressure); Articulating/straight bed end dumps if assigned (minus \$4.00 per hour); Asphalt Plant Engineers (Portage and Summit Counties only); Bobcat-type and/or skid steer loader with or without attachments; Drones; Highway Drills (all types); HydroVac/Excavator (when a second person is needed, the rate of pay will be "Class E"); Locomotives (narrow gauge); Material Hoist/Elevators; Mixers, concrete (more than one bag capacity); Mixers, one bag capacity (side loader); Power Boilers (over 15 lbs. pressure); Pump Operators (installing or operating well points); Pumps (4 inch and over discharge); Railroad Tie Insertor/Remover; Rollers, Asphalt; Rotovator (lime-soil Stabilizer); Switch & Tie Tamper (without lifting and aligning device); Utilities Operators, (small equipment); Welding Machines and Generators. Class D - Backfillers and Tampers; Ballast Re-locator; Bar and Joint Installing Machines; Batch Plant Operators; Boring Machine Operators (48 inch or less); Bull Floats; Burlap and Curing Machines; Concrete Plants (capacity 4 yds. and under); Concrete Saws (multiple); Conveyors (highway); Crushers; Deckhands; Farm type tractors, with attachments (highway); Finishing Machines; Firemen, Floating Equipment (all types); Fork Lifts (highway), except masonry; Form Trenchers; Hydro Hammers; Hydro Seeders; Pavement Breakers (hydraulic or cable); Plant Mixers; Post Drivers; Post Hole Diggers; Power Brush Burners; Power Form Handling Equipment; Road Widening Trenchers; Rollers (brick, grade, macadam); Self-Propelled Power Spreaders; Self-Propelled Sub-Graders; Steam Firemen; Survey Instrument men; Tractors, pulling sheepsfoot rollers or graders; Vibratory Compactors, with integral power. Class E - Compressors (portable, Sewer, Heavy and Highway); Cranes-Compact, track or rubber under 4,000 pound capacity; Drum Firemen (asphalt plant); Fueling and greasing (Primary Operator with Specialized CDL Endorsement Add \$3.00/hr); Generators; Inboard-Outboard Motor Boat Launches; Masonry Fork Lifts; Oil Heaters (asphalt plant); Oilers/Helpers; Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Signalperson; Survey Rodmen or Chalmers; Tire Repairmen; VAC/ALLS. Master Mechanic - Master Mechanic Cranes and Mobile Concrete Pumps 150' -179' - Boom & Jib 150 - 179 feet Cranes and Mobile Concrete Pumps 180' - 249' - Boom & Jib 180 - 249 feet Cranes and Mobile Concrete Pumps 250' and over - Boom & Jib 250 feet or over

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 1275	LCN02-2025sks	Painter	11/12/2025	11/12/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Painter Brush, Roll & Wall Washing	\$28.91	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$46.36	\$60.82	
Apprentice	Percent	BHR										
0-1500 hrs	80.000000	\$23.13	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.23	\$42.80
1501-3000 hrs	85.000000	\$24.57	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$32.67	\$44.96
3001-4500 hrs	90.000000	\$26.02	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34.12	\$47.13
4501-6000 hrs	95.000000	\$27.46	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.56	\$49.29

Special Calculation Note

- A premium for "Structural Steel, Swingstage" shall pay \$.30 per hour worked.
- A premium for "Spray" shall pay \$.75 per hour worked.
- A premium for "Vinyl Hanging" shall pay \$.75 per hour worked.
- A premium for "Sandblast, steamclean, water blast (Above 3500 psi) and hazardous" shall pay \$.70 per hour worked.

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 1275 Drywall	LCN01-2025ib	Painter	10/29/2025	10/29/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Painter Drywall Finisher	\$34.80	\$6.80	\$8.31	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50.26	\$67.66	
Apprentice	Percent	BHR										
1st 0-1500 hrs	75.000000	\$26.10	\$6.80	\$2.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.55	\$48.60
2nd 1501-3000 hrs	85.000000	\$29.58	\$6.80	\$2.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39.03	\$53.82
3rd 3001-4500 hrs	95.000000	\$33.06	\$6.80	\$2.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.51	\$59.04

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 1275 HevHwy	LCN02-2025ib	Painter	11/12/2025	11/12/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Painter Bridge Class 1 Bridge Blaster	\$38.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$56.42	\$75.91
Painter Bridges Class 2 Rigger, Containment Builder, Spot Blaster	\$35.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.42	\$71.41
Painter Bridges Class 3 Equipment Operator/Field Mechanic, Grit Reclamation, Paint Mix, Traffic Control, Boat Person, Driver (0-5 Years Exp.)	\$28.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$46.42	\$60.91
Painter Bridges Class 3 Equipment Operator/Field Mechanic, Grit Reclamation, Paint Mix, Traffic Control, Boat Person, Driver (plus 5 Years Exp.)	\$31.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.42	\$65.41
Painter Bridges Class 4 Concrete Sealing, Concrete Blasting Power Washing	\$27.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.42	\$59.41
Painter Bridges Class 5 Quality Control, Quality Assurance, Traffic Safety Competent Person	\$31.97	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.42	\$65.41
Apprentice	Percent	BHR									
1st 0-1500 hrs	80.000000	\$31.18	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$39.28	\$54.87
2nd 1501-3000 hrs	85.000000	\$33.12	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$41.22	\$57.78
3rd 3001-4500 hrs	90.000000	\$35.07	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$43.17	\$60.71
4th 4501-6000 hrs	95.000000	\$37.02	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$45.12	\$63.63

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note

Details

Heavy Highway Class 1 are qualified painters,blasters,riggers. Class 2 Equipment Tenders /or containment Builders are hired to tend employers equipment also engage in the building & moving of containment systems. Class 3 support personnel will perform Quality control duties,clean abrasive blast materials, load and unload trucks, handle all materials, man safety boats, & handle traffic control. NACE Level I, II, III or equivalent with at least five (5) years Journeyman QC experience shall pay Class 5 rate plus premium of \$4.00 per hour worked.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 1275 Industrial	LCN02-2025ib	Painter	11/12/2025	11/12/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Painter Brush Roll	\$30.36	\$6.80	\$10.30	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.81	\$62.99
Apprentice	Percent	BHR									
0-1500 hrs	80.000000	\$24.29	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$32.39	\$44.54
1501-3000 hrs	85.000000	\$25.81	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$33.91	\$46.81
3001-4500 hrs	90.000000	\$27.32	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$35.42	\$49.08
4501-6000 hrs	95.000000	\$28.84	\$6.80	\$0.95	\$0.35	\$0.00	\$0.00	\$0.00	\$0.00	\$36.94	\$51.36

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Muskingum, Perry, Pickaway, Ross, Union

Special Jurisdictional Note

Details

Definition of Industrial Classification: Industrial Facilities to be included in the Industrial Classification shall include; Water Treatment, Waste Water Treatment, Natural Gas and related facilities, refineries, transmission pipe lines, electrical transmission towers and or switching /sub stations and Power Plants. Exclusions from the industrial classification are Power Plants that generate power to a single customer; such as an emergency power supplier or a Hospital, Information Technology Facility, Sporting/Event or Arena/Stadium type facility. This exclusion would also be given to any commercial office space located within the facilities property. The excluded spaces shall be done under the Commercial Wage rates.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 639 Sign and Display	LCN01-2025ib	Painter	06/18/2025	06/18/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Top Mechanic Class A	\$27.53	\$4.50	\$0.00	\$0.00	\$0.00	\$0.00	\$1.45	\$0.00	\$0.00	\$33.48	\$47.25
Top Mechanic Class B	\$27.53	\$4.50	\$0.75	\$0.00	\$0.53	\$0.00	\$1.45	\$0.00	\$0.00	\$34.76	\$48.53
Top Helper Class A	\$22.33	\$4.50	\$0.00	\$0.00	\$0.00	\$0.00	\$1.20	\$0.00	\$0.00	\$28.03	\$39.20
Top Helper Class B	\$22.33	\$4.50	\$0.75	\$0.00	\$0.43	\$0.00	\$1.20	\$0.00	\$0.00	\$29.21	\$40.38
Helper Class A	\$17.19	\$4.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.90	\$0.00	\$0.00	\$22.59	\$31.19
Helper Class B	\$17.19	\$4.50	\$0.75	\$0.00	\$0.30	\$0.00	\$0.90	\$0.00	\$0.00	\$23.64	\$32.24
New Hire (90 Days)	\$15.75	\$4.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.55	\$0.00	\$0.00	\$20.80	\$28.68

Special Calculation Note

Other: Sick, Personal & Holiday Pay Swing Stage Rate: Employees shall receive a differential of \$1.50 per hour for all hours worked on scaffolds four sections or higher, including any boom lifts and swing stage scaffolds. In addition, the rigging and derigging of hanging/suspended swing stage systems and rappelling/bolson chair work of a single employee will qualify for \$1.50 differential, will be paid to a single lead Top Mechanic or single lead Top Helper on any given swing stage job, even when it includes multiple running rigs on a single jobsite.

Ratio

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Cuyahoga, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Geauga, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lake, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

The work performed by employees covered by this rate shall include cleaning and refinishing of architectural metals using chemicals, solvents, coatings and hand-applied lacquer thinner, removing scratches from mirror finished metals, burnishing of bronze, statuary finishes on exterior and interior surfaces during the course of the restoration and maintenance of architectural metals, and other specialty metal finishing work, and the use of all tools required to perform such work, including but not limited to polishes, spray equipment and scaffolding. Class A: Less Than 1 Year of Service Class B: More Than 1 Year of Service Top Mechanic: Top Mechanic shall be responsible for ensuring the highest quality of workmanship by Helpers, and be highly competent and knowledgeable in the following areas: coatings, both solvent and waterborne, spraying ability, stainless steel, aluminum and bronze finishing, scaffolding and swing stage work. The Top Mechanic shall also be responsible for providing necessary training of employees in lower classifications and for directing all employees in his/her crew to perform their responsibilities in a productive and efficient manner. Top Helper: For existing Top Helpers at the time of this Agreement shall, in addition to performing the responsibilities of a Helper, be responsible and accountable for the setup, breakdown, safety and quality of the Company's product. Helper: A Helper shall be responsible for performing tasks in refinishing, compliance with safety procedures, setting up and breaking down job sites, setting up and breaking down scaffolding and swing stages, preparing surfaces for refinishing, including but not limited to masking and stripping, cleaning, oxidizing, polishing and scratch removal on various finishes.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Painter Local 639 Zone 2 Sign	LCN01-2025ib	Painter	05/28/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Painter Sign Journeyman Tech/Team Leader Class A	\$26.56	\$3.36	\$0.21	\$0.00	\$0.00	\$0.00	\$0.72	\$0.00	\$0.00	\$30.85	\$44.13
Painter Sign Journeyman Tech/Team Leader Class B	\$26.56	\$3.36	\$0.21	\$0.00	\$0.51	\$0.00	\$0.72	\$0.00	\$0.00	\$31.36	\$44.64
Painter Sign Journeyman Tech/Team Leader Class C	\$26.56	\$3.36	\$0.21	\$0.00	\$1.02	\$0.00	\$0.72	\$0.00	\$0.00	\$31.87	\$45.15
Painter Sign Journeyman Tech/Team Leader Class D	\$26.56	\$3.36	\$0.21	\$0.00	\$1.53	\$0.00	\$0.72	\$0.00	\$0.00	\$32.38	\$45.66
Sign Journeyman Class A	\$26.27	\$3.36	\$0.21	\$0.00	\$0.00	\$0.00	\$0.71	\$0.00	\$0.00	\$30.55	\$43.69
Sign Journeyman Class B	\$26.27	\$3.36	\$0.21	\$0.00	\$0.51	\$0.00	\$0.71	\$0.00	\$0.00	\$31.06	\$44.20
Sign Journeyman Class C	\$26.27	\$3.36	\$0.21	\$0.00	\$1.01	\$0.00	\$0.71	\$0.00	\$0.00	\$31.56	\$44.70
Sign Journeyman Class D	\$26.27	\$3.36	\$0.21	\$0.00	\$1.52	\$0.00	\$0.71	\$0.00	\$0.00	\$32.07	\$45.21
Tech Sign Fabrication/ Erector Class A	\$20.67	\$3.36	\$0.21	\$0.00	\$0.00	\$0.00	\$0.56	\$0.00	\$0.00	\$24.80	\$35.14
Tech Sign Fabrication/ Erector Class B	\$20.67	\$3.36	\$0.21	\$0.00	\$0.40	\$0.00	\$0.56	\$0.00	\$0.00	\$25.20	\$35.54
Tech Sign Fabrication/ Erector Class C	\$20.67	\$3.36	\$0.21	\$0.00	\$0.80	\$0.00	\$0.56	\$0.00	\$0.00	\$25.60	\$35.94
Tech Sign Fabrication/ Erector Class D	\$20.67	\$3.36	\$0.21	\$0.00	\$1.19	\$0.00	\$0.56	\$0.00	\$0.00	\$25.99	\$36.33

Special Calculation Note

Other is for paid holidays.

Ratio

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Auglaize, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Greene, Hamilton, Hancock, Hardin, Henry, Highland, Holmes, Huron, Jackson, Knox, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Mercer, Miami, Montgomery, Morrow, Muskingum, Ottawa, Paulding, Perry, Pickaway, Pike, Preble, Putnam, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Trumbull, Tuscarawas, Union, Van Wert, Warren, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

Class A: less than 1 year. Class B: 1-3 years. Class C: 3-10 years. Class D: More than 10 years.

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Plasterer Local 132 (Columbus)	LCN01-2025ib	Plasterer	06/01/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Plasterer	\$31.68	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$0.00	\$47.14	\$62.98
Fireproofing Gunner	\$32.68	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$0.00	\$48.14	\$64.48
Apprentice	Percent	BHR									
1st 800 hrs	70.000000	\$22.18	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$37.64	\$48.72
2nd 800 hrs	74.000000	\$23.44	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$38.90	\$50.62
3rd 800 hrs	78.000000	\$24.71	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$40.17	\$52.53
4th 800 hrs	82.000000	\$25.98	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$41.44	\$54.43
5th 800 hrs	86.000000	\$27.24	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$42.70	\$56.33
6th 800 hrs	90.000000	\$28.51	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$43.97	\$58.23
7th 800 hrs	94.000000	\$29.78	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$45.24	\$60.13
8th 800 hrs	98.000000	\$31.05	\$8.20	\$4.70	\$0.50	\$0.00	\$2.00	\$0.06	\$0.00	\$46.51	\$62.03

Special Calculation Note

*Other is International Training Fund

Ratio

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Ashland, Coshocton, Crawford, Delaware, Fairfield, Fayette, Franklin, Guernsey, Hocking, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Richland, Ross, Union, Vinton, Wyandot

Special Jurisdictional Note

Details

Fireproofing Gunner: If any mechanical means is used in the gauging of lime for any finish coat, the mixing shall be gauged by a member of the crew who is to apply the respective gauging. This clause applies on jobs where cementitious and fibrous type fireproofing is the material being applied. There shall be an equal number of plasterers to nozzles used. Working on swing stage, slip scaffold or window jack scaffold shall receive the following rates: \$0 above the regular rate for heights up to forty-nine (49) feet above grade level \$0.75 above the regular rate for heights over fifty (50) feet above grade level

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Plumber Pipefitter Local 189	LCN01-2024ib	Plumber Pipefitter	08/21/2024	08/21/2024

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Plumber Pipefitter	\$49.00	\$10.39	\$7.49	\$1.45	\$0.00	\$8.26	\$0.00	\$0.00	\$0.00	\$76.59	\$101.09
Heating Piping Refrigeration, Temperature Control, Air Conditioning Welder	\$49.00	\$10.39	\$7.49	\$1.45	\$0.00	\$8.26	\$0.00	\$0.00	\$0.00	\$76.59	\$101.09
Apprentice	Percent	BHR									
1st Year	45.000000	\$22.05	\$5.00	\$0.00	\$1.45	\$0.00	\$0.00	\$0.10	\$0.00	\$28.60	\$39.63
2nd Year	50.000000	\$24.50	\$10.39	\$5.60	\$1.45	\$0.00	\$0.00	\$0.10	\$0.00	\$42.04	\$54.29
3rd Year	55.000000	\$26.95	\$10.39	\$5.60	\$1.45	\$0.00	\$0.00	\$0.10	\$0.00	\$44.49	\$57.97
4th Year	65.000000	\$31.85	\$10.39	\$5.60	\$1.45	\$0.00	\$6.26	\$0.10	\$0.00	\$55.65	\$71.58
5th Year	80.000000	\$39.20	\$10.39	\$5.60	\$1.45	\$0.00	\$8.26	\$0.10	\$0.00	\$65.00	\$84.60

Special Calculation Note

*Other is International Training

Ratio

Employees-----Journeyman to Apprentice per Job 1) 1-0 2) 1-1 3) 2-1 4) 2-2 5) 3-2 6) 4-2 7) 4-3 8) 5-3 9) 6-3 10) 6-4 11) 7-4 12) 8-4 13) 8-5 14) 9-5 15) 10-5 16) 10-6 17) 11-6 18) 12-6 19) 12-7 20) 13-7 21) 14-7 22) 14-8 23) 15-8 24) 16-8 25) 16-9 Heating Piping refrigeration, Temperature Control, Air Conditioning Ratio (1) Additional Apprentice to (3) Journeymen thereafter Employees Journeyman to Apprentice per Job 1) Employee 1-0 2) Employees 1-1 3) Employees 2-1 4) Employees 2-2 5) Employees 3-2 6) Employees 4-2 7) Employees 5-2 8) Employees 5-3 9) Employees 6-3 10) Employees 7-3 11) Employees 8-3 12) Employees 8-4 13) Employees 9-4 14) Employees 10-4 15) Employees 11-4 16) Employees 11-5 17) Employees 12-5 18) Employees 13-5 19) Employees 14-5 20) Employees 14-6 21) Employees 15-6 22) Employees 17-5 23) Employees 18-5 24) Employees 18-6 25) Employees 19-6 26) Employees 20-6 28) Employees 22-6 29) Employees 22-7 30) Employees 23-7 31) Employees 23-7 32) Employees 25-7 33) Employees 26-7 34) Employees 26-8

Jurisdiction (* denotes special jurisdictional note)

Delaware, Fairfield, Franklin, Hocking, Licking, Madison, Marion, Perry, Pickaway, Ross, Union

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Rofer Local 86	LCN01-20251b	Rofer	09/03/2025	09/03/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate	
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)			
Rofer	\$38.33	\$8.20	\$7.40	\$0.88	\$0.00	\$0.30	\$0.09	\$0.00	\$0.00	\$55.20	\$74.36	
Apprentice	Percent	BHR										
1st Year	65.000000	\$24.91	\$0.00	\$0.00	\$0.88	\$0.00	\$0.25	\$0.09	\$0.00	\$0.00	\$26.13	\$38.59
2nd Year	72.000000	\$27.60	\$8.20	\$1.85	\$0.88	\$0.00	\$0.25	\$0.09	\$0.00	\$0.00	\$38.87	\$52.67
3rd Year	80.000000	\$30.66	\$8.20	\$3.33	\$0.88	\$0.00	\$0.25	\$0.09	\$0.00	\$0.00	\$43.41	\$58.74
4th Year	88.000000	\$33.73	\$8.20	\$4.81	\$0.88	\$0.00	\$0.25	\$0.09	\$0.00	\$0.00	\$47.96	\$64.83

Special Calculation Note

Other: Education & Research Fund

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Champaign, Delaware, Fairfield, Fayette, Franklin, Hardin, Hocking, Knox, Licking, Logan, Madison, Marion, Morrow, Perry, Pickaway, Pike, Ross, Union, Wyandot

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Sheet Metal Local 24 (Columbus)	LCN01-2025ib	Sheet Metal Worker	06/11/2025	06/11/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Sheet Metal Worker	\$41.10	\$10.23	\$12.56	\$1.26	\$0.00	\$4.12	\$0.00	\$0.00	\$0.00	\$69.27	\$89.82
Apprentice	Percent	BHR									
1st Year	57.000000	\$23.43	\$8.42	\$2.19	\$1.05	\$0.00	\$0.00	\$0.00	\$0.00	\$35.09	\$46.80
2nd Year	65.000000	\$26.72	\$9.61	\$8.17	\$1.05	\$0.00	\$0.00	\$0.00	\$0.00	\$45.55	\$58.90
3rd Year	75.000000	\$30.83	\$9.84	\$9.42	\$1.26	\$0.00	\$3.09	\$0.00	\$0.00	\$54.44	\$69.85
4th Year	85.000000	\$34.94	\$9.99	\$10.67	\$1.26	\$0.00	\$3.50	\$0.00	\$0.00	\$60.36	\$77.82

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice 2 Journeymen to 2 Apprentices 3 Journeymen to 3 Apprentices 4 Journeymen to 4 Apprentices 5-7 Journeymen to 5 Apprentices 8-10 Journeymen to 6 Apprentices 11-13 Journeyman to 7 Apprentices 14-16 Journeyman to 8 Apprentices 17-19 Journeymen to 9 Apprentices 20-22 Journeymen to 10 Apprentices 23-25 Journeymen to 11 Apprentices 26-28 Journeymen to 12 Apprentices 29-31 Journeymen to 13 Apprentices 32-34 Journeymen to 14 Apprentices 35-37 Journeymen to 15 Apprentices 38-40 Journeymen to 16 Apprentices and so on

Jurisdiction (* denotes special jurisdictional note)

Adams, Athens, Delaware, Fairfield, Fayette, Franklin, Gallia, Guernsey, Hocking, Jackson, Knox, Lawrence, Licking, Madison, Marion, Meigs, Morgan, Morrow, Muskingum, Noble, Perry, Pickaway, Pike, Ross, Scioto, Union, Vinton

Special Jurisdictional Note

Details

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Sprinkler Fitter Local 669	LCR01-2025ib	Sprinkler Fitter	08/06/2025	08/06/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Sprinkler Fitter	\$48.28	\$12.40	\$7.40	\$0.54	\$0.00	\$7.74	\$0.00	\$0.00	\$0.00	\$76.36	\$100.50
Apprentice	Percent	BHR									
CLASS 1	50.000000	\$24.14	\$9.03	\$0.00	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$33.71	\$45.78
CLASS 2	56.000000	\$27.04	\$9.03	\$0.00	\$0.54	\$0.00	\$0.00	\$0.00	\$0.00	\$36.61	\$50.13
CLASS 3	61.000000	\$29.45	\$12.40	\$7.40	\$0.54	\$0.00	\$1.15	\$0.00	\$0.00	\$50.94	\$65.66
CLASS 4	65.000000	\$31.38	\$12.40	\$7.40	\$0.54	\$0.00	\$1.15	\$0.00	\$0.00	\$52.87	\$68.56
CLASS 5	69.000000	\$33.31	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$55.05	\$71.70
CLASS 6	75.000000	\$36.21	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$57.95	\$76.05
CLASS 7	79.000000	\$38.14	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$59.88	\$78.95
CLASS 8	84.000000	\$40.56	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$62.30	\$82.58
CLASS 9	89.000000	\$42.97	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$64.71	\$86.19
CLASS 10	93.000000	\$44.90	\$12.40	\$7.40	\$0.54	\$0.00	\$1.40	\$0.00	\$0.00	\$66.64	\$89.09

Special Calculation Note

Ratio

1 Journeyman to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

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

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Truck Driver Locals 20,40,92,100,175,284,348,377,637,697,908,9 57 - Bldg & HevHwy Class 1	LCN01-2025ib	Truck Driver	05/28/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Truck Driver CLASS 1	\$34.26	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.51	\$70.64
Apprentice	Percent	BHR									
First 6 months	80.000000	\$27.41	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$46.66	\$60.36
7-12 months	85.000000	\$29.12	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$48.37	\$62.93
13-18 months	90.000000	\$30.83	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$50.08	\$65.50
19-24 months	95.000000	\$32.55	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$51.80	\$68.07
25-30 months	100.000000	\$34.26	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$53.51	\$70.64

Special Calculation Note

Ratio

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

CLASS 1: Drivers on trucks, including but not limited to: 4-wheel service trucks; 4-wheel dump trucks; batch trucks; drivers on tandems; truck sweepers (not to include power sweepers and scrubbers) Drivers on tractor – trailer combinations including but not limited to the following: Semi-tractor trucks; pole trailers; ready-mix trucks; fuel trucks; all trucks five (5) axle and over; drivers on belly dumps; truck mechanics (when needed).

Prevailing Wage Rates - Skilled Crafts

Details

Union	Change#	Craft	Effective Date	Posted Date
Truck Driver Locals 20,40,92,100,175,284,348,377,637,697,908,9 57 - Bldg & HevHwy Class 2	LCN01-2025ib	Truck Driver	05/28/2025	05/28/2025

Wage Rates

Classification	BHR	Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
		H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Truck Driver CLASS 2	\$35.26	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.51	\$72.14
Apprentice	Percent	BHR									
First 6 months	80.000000	\$28.21	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$47.46	\$61.56
7-12 months	85.000000	\$29.97	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$49.22	\$64.21
13-18 months	90.000000	\$31.73	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$50.98	\$66.85
19-24 months	95.000000	\$33.50	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$52.75	\$69.50
25-30 months	100.000000	\$35.26	\$9.25	\$9.60	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$54.51	\$72.14

Special Calculation Note

Ratio

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note)

Adams, Allen, Ashland, Ashtabula, Athens, Auglaize, Belmont, Brown, Butler, Carroll, Champaign, Clark, Clermont, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Greene, Guernsey, Hamilton, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Jefferson, Knox, Lawrence, Licking, Logan, Lorain, Lucas, Madison, Mahoning, Marion, Medina, Meigs, Mercer, Miami, Monroe, Montgomery, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Portage, Preble, Putnam, Richland, Ross, Sandusky, Scioto, Seneca, Shelby, Stark, Summit, Trumbull, Tuscarawas, Union, Van Wert, Vinton, Warren, Washington, Wayne, Williams, Wood, Wyandot

Special Jurisdictional Note

Details

CLASS 2: Drivers on articulated dump trucks; rigid-frame rock trucks; distributor trucks; low boys/drag driver on the construction site only and heavy duty equipment (irrespective of load carried) when used exclusively for transportation on the construction site only.