

Project Specifications

City of Muskegon

Muskegon County, Michigan

Water System Improvements: Butler Street and Catherine Avenue
DWRP Project Number: 7717-01

May 2025

2240838

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Advertisement

Owner: City of Muskegon

Project Title: Water System Improvements: Butler Street and Catherine Avenue
DWRP Project Number: 7717-01

Project #: 2240838

1. RECEIPT OF BIDS

Sealed bids for the above project will be received by City of Muskegon of 933 Terrace Street, Muskegon, Michigan until:

2:00 PM (local time) on Thursday June 19, 2025

at which time the bids will be publicly opened and read aloud.

2. PRE-BID MEETING

A bidders information meeting will be held at the City of Muskegon Department of Public Works Office, 1350 E. Keating Avenue, Muskegon, MI 49440 on Wednesday, June 4 at 2:00 P.M. Attendance at the bidder's information meeting is **mandatory** for all General Contractors wishing to submit a bid on the projects. Minutes of the bidders' information meeting will be forwarded to all plan holders as an addendum. This pre-bid meeting will provide information for all DWSRF funded projects being bid out by the City of Muskegon. The pre-bid meeting will follow the following agenda (all times after 2:00 PM are subject to change):

- General DWSRF Project requirements (applies to all contracts)
- Butler Street and Catherine Avenue
- Marshall Tank Improvements
- Water Service Contract

3. SCOPE OF PROJECT

The project consists of furnishing all material and constructing the following:

- 3,200 ft. of 8-inch to 18-inch sanitary sewer
- 1,865 ft. of 12-inch to 24-inch storm sewer
- 3,000 ft. of 6-inch to 24-inch water main
- 3,200 ft. of road reconstruction

Including all necessary appurtenances and restoration.

4. EXAMINATION OF SPECIFICATIONS

Contract documents may be examined online at <https://muskegon-mi.gov/category/bid-postings/> or at the offices of:

City of Muskegon, 933 Terrace Street, Muskegon, MI 49440
Prein&Newhof, 4910 Stariha Drive, Muskegon, MI 49441
Prein&Newhof, 3355 Evergreen Drive NE, Grand Rapids, MI 49525

And some local plan rooms.

5. DEPOSIT FOR DRAWINGS AND SPECIFICATIONS

Drawings and specifications are available online at <https://muskegon-mi.gov/category/bid-postings/> . Bidder assumes sole risk for any project specifications and drawings, electronic or hard copy, obtained other than directly from the City of Muskegon. Hard copy drawings and specifications are available for the fee of 40 dollars from the City of Muskegon. Fees are payable by cash or check only and are not refunded.

6. FUNDING

The work to be performed under this contract will be financed and paid for by funds received from by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Drinking Water Revolving Fund (DWRf) and with City of Muskegon local funds. DWRf monies will be received by the City of Muskegon. **Davis-Bacon/Prevailing Federal Wages apply to this project.**

Federal Labor Standards Provisions and associated documents that are incorporated in this contract are included in Appendix A. The DWRf Project Number is 7717-01.

The Contractor will be required to comply with the debarment and American Iron and Steel contractual language included in Appendix A.

7. BID SURETY

A bid bond, certified check, or cashier's check payable to City of Muskegon in an amount equal to five percent (5%) of the total price shall accompany each bid. This surety shall bind the bidder for a period of one hundred twenty (120) days after the receipt of bids.

8. COMPLETION DATE

All work shall be substantially completed all services installed and roads open to traffic on September 4, 2026. Final restoration and project completion shall occur on or before October 2, 2026. See progress clause for additional information on schedule.

Ann Marie Meisch
Muskegon City Clerk
933 Terrace Street
Muskegon, MI 49440
231-724-6705

Instructions To Bidders

Owner: City of Muskegon, Muskegon County, Michigan

Project Title: Water System Improvements: Butler Street and Catherine Avenue
DWRP Project Number: 7717-01

Project #: 2240838

1. CONTRACT DOCUMENTS

The contract documents consist of material outlined in Article 7 of the Agreement. Each Bidder shall carefully examine his copy of the contract documents for completeness. No claim will be allowed on the basis that the contract documents are not complete.

2. INTERPRETATION OF THE CONTRACT DOCUMENTS

It is the intent of these contract documents to be clear, complete and consistent. If Bidder is of the opinion that any portion of the contract documents is ambiguous, inconsistent or contains errors or omissions Bidder shall, prior to submitting its bid, in writing request Engineer to clarify that portion of the contract documents as an addendum. This interpretation or correction will be made a part of the contract documents as an addendum. Any such addendum shall be mailed, faxed, e-mailed or delivered only to each person recorded as having received/downloaded a copy of the contract documents directly from Prein&Newhof.

The last day an addendum will be issued is three (3) business days prior to the bid. Questions to be addressed in the addendum will be received through 5:00 p.m. five (5) business days prior to the bid.

Only written addenda issued by the Engineer shall be binding. Oral interpretations, information or instructions by any office or employee of the Owner or Engineer are not authorized and therefore are not binding.

Questions related to the project should be directed to Matthew Hulst, P.E., at 231-798-0101 or via email at mhulst@preinnewhof.com.

Any conclusions or information obtained or derived from Contract Documents will be at the user's sole risk. The City of Muskegon will maintain the master copy (hard copy). In the case of any contract discrepancy, the Master Copy (hard copy) shall be considered the controlling document.

3. BIDDERS INVESTIGATION

The Bidder will be responsible for inspecting the site of the proposed work to determine for himself all conditions under which he will be obligated to work. It is also expected that he will investigate and make his own determination concerning the available facilities for receiving, transporting, handling and storing construction equipment and materials, and concerning other local conditions that may affect his work.

4. BID PROPOSAL PREPARATION

A. Name, Address and Legal Status of Bidder

The name and legal status of the Bidder, Corporation, Partnership or an Individual, shall be stated in the Proposal. A corporation Bidder shall name the state in which its Articles of Incorporation are held, and must give the title of the official having authority, under the by-laws, to sign contracts. A partnership Bidder shall give the full names and addresses of all partners. An L.L.C. Bidder shall provide the full names and addresses of all members.

Anyone signing a proposal as an agent of another must submit, with his proposal, legal evidence of his authority to act as an authorized agent of the party.

The place of residence of each Bidder, or the office address in the case of a firm or company, with county and state, must be given after a signature.

B. Bid Surety

See ADVERTISEMENT "BID SURETY"

C. Proposal Form

The Bidder is to complete the Bid Proposal Documents that are included in the Project Specification book (online or hard copy), referring to the table of contents to identify the exact order of these documents. Regardless of how the bid documents are received, a hard copy (paper copy) of the Bid Proposal Documents must be submitted for bidding purposes. *No electronically-submitted Proposals will be accepted.* The Bid Proposal Documents include: Bid Proposal Checklist, Bid Proposal, and Bid Proposal – Unit Prices.

The Bidder must provide the signed Bid Proposal Documents in either type written or hand written (in ink) form and clearly and completely set forth all required lump sum amounts, unit prices or other costs in a legible and understandable manner. Illegibility of any work or figure in the proposal may be sufficient cause for rejection of the proposal by the Owners. *No electronically-submitted Proposals will be accepted.*

Each proposal must be enclosed in a sealed envelope addressed to 933 Terrace Street, Muskegon, Michigan, 49440 and labeled "Proposal for City of Muskegon, Muskegon County, Michigan, Water System Improvements: Butler Street and Catherine Avenue." No electronically submitted Proposals will be accepted.

D. Proposal Data

Proposals shall be carefully prepared in strict accordance with contract requirements and these instructions and shall include all pertinent information required by the proposal form. Failure of the bidder to comply in any respect shall be grounds for rejection of the bidder's proposal.

The proposal for work is on a unit basis.

The bids will be based on the comparison of totals of the extensions of the stated unit prices. In case of an error in preparation of the bid form, the unit prices will be used.

No partial bids will be considered.

E. Experience and Qualifications

It is the intention of the Owner to award this contract to a Bidder that will perform and complete all work in compliance with the Contract Documents and in a workmanlike and professional manner. Bids are therefore only solicited from responsible Bidders known to be skilled, experienced and regularly engaged in work of similar character and magnitude to that covered by these contract documents.

After the opening of bids, when so requested by the Owner or Engineer, the Bidder will be required to provide documentation of the extent and nature of his experience in work of this kind and to furnish references as to his experience on projects of similar types and concerning contractor's ability to timely and within budget perform work of the type involved in this project. The successful Bidder shall submit a statement of his experience and financial status, a list of all jobs he now has underway, with the volume and percent completed. If the successful Bidder is an LLC, bidder shall provide, if requested, personal guarantees of its members.

In addition to the above, when so requested, the Bidder shall meet with the Owner's representatives and give further information in relation to his proposed construction plan, methodology, and schedule of operations, in order to determine the Bidder's qualifications, ability to perform the Work, and timely complete the Work in accordance with the contract requirements.

F. Return of Bid Deposits

The bid deposits of all Bidders, except the three lowest Bidders, will be returned within seven days after the opening of the bids. The bid deposits of the three lowest Bidders will be returned (1) within 48 hours after the contract shall have been awarded to the successful Bidder, the signed agreement has been delivered, and the required bonds have been approved by the Owner, or (2) after rejection of all bids.

5. FUNDS AVAILABLE

The work to be performed under this contract will be financed and paid for by the Michigan Department of Environment, Great Lakes & Energy (EGLE) Drinking Water Revolving Fund (DWRf), and with City of Muskegon local funds. DWRf monies will be received by City of Muskegon. **Davis-Bacon/Prevailing Federal Wages apply to this project.** Federal Labor Standards Provisions and associated documents that are incorporated in this contract are included in Appendix A. The DWRf Project Number is 7717-01.

6. AMERICAN IRON AND STEEL

The Consolidated Appropriations Act, 2014, H.R. 3547 added an “American Iron and Steel” requirement to the existing State Water Revolving Fund (SRF). Therefore, all iron and steel products used in this project shall be produced in the United States. “Iron and steel products” for the purposes of this requirement means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

Contractor shall comply with the “American Iron and Steel Contract Language” included in Appendix A.

7. WITHDRAWAL OF BIDS

Any Bidder who has submitted a proposal to the Owner may withdraw his bid at any time prior to the scheduled time for opening bids. No Bidder may withdraw his bid after the opening for a period of one hundred twenty (120) days thereafter.

8. AWARD AND EXECUTION OF THE CONTRACT

The contract will be deemed as having been awarded when formal Notice of Award is duly provided by the Owner upon the Bidder. Notice of Award will be issued within sixty (60) days of the EGLE “Order of Approval” (August 6, 2025), contingent upon the successful sale of bonds by the State Treasury.

The Bidder to whom the contract shall have been awarded will be required to execute an Agreement in the form included in the Contract Documents and to furnish sureties, insurance policies and certificates all as required within fifteen (15) days after the award. In case of his refusal or failure to do so, he will be considered to have abandoned all his rights and interest in the award, and his bid deposit may be declared forfeited to the Owner and the work may be awarded to another Bidder.

Bid Proposal Checklist

Owner: City of Muskegon, Muskegon County, Michigan

Project Title: Water System Improvements: Butler Street and Catherine Avenue
DWRP Project Number: 7717-01

Project #: 2240838

This checklist is for the bidder's convenience and the Engineer's use. It should be reviewed thoroughly before submitting a bid.

- ☐ Bid submitted on time.
- ☐ Bid surety properly completed and enclosed.
- ☐ Addenda, if applicable, has been acknowledged and any revisions to the proposal completed.
- ☐ Bid proposal legally signed in ink.
- ☐ All unit prices are completed in ink.
- ☐ Completed Certification Regarding Debarment, Suspension, and other Responsibility Matters

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Bid Proposal

Owner:	City of Muskegon		
Owner Address:	933 Terrace Street, Muskegon, MI 49440		
Project Title:	Water System Improvements: Butler Street and Catherine Avenue DWRP Project Number: 7717-01		
Bid Date & Time:	June 19, 2025 at 2:00 PM	Project #:	2240838

The undersigned, being familiar with the site, plans, specifications, and related documents, proposes to furnish all required labor, materials, tools and equipment to construct the project in accordance with the unit prices on the following sheets.

Date Prepared: _____

Receipt of Addenda

Receipt of Addenda _____ through _____ is hereby acknowledged.

Summary of Bids

Total Bid \$ _____

The Owner reserves the right to accept or reject any or all bids and to waive any irregularities in the bidding. No partial bids will be accepted.

Contractor's Signature

Contractor's Name	Email Address	Telephone Number
Business Address	City	Zip Code
Printed Name	Title	Date
Signature _____		

Seal (if bidder is a corporation)

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Bid Proposal - Unit Prices

Owner:

City of Muskegon

Project Title:

Water and Sanitary System Improvements, Catherine Avenue

Bid Date & Time:

See advertisement

Project #:

2240838

DWRF Project No.

7717-01

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization, Max 10%	1	LS		
2	Traffic Control, Max 3%	1	LS		
3	Tree, Rem, 6 inch to 18 inch	1	EA		
4	Tree, Rem, 19 inch to 36 inch	2	EA		
5	Tree, Rem, 37 inch or Larger	1	EA		
6	Stump, Rem, 19 inch to 36 inch	2	EA		
7	Pavt, Rem	12,000	SYD		
8	Sidewalk, Rem	1,400	SYD		
9	Curb and Gutter, Rem	6,400	FT		
10	Dr Structure, Rem	65	EA		
11	Hydrant, Rem	5	EA		
12	Sewer Rem, Less than 24 inch	3,300	FT		
13	Water Main, Rem	510	FT		
14	Sign, Rem	1	EA		
15	Sign, Type III, Erect & Salvage	1	EA		
16	Machine Grading, Modified	46	STA		
17	Aggregate Surface Cse, 8 inch	950	SYD		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
18	Aggregate Base, 8 inch, Modified	10,500	SYD		
19	Curb and Gutter, Conc, Det F4	6,120	FT		
20	Driveway, Nonreinf Conc, 6 inch	1,310	SYD		
21	Sidewalk, Conc, 4 inch	9,750	SFT		
22	Sidewalk, Conc, 6 inch	1,240	SFT		
23	Curb Ramp Opening, Conc	220	FT		
24	Curb Ramp, Conc, 6 inch	3,470	SFT		
25	Detectable Warning Surface	220	FT		
26	HMA, 4EML	11,100	TON		
27	HMA, 5EML	8,300	TON		
28	Sign, Type IIIA	1	SFT		
29	Sign, Type IIIB	7	SFT		
30	Post, Steel, 3 lb	15	FT		
31	Turf Restoration	46	STA		
32	Irrigation Repair Allowance	25,000	DLR		
33	Water Main, DI, 6", Tr Det G	270	FT		
34	Water Main, DI, 8", Tr Det G	3,910	FT		
35	Water Main, DI, 10", Tr Det G	5	FT		
36	Water Main, Bend, 11.25 Deg, 8"	2	EA		
37	Water Main, Bend, 22.5 Deg, 8"	1	EA		
38	Water Main, Bend, 45 Deg, 6"	12	EA		
39	Water Main, Bend, 45 Deg, 8"	26	EA		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
40	Water Main, Sleeve, 6"	9	EA		
41	Water Main, Sleeve, 8"	6	EA		
42	Water Main, Sleeve, 10"	1	EA		
43	Water Main, Tee, 8" x 8" x 6"	10	EA		
44	Water Main, Tee, 8" x 8" x 8"	5	EA		
45	Water Main, Cross, 8" x 8" x 8" x 8"	2	EA		
46	Water Main, Reducer, 8" x 6"	9	EA		
47	Water Main, Reducer, 10" x 8"	1	EA		
48	Water Main, Valve & Box, 6"	10	EA		
49	Water Main, Valve & Box, 8"	22	EA		
50	Water Main, Tapping Sleeve and Valve, 24" x 8"	1	EA		
51	Water Main, Cut & Cap, 4"	1	EA		
52	Water Main, Cut & Cap, 6"	4	EA		
53	Water Main, Cut & Cap, Temp	4	Ea		
54	Hydrant	10	EA		
55	Water Service, 1"	5,090	FT		
56	Water Service, Corporation Stop, 1"	64	EA		
57	Water Service, Curb Stop & Box, 1"	64	EA		
58	Water Service, Connect to Ex.	58	EA		
59	Water Filter	58	EA		
60	Meter Setting	41	EA		
61	Water Service, Restoration Private	52	EA		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
62	Sewer, Cl E, 8", Tr Det B	47	FT		
63	Sewer, Cl E, 12", Tr Det B	2,305	FT		
64	Sewer, Cl E, 36", Tr Det B	40	FT		
65	Dr Structure, Case 1, Adj	6	EA		
66	Dr Structure, 24", Mod	12	EA		
67	Dr Structure, 48", Mod	15	EA		
68	Dr Structure, 60", Mod	2	EA		
69	Dr Structure, Doghouse, 48"	1	EA		
70	Sewer, Connect to Ex. 8"	2	EA		
71	Dr Structure, Tap, 8"	2	EA		
72	Dr Structure, Tap, 12"	2	EA		
73	Dr Structure Cover, Type B, Mod	14	EA		
74	Dr Structure Cover, Type K	24	EA		
75	Sanitary Manhole, 48" Dia	11	EA		
76	Sanitary Drop Manhole, 48" Dia	2	EA		
77	Sanitary Sewer, 8", Tr Det B	2,530	FT		
78	Sanitary Sewer, Connect to Ex. 8"	3	EA		
79	Sanitary Sewer, Connect to Ex. 15"	2	EA		
80	Sanitary Sewer, Bulkhead, 8"	1	EA		
81	Sanitary Sewer, Wye, 8" x 6"	72	EA		
82	Sanitary Sewer, CCTV	2,530	FT		
83	Sanitary Lateral, 6"	2,700	FT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
84	Sanitary Lateral, Connection to Ex.	61	EA		
85	Sanitary Sewer Sleeve, PVC	1	EA		
				Total Bid:	

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between City of Muskegon, 933 Terrace Street, Muskegon, MI 49440 ("Owner") and [Contractor Name & Address] ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: *Water System Improvements: Butler Street and Catherine Avenue, DWRF Project Number: 7717-01*

ARTICLE 2—THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: *Water System Improvements: Butler Street and Catherine Avenue, DWRF Project Number: 7717-01*

ARTICLE 3—ENGINEER

- 3.01 The Owner has retained Prein&Newhof, 3355 Evergreen Drive NE, Grand Rapids, MI 49525 ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.
- 3.02 The part of the Project that pertains to the Work has been designed by Prein&Newhof.

ARTICLE 4—CONTRACT TIMES

- 4.01 *Time is of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Contract Times: Dates*
- A. The Work will be substantially complete on or before **September 4, 2026**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **October 2, 2026**.
- ~~4.03 *Contract Times: Days*~~
- ~~A. The Work will be substantially complete within [number] days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within [number] days after the date when the Contract Times commence to run.~~

4.04 ~~Milestones~~

~~A. Parts of the Work must be substantially completed on or before the following Milestone(s):~~

- ~~1. Milestone 1 [event & date/days]~~
- ~~2. Milestone 2 [event & date/days]~~
- ~~3. Milestone 3 [event & date/days]~~

4.05 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner **\$1,500** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner **\$1,500** for each day that expires after such time until the Work is completed and ready for final payment.
3. ~~*Milestones:* Contractor shall pay Owner **\$(number*)** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate indicated in Paragraph 4.05.A.1 will apply, rather than the Milestone rate.~~
4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

C. *Bonus:* Contractor and Owner further recognize the Owner will realize financial and other benefits if the Work is completed prior to the time specified for Substantial Completion. Accordingly, Owner and Contractor agree that as a bonus for early completion, Owner shall pay Contractor **\$(number)** for each day prior to the time specified above for Substantial Completion (as duly adjusted pursuant to the Contract) that the Work is substantially complete. The maximum value of the bonus will be limited to **\$(number)**.

4.06 *Special Damages*

A. Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract

Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.
- C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. ~~For all Work other than Unit Price Work, a lump sum of \$[number].~~

~~All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.~~

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

Unit Price Work					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					\$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. ~~Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) \$[number].~~

D. ~~For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.~~

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the _____ day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. **90** percent of the value of the Work completed (with the balance being retainage).
 - 1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. **0** percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **98** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **100** percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

- A. All amounts not paid when due will bear interest at the rate of **0** percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual.
 - 6. Drawings (not attached but incorporated by reference) consisting of 22 sheets with each sheet bearing the following general title: Butler and Catherine Utility Improvements.
 - 7. Addenda (numbers **[number]** to **[number]**, inclusive).
 - 8. Exhibits to this Agreement (enumerated as follows):
 - a. **[list exhibits] Contractor's Bid (pages 1 to [redacted], inclusive)**
 - b. Insurance Specifications (pages 1 to 13, inclusive).
 - c. The 2020 Standard Specifications for Construction adopted by the Michigan Department of Transportation are hereby incorporated into these contract documents.
 - d. [List other required attachments (if any), such as documents required by funding or lending agencies]
 - 9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
 9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:

City of Muskegon

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

933 Terrace Street

Muskegon, MI 49440

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Contractor:

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

License No.:

(where applicable)

State:

PERFORMANCE BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: City of Muskegon Mailing address <i>(principal place of business)</i> : 933 Terrace Street Muskegon, MI 49440	Contract Description <i>(name and location)</i> : Water System Improvements: Butler Street and Catherine Avenue DWRP Project Number: 7717-01 Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

PAYMENT BOND

Contractor Name: _____ Address <i>(principal place of business)</i> : _____ 	Surety Name: _____ Address <i>(principal place of business)</i> : _____
Owner Name: City of Muskegon Mailing address <i>(principal place of business)</i> : 933 Terrace Street Muskegon, MI 49440	Contract Description <i>(name and location)</i> : Water System Improvements: Butler Street and Catherine Avenue DWRP Project Number: 7717-01 Contract Price: _____ Effective Date of Contract: _____
Bond Bond Amount: _____ Date of Bond: _____ <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Title: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Title: _____ <div style="text-align: center;"><i>(Signature)</i></div>
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

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



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. 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, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by

Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or

communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice 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.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *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.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *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, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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 a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*: 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 Article 10 or any other provision of the Contract Documents.
- C. *Day*: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective*: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. 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 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means to furnish and install said services, materials, or equipment complete and ready for intended use.

- 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. 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 Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), 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;
 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.

2.04 *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 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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 the component parts of the Work.
 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

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

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer 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 part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or 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) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) 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 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
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 part of the Contract Documents prepared by or for Engineer take

precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

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

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers 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 versions, or 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; or
 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract 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 Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *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.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, 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 Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. Abnormal weather conditions;
 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 4. Acts of war or terrorism.
- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the

effect of the delay, disruption, or interference on the critical path to completion of the Work.

- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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.
- 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 permanent improvements are to be made 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.

5.02 *Use of Site and Other Areas*

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

- 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
- 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise;

(b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, 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 any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will 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 and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 - 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
 - 3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on 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;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement

to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

- D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
 - 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 Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities.

Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;
 3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then 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 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written

statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

- E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. 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 Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on 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;
 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. 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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. 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, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond 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 must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the

required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

- C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, 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.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.
- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 1. include at least the specific coverages required;
 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is 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; and
 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
 4. not seek contribution from insurance maintained by the additional insured; and
 5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.
 - 1. Owner and Contractor waive all rights against each other and the 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, risks, 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 Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, 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.
 - 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. 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 all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at

Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *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 maintain good discipline and order at the Site.
- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *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, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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 must 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.

7.05 “Or Equals”

- A. *Contractor’s Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an “or equal” item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) 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;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
 - b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor’s Expense:* Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.
- C. *Engineer’s Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal,” which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer’s Determination:* Neither approval nor denial of an “or-equal” request will result in any change in Contract Price. The Engineer’s denial of an “or-equal” request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor’s Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) 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
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in

Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. 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.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or

otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *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 an 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 will be disclosed 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.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *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.

7.11 *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. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and 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

such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

7.13 *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.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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 at its expense (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).

- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. 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.
- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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.

7.15 *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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.
3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. Submittal Procedures for Shop Drawings and Samples: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings must 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 7.16.C.

2. Samples

- a. Contractor shall submit the number of Samples required in the Specifications.
- b. Contractor shall 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 7.16.C.

3. 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. Engineer's Review of Shop Drawings and Samples

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of 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, or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.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 will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two

resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.
 - d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.

- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *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 is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
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;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or
 9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, 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 losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage 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 7.18.A will 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.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.
- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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.
- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be

set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) 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 any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *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.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *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 (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- 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.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *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.

10.02 *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 10.07. 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.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.
- E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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, will 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 Contractor under Paragraph 15.06.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 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in 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;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.
- B. If Owner has issued a Work Change Directive and:
1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-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. Changes involving

the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 - 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 - 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will 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 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
- d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
- e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
- f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
 4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *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.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 - 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal

and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will 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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe

benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
5. Other costs consisting of 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, 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.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
 - c. *Construction Equipment Rental*
 - 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment,

machinery, or parts must cease when the use thereof is no longer necessary for the Work.

- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed 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 builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 communication 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 that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals, general 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.
3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
5. 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.
6. Expenses incurred in preparing and advancing Claims.
7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. Documentation and Audit:** Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 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*: Contractor agrees that:
 - 1. 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
 - 2. 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 for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's 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 for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- 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. 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, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.
- E. *Adjustments in Unit Price*
 - 1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

- b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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 with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- 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, obtaining, and paying for all inspections and tests required:
 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages 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. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. 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, 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *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, then 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 will 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.

14.07 *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 defective Work as required by Engineer, then

Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

- B. In exercising the rights and remedies under this Paragraph 14.07, 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *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.
 - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 13.03, 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; 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;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; 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 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

- e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. 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; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- 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 preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. 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 punch list.

15.04 *Partial Use or Occupancy*

- 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. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be 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 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work 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 15.03 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 6.04 regarding builder's risk or other property insurance.

15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *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, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

- B. *Engineer's Review of Final Application and Recommendation of Payment:* 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 have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *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 Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, 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. Contractor shall pay all 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.
- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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.

- F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 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; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 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 16.03.
- 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, 7 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 are not intended to preclude Contractor from submitting a Change Proposal 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 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract 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.

18.03 *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. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

Water System Improvements: Butler Street and Catherine Avenue DWRP Project Number: 7717-01

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Caption and Introductory Statements

Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2018 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

Unless otherwise noted, the terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix “SC” added thereto.

ADDITIONS, DELETIONS AND CHANGES TO GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

SC-1.01 Add the following new paragraph immediately after Paragraph 1.01.A.22:

22.1 *Falsework*--temporary construction work on which a main work is wholly or partly built and/or supported until the main work is strong enough to support itself.

SC-1.01 Add the following new paragraph immediately after Paragraph 1.01.A.32:

32.1 *Project Manual* – the written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

SC-1.02 Terminology

SC-1.02 Add the following new sentence immediately after the last sentence in Paragraph 1.02.B:

The use of any such term or adjective is not intended to and shall not be effective to relieve the Contractor of responsibility to comply with all Laws and Regulations applicable to the performance of the Work, or to perform the Work in accordance with the provisions of Article 7, or to comply with any other provision of the Contract Documents.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.03 *Before Starting Construction*

SC-2.03 Delete Paragraph 2.03.A in its entirety and insert the following in its place:

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement, Contractor shall submit to Owner and Engineer for timely review:
 - 1. A preliminary Progress Schedule indicating the times (number 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.

SC-2.05 *Acceptance of Schedules*

SC-2.05 Delete Paragraph 2.05.A in its entirety and insert the following in its place:

- A. Upon Owner's, Engineer's or Contractor's request at least ten days before submission of the first Application for Payment a conference, attended by Contractor, Owner, Engineer and others as appropriate, will be held to review for acceptability to Owner as provided below the schedules submitted in accordance with paragraph 2.03.A. If a schedule is not acceptable, Contractor shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. Upon notice by Owner, no progress payment shall be made to Contractor until acceptable schedules are submitted and accepted by Owner.

1. The Progress Schedule will be acceptable to Owner if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Time, and if acceptable to Engineer. Such acceptance will not impose on Owner or 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 Owner if acceptable to Engineer and if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Owner as to form and substance if it is acceptable to Engineer and if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01 *Intent*

SC-3.01 Add the following new sentence immediately after the last sentence in Paragraph 3.01.B:

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.

SC-3.02 *Reference Standards*

SC-3.02.A.2 Delete Paragraph 3.02.A.2 in its entirety and insert the following in its place:

No provision of any such standard specification, manual, reference standard, 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 part of the Contract Documents prepared by or for Engineer. 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 part of the Contract Documents prepared by or for Engineer.

SC-3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

SC-3.03 Delete Sub-Paragraph 3.03.A.3 in its entirety and insert the following in its place:

3. Contractor shall not be entitled to any increase in the Contract Amount or Contract Time for any conflicts, errors, ambiguities or discrepancies in the Contract Documents that were known, or that should have been known to Contractor, or which could have been discovered by Contractor as part of its review of the bidding requirements and Contract Documents prior to bidding or its review of the Contract Documents prior to undertaking any part of the Work.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Commencement of Contract Times; Notice to Proceed

SC-4.01 Delete Paragraph 4.01.A in its entirety and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed.

SC-4.05 Delays in Contractor's Progress

SC-4.05 Add the following new paragraph immediately after Paragraph 4.05.G

H. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under Paragraph 4.05 within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 - SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 *Subsurface and Physical Conditions*

SC-5.03.A Delete Paragraph 5.03.A in its entirety and insert the following in its place:

A. *Reports and Drawings:* The Contract Documents may identify:

1. Those soil borings, plans, drawings, surveys or other reports of explorations of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents;
2. Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site, (Except Underground Facilities) that Engineer has used in preparing the Contract Documents; and
3. Technical Data contained in such *Reports and Drawings*.

The soil borings, plans, drawings, surveys, technical data, and other documents referenced in Paragraphs 5.03.A.1, 2 and 3 are collectively called "*Reports and Drawings*."

SC-5.03.C Delete Paragraph 5.03.C in its entirety and insert the following in its place:

C. *Reliance by Contractor Not Authorized.* Contractor may not rely upon the *Reports and Drawings* referenced in 5.03.A or make any claim against Owner, Engineer, or any of Owner's or Engineer's Consultants or Subcontractors related to the *Reports and Drawings*. This limitation includes but is not limited to:

1. The accuracy or 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. The accuracy or completeness of other data, interpretations, opinions, and information contained in, shown on, or indicated in the *Reports and Drawings*; or

3. Any Contractor interpretation of or conclusion drawn from any of the *Reports and Drawings* or any other Technical Data, data, interpretations, opinions or information referenced in the *Reports and Drawings*.

The *Reports and Drawings*, including the information contained therein, are offered to the Contractor only as information relied upon by Engineer in the preparation of the Contract Documents, and the Contractor is solely responsible for confirming actual conditions. Neither the Engineer nor the Owner, nor the Consultants or Subcontractors of either have any responsibility for any conclusion, interpretation or analysis contained therein or made by the Contractor based upon the Contractor's review of the *Reports and Drawings*.

Neither Owner nor Engineer has any responsibility for and does not warrant that the soils or water table encountered during construction will be as shown in the *Reports and Drawings*.

SC-5.03.D

Delete Paragraph 5.03.D in its entirety and insert the following in its place:

- D. Contractor warrants that before submitting a bid the Contractor has determined the soil and subsoil conditions, including the water table elevation and the conditions to be encountered by Contractor in the performance of the Work and that said conditions and factors have been evaluated by Contractor and incorporated into his Contract with Owner. Contractor further warrants that the Contractor is fully aware of the soil conditions, subsoil conditions, water table and all applicable State and Federal Regulations related to the excavation, removal, transportation, placement and relocation of the materials involved in the Work to be performed by the Contractor and that Contractor will complete the Work under whatever conditions he may encounter or create without extra cost, expense to or claim against the Owner or Engineer, their Consultants or Subcontractors.

Contractor has identified all locations where the

Contractor's operations are near public roadways, the properties of railroads or contiguous physical structures. Work shall not take place until Contractor has made all arrangements necessary to identify the location and/or elevation of the roadways, the properties of railroads or contiguous physical structures and foundation or appurtenances and has taken all necessary steps to protect the roadways, the properties of railroads or contiguous physical structures from damage. Contractor is solely responsible for any and all damage to roadways, the properties of railroads or contiguous physical structures and any personal injury, death or property damage or consequential damages arising from Contractor's operations.

SC-5.04 *Differing Subsurface or Physical Conditions*

SC-5.04.A Delete Paragraph 5.04.A in its entirety and insert the following in its place:

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
1. is of such a nature as to require a change in the Contract Documents; or
 2. 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, within 48 hours 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 7.15), 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. If notice as provided in the section is not given, no change in Contract Price shall be considered or allowed.

SC-5.04.B Delete Paragraph 5.04.B in its entirety and insert the following in its place:

- B. *Engineer's Review:* After receipt of written notice as required by Paragraph 5.04.A, Engineer will review the information provide by Contractor. If Engineer, in Engineer's sole discretion, determines that additional explorations and/or tests are needed to evaluate Contractor's belief that there are differing subsurface or physical conditions, then Contractor, at Contractor's sole expense, shall promptly undertake those additional explorations and/or tests, and provide the results to Engineer. Engineer will then review the information provided by Contractor along with any other information Engineer believes is pertinent, and advise Owner in writing (with a copy to Contractor) of Engineer's findings, conclusions and recommendations.

If after receipt of written notice as required by Paragraph 5.04.A, Engineer, in Engineer's sole discretion, determines that additional explorations and/or tests are not needed to evaluate Contractor's belief that there are differing subsurface or physical conditions, Engineer will review the information provided by Contractor, along with any other information Engineer believes is pertinent, and advise Owner in writing (with copy to Contractor) of Engineer's findings, conclusions and recommendations.

Owner reserves the right at its own expense to undertake additional exploration and/or testing. This reservation in no way waives the responsibility of the Contractor to undertake additional explorations and/or tests, if required, as set forth above.

SC-5.05 *Underground Facilities*

SC-5.05.A Delete Paragraph 5.05.A in its entirety and insert the following in its place:

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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.
1. The Underground Facilities shown on or indicated in the Contract Documents are located according to the information available to the Engineer at the time of the

preparation of the Contract Documents. Neither the Engineer nor the Owner guarantee the accuracy or completeness of any such information or data, including but not limited to information provided by the Owner;

2. The Contractor is solely responsible for identifying the actual location of all Underground Facilities and shall verify the location and/or elevations of the Underground Facilities prior to undertaking construction;
3. At all locations where the Contractor's operations are near, will cross or contact Underground Facilities, no part of the Work shall commence until Contractor has made all arrangements necessary to identify the location and/or elevation of the Underground Facility, including contacting MISS DIG, has notified the owner of the Underground Facility, and has taken all necessary steps to protect the Underground Facility from damage.
4. 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 information and data regarding Underground Facilities at the Site;
 - b. complying with applicable state and local utility damage prevention Laws and Regulations;
 - c. locating all Underground Facilities shown or indicated in the Contract Documents;
 - d. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 - e. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction;

- f. the safety and protection of all such Underground Facilities and related above ground structures, including but not limited to shoring, bracing, supporting and maintenance of all Underground Facilities and related above ground structures affected by the Contractor's operations;
 - g. repairing any damage to Underground Facilities and related above ground structures resulting from the Work; and
 - h. any personal injury, death or property damage or consequential damages arising from Contractor's Work.
- 5. In the event of the interruption of or damage to an Underground Facility as the result of Contractor's operations, the Contractor shall immediately notify the Underground Facility owner and shall take all steps necessary to cooperate with and assist the Underground Facility owner in the restoration and repair of the Underground Facility. Said repair work shall be continuous and shall not result in any delay of the Project or increased cost or expense to Owner, or claim against Owner, Engineer or their Consultants.

SC-5.05.B Delete Paragraph 5.05.B in its entirety and insert the following in its place:

- B. *Notice by Contractor:* If an Underground Facility is uncovered or revealed at or adjacent to the Site which was not shown or indicated 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 paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

SC-5.05.C Delete Paragraph 5.05.C in its entirety and insert the following in its place:

- C. *Engineer's Review:* Engineer will 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. If Engineer concludes that a change in the Contract Documents is required, Engineer shall prepare recommendations to the Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. At all times, Contractor shall be solely responsible for the safety and protection of such Underground Facility.

SC-5.05.F. Delete Paragraph 5.05.F.1 in its entirety and insert the following in its place:

F. *Possible Price and Times Adjustment*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated in the Contract Documents, subject to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - 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 Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.

SC-5.06 *Hazardous Environmental Conditions at Site*

SC-5.06.A Delete Paragraph 5.06.A in its entirety and insert the following in its place:

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

1. The following reports regarding Hazardous Environmental Conditions at the Site were utilized by the Engineer in the preparation of the Contract Documents:

a. *None*

2. The following drawings regarding Hazardous Environmental Conditions at the Site were utilized by the Engineer in the preparation of the Contract Documents:

a. *None*

3. Technical Data contained in such *Reports and Drawings*.

SC-5.06.B Delete Paragraph 5.06.B in its entirety and insert the following in its place:

B. *Reliance by Contractor Not Authorized*: Contractor may not make any Claim against Owner, Engineer or the Consultants of either with respect to:

1. The completeness of such reports, drawings and/or Technical Data, 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, the cost of Work and safety precautions and programs incident thereto; or

2. The accuracy of any Technical Data, or any other data, interpretations, opinions and information contained in such reports or shown or indicated on such drawings; or

3. Any Contractor interpretation of or conclusion drawn from any such report, drawing or Technical Data.

ARTICLE 6 - BONDS AND INSURANCE

6.02 *Insurance—General Provisions*

SC-6.02 Delete Paragraph 6.02.A in its entirety and insert the following in its place:

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Insurance Specification.

SC-6.02 Delete Paragraphs 6.02.B through 6.02.N in their entirety and replace with Insurance Specification.

6.03 *Contractor's Insurance*

SC-6.03 Delete Paragraph 6.03.A in its entirety and insert the following in its place:

A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Insurance Specification.

SC-6.03 Delete Paragraphs 6.03.B through 6.03.C in their entirety and replace with Insurance Specification.

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Delete the last sentence of Paragraph 6.04.A and insert the following in its place:

The specific requirements applicable to the builder's risk insurance are set forth in the Insurance Specification.

SC-6.04 Delete Paragraphs 6.04.B through 6.04.E in their entirety and replace with Insurance Specification.

6.05 *Property Losses; Subrogation*

SC-6.05 Delete Paragraphs 6.05.A through 6.05.D in their entirety and replace with Insurance Specification.

6.06 *Receipt and Application of Property Insurance Proceeds*

SC-6.06 Delete Paragraphs 6.06.A through 6.06.C in their entirety and replace with Insurance Specification.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.01 *Contractor's Means and Methods of Construction*

SC-7.01.A Add the following new sentence immediately after the last sentence in 7.01.A:

Nothing in the design, specifications or Contract Documents shall be deemed to constitute a specific means, method, technique, sequence, or procedure of construction. Contractor shall be solely responsible for ensuring that the completed Work conforms accurately to the Contract Documents.

SC-7.05 *"Or-Equals"*

SC-7.05.A Add the following sub-paragraph immediately after Paragraph 7.05.A.1.b.2:

- 3) the item will be functionally equal to the named item of material or equipment. Contractor warrants and assumes sole responsibility for the adequacy, performance and functioning of the "or-equal" material or equipment.

SC-7.06 *Substitutes*

SC-7.06.A.3.e Add the following sub-paragraph immediately following paragraph 7.06.A.3.d:

- e. Contractor warrants that, if approved and incorporated into the Work, the "substitute item" will be functionally equal to the named item of material or equipment. Contractor assumes sole responsibility for the adequacy, performance and functioning of the "substitute" item of material or equipment.

SC-7.07 *Concerning Subcontractors and Suppliers*

SC-7.07.D Delete Paragraph 7.07.D in its entirety and replace with the following paragraph:

- D. No later than two (2) business days after the bid opening, the Contractor shall submit to the Owner and Engineer for acceptance a list of the names

and addresses of the Contractor's Subcontractors, Suppliers and such other individuals and entities as the Owner requests.

SC-7.07 Add the following sub-paragraphs immediately following paragraph 7.07.M:

- N. Contractor shall require all Subcontractors, prior to commencement of any Work by the Subcontractor, to secure and keep in force the insurance coverages set forth in and required by the Insurance Specification.
- O. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors and Suppliers, whether initially or as a replacement, performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

SC-7.08 *Patent Fees and Royalties*

SC-7.08.B Delete paragraph 7.08.B in its entirety.

SC-7.11 *Laws and Regulations*

SC-7.11.D Add the following new paragraph immediately after Paragraph 7.11.C:

- D. Contractor shall be solely responsible for compliance with all Federal and State Occupational Safety and Health Act ("OSHA") requirements related to the Work and the Site, including, if applicable, the requirements of the Michigan Occupational Safety and Health Act ("MIOSHA"). Neither Owner nor Engineer shall have any responsibility for construction site safety or OSHA or MIOSHA compliance. Contractor will indemnify and hold harmless Owner and Engineer from all claims, costs, fees, fines, penalties and expenses (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court, administrative proceeding, and dispute resolution costs) related in any way to claims related to construction site safety, OSHA or MIOSHA violations or charges.

SC-7.13 *Safety and Protection*

SC-7.13.A Amend the first sentence of Paragraph 7.13.A to read as follows:

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, including but not limited to the enforcement of safety precautions

and programs of all Subcontractors.

SC-7.13.D Amend Paragraph 7.13.D to read as follows:

- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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 at its expense.

SC-7.16 *Submittals*

SC-7.16.B.1 Amend paragraph 7.16.B.1.a to read as follows:

- a. Contractor shall submit to Engineer for approval eight (8) copies of all shop drawings.

SC-7.16.B.2 Amend paragraph 7.16.B.2.a to read as follows:

- a. Contractor shall submit to Engineer for approval eight (8) duplicates of each Sample.

SC-7.16.E Add the following new paragraph immediately after Paragraph 7.16.E.1.d:

- e. Contractor shall submit to Engineer for approval eight (8) duplicates of each submittal.

SC-7.17 *Contractor's General Warranty and Guarantee*

SC-7.17.A Delete Paragraph 7.17.A in its entirety and replace with the following paragraph:

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 Contractor's warranty and guarantee. Contractor's warranty and guaranty that all Work will be in accordance with the Contract Documents and will not be defective includes but is not limited to all materials and equipment incorporated into the Work. Unless a longer duration is required by the Project Specifications, Contractor's warranty and guaranty that all Work will be in accordance with the Contract

Documents and will not be defective will extend for at least one year after the date of Substantial Completion.

SC-7.17.D.8 Amend paragraph 7.17.D.8 to read as follows:

8. Any inspection, test, review, or approval by Engineer, the Resident Project Representative (if one is assigned to the Site), or by others;

SC-7.17.D.9 Amend Paragraph 7.17.D.9 to read as follows:

9. Any correction of defective Work by Owner; or

SC-7.17.D.10 Add the following new paragraph immediately after Paragraph 7.17.D.9:

10. Any acceptance by Owner, or any failure to do so.

SC-7.19 Delegation of Professional Design Services

SC-7.19.B Add the following new sentence immediately after the last sentence in 7.19.B:

The design professional must be licensed in the state or states where the Project is located.

SC-7.19.D Delete Paragraph 7.19.D in its entirety and replace with the following paragraph:

Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, drawings, calculations, specifications, Submittals, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

ARTICLE 9 – OWNER’S RESPONSIBILITIES

SC-9.06 Insurance

SC-9.06.A. Delete Paragraph 9.06.A in its entirety and replace with the following paragraph:

- A. Owner’s responsibilities, if any, with respect to purchasing and maintaining

liability and property insurance are set forth in the Insurance Specifications.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.01 Owner's Representative

SC-10.01.A Delete Paragraph 10.01.A in its entirety and insert the following in its place:

- A. Engineer will be Owner's representative during the construction period. The Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents. The authority and responsibilities of the Engineer as set forth in the Contract Documents shall not be restricted, extended or otherwise modified without the written consent of the Engineer and the Owner. Nothing in the Contract Documents shall create for the benefit of the Contractor, any Subcontractor, Supplier or other individual or entity, any contractual relationship between Engineers and any such Contractor, Subcontractor, Supplier or other individual or entity.

SC-10.02 Visits to Site

SC-10.02.A Amend Paragraph 10.02.A by striking the following words from the first sentence:

"at intervals appropriate to the various stages of construction"

SC-10.03 Resident Project Representative

SC-10.03.C Add the following new paragraphs immediately after Paragraph 10.03.C:

- C. If Engineer furnishes a Resident Project Representative (RPR), the RPR will be Engineer's employee or agent at the Site. The RPR's authority and responsibility is expressly limited to making observations of the progress that has been made and the quality of the various aspects of Contractor's executed Work, and reporting same to Engineer. RPR will not be required to make exhaustive or continuous observations or inspections on the Site to check the quality or quantity of the Work. RPR'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. In addition to the limitations set forth in Paragraph 10.07, The RPR does not have the authority or responsibility to:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor’s superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals.
8. Authorize Owner to occupy the Project in whole or in part.
9. Interpret for Contractor or Owner any provision of the Contract Documents.
10. Stop the Work for any reason.

SC-10.07 Limitations on Engineer’s Authority and Responsibilities.

SC-10.07.B Add the following sentence immediately after the last sentence in Paragraph 10.07.B:

Engineer may not stop the work or interfere with the progress of the Work. No decision made by the Engineer in good faith either to exercise or not exercise any authority or responsibility delegated to Engineer in the Contract Documents or the undertaking, exercise, or performance of any authority or

responsibility by Engineer shall be construed as interference with the progress of the Work. Engineer shall have no authority or responsibility to recommend alternate or possible safety activities or changes for the safety of the project, Contractor, Subcontractors, Suppliers, Owner, employees, third persons or their property.

SC-10.07.F Add the following new paragraph immediately after Paragraph 10.07.E:

- F. Engineer will not be responsible for Contractor's failure to pay Subcontractors, Suppliers, employees, taxes, fees, permits, patent fees, copyright fees, royalties, licenses or monies due to any individual or entity.

SC-15.01 *Progress Payments*

SC-15.01.C Delete Paragraph 15.01.C.3.a and insert the following in its place:

- 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; or

SC-15.01.C Delete the period at the end of the sentence in Paragraph 15.01.C.4.e and insert the following in its place:

, or

SC-15.01.C Add the following new paragraphs immediately after Paragraph 15.01.C.4.e:

- f. for Contractor's failure to construct the Work or any part of the Work in conformance with the Contract Documents, or
- g. for defective Work.

SC-15.04 *Partial Use or Occupancy*

SC-15.04 Delete Paragraph 15.04.A.4 in its entirety and insert the following in its place:

- 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of the Insurance Specifications regarding builder's risk or other property insurance.

SC-15.07 *Waiver of Claims*

SC-15.07.A Delete Paragraph 15.07.A in its entirety and insert the following in its place:

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising (1) from unsettled Liens, (2) from defective Work, (3) from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, (4) from outstanding Claims by Owner, (5) from Contractor's continuing obligations under the Contract Documents, and (6) from late completion by Contractor, including without limitation liquidated damages or other damage.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.01 Methods and Procedures

SC-17.01.B Delete Paragraph 17.01.B.1 in its entirety and insert the following in its place:

1. At Owner's sole option, Owner may demand in writing arbitration of the dispute;

SC-17.01.C Add the following new paragraph immediately after Paragraph 17.01.B

SC-17.01.C Arbitration of Claims at Election of Owner

1. If the Owner elects in writing to demand arbitration as set forth in Paragraph 17.01.1, the dispute will be decided by arbitration in accordance with the rules of the American Arbitration Association in effect as of the Effective Date of the Agreement
2. The demand for arbitration will be filed in writing with the Contractor and with the selected arbitrator, and a copy will be sent to Engineer for information.
3. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include: (i) a concise breakdown of the award; and (ii) a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.
4. The award 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 except as provided by the controlling law governing vacating or modifying an arbitration award.

5. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

SC-18.01 Delete Paragraph 18.01.A.3 in its entirety.

SOIL NOMENCLATURE AND TERMINOLOGY

DRILLING & SAMPLING DESIGNATIONS:

SS :	Split Spoon Sample (per ASTM D 1586)	HSA :	Hollow Stem Auger
LS :	Split Spoon Sample with 3" Liner Insert	SSA :	Solid Stem Auger
ST :	Shelby Tube Sample - 3" O.D., unless otherwise noted	RB :	Rock Bit (NX; BX; AX)
AS :	Auger Sample	PP :	Pocket Penetrometer Value
BS :	Bulk Sample	VS :	Vane Shear Value
		PM :	Pressuremeter test - in situ

STANDARD PENETRATION TEST (ASTM D-1586): A 2-inch OD, 1½-inch ID split barrel sampler is driven into undisturbed soil by means of repeating blows from a 140-pound hammer falling 30 inches. The sampler is driven three successive 6-inch increments; the total number of blows required for the final 12 inches of penetration is termed the Standard Penetration Resistance (N).

GRADATION DESCRIPTION & TERMINOLOGY:

Granular Soils (coarse-grained) have more than 50% of their dry weight retained on a #200 sieve; they are described as: *Boulders, Cobbles, Gravel* or *Sand*. Fine-Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: *Clays* or *Clayey Silts* if they are cohesive, and *Silts* if they are non-cohesive. In addition to gradation, granular soils are defined based on their *in-situ density*; fine grained soils are further defined based on their strength or *consistency*, and on their *plasticity*.

<u>Major Soil Component</u>		<u>Gradation Range</u>	<u>Descriptive Term(s)</u> (Of Minor Soil Constituents)	<u>Percent of Dry Weight</u>
Boulders		Over 12 inches (305mm)		
			Trace	1 - 10
Cobbles		12 inches to 3 inches (305mm to 76mm)		
			Little	10 - 20
Gravel	Coarse	3 inches to ¾ inches (76mm to 19mm)		
			Some	20 - 35
	Fine	¾ inches to #4 sieve (19mm to 4.75mm)		
			And	35 - 50
Sand	Coarse	#4 sieve to #10 sieve (4.75mm to 2.00mm)		
	Medium	#10 sieve to #40 sieve (2.00mm to 0.425mm)		
	Fine	#40 sieve to #200 sieve (0.425mm to 0.074mm)		
Silt		Passing #200 sieve (0.074mm) to 0.005mm		
Clay		Smaller than 0.005mm		

CONSISTENCY OF COHESIVE SOILS:

<u>Unconfined Comp Strength, Qu (tsf)</u>	<u>Consistency</u>
<0.25	Very Soft
0.25 – 0.50	Soft
0.50 – 1.00	Medium (firm)
1.00 – 2.00	Stiff
2.00 – 4.00	Very Stiff
4.00 – 8.00	Hard
>8.00	Very Hard

IN-SITU DENSITY OF GRANULAR SOILS:

<u>N - Blows/ft.</u>	<u>In-Situ Density</u>
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
50 +	Very Dense

WATER LEVEL MEASUREMENT:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. It should be noted that groundwater levels observed during drilling in predominantly cohesive soils are not necessarily indicative of the static groundwater level. This is due to the relatively low permeability of clay soils and the tendency of drilling operations to temporarily seal off natural paths of groundwater migration into the borehole. Additionally, fluctuations in groundwater levels should be anticipated with seasonal variations and following periods of heavy or prolonged precipitation.

INSURANCE SPECIFICATIONS

Insurance Required to be Purchased and Maintained by the Contractor

Contractor shall comply with all requirements of this Insurance Specification. Contractor shall purchase and maintain (i.e. keep in force) insurance which conforms to the requirements of this Insurance Specification.

1.1 Insurance—General Provisions

- 1.1.1** Contractor shall obtain and maintain insurance as required in this Insurance Specification.
- 1.1.2** All insurance required by the Contract to be purchased and maintained by Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverage's. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- 1.1.3** Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Insurance Specification, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverage's, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- 1.1.4** Failure of Owner to demand such certificates or other evidence of the 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 the Contractor's obligation to obtain and maintain such insurance.
- 1.1.5** If Contractor does not purchase or maintain all of the insurance required of Contractor by the Contract, Contractor 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.
- 1.1.6** If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16 of the General Conditions of the Contract.

- 1.1.7 Without prejudice to any other right or remedy, if Contractor has failed to obtain required insurance, Owner may elect to obtain equivalent insurance to protect Owner's interests at the expense of the Contractor, and the Contract Price shall be adjusted accordingly.
- 1.1.8 Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- 1.1.9 The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

1.2 Contractor's Insurance - Liability

- 1.2.1 **Owner's & Contractor's Protective Liability:** Contractor shall purchase and maintain an Owner's & Contractor's Protective Liability Policy ("OCP" Policy). The OCP policy shall name the Owner, the Engineer, their consultants, agents, and employees, as the insureds (hereinafter collectively called the "named insureds"). The OCP policy will protect the named insureds for any actual or alleged liability arising out of the work performed by the Contractor, the Subcontractor(s), or Suppliers, on this Project. The OCP policy will provide primary, non-contributing coverage.
- 1.2.2 **Workers' Compensation and Employer's Liability:** Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1.2.2.1 Claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 1.2.2.2 United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 1.2.2.3 Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 - 1.2.2.4 Foreign voluntary worker compensation (if applicable).
- 1.2.3 **Commercial General Liability—Claims Covered:** Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
 - 1.2.3.1 Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 - 1.2.3.2 Claims for damages insured by reasonably available personal injury liability coverage.
 - 1.2.3.3 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.

1.2.4 Commercial General Liability—Form and Content: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverage's and endorsements:

- 1.2.4.1** Products and completed operations coverage: Such insurance shall be maintained for three years after final payment.
- 1.2.4.2** Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
- 1.2.4.3** Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
- 1.2.4.4** Premises/operations liability.
- 1.2.4.5** Personal and advertising injury.
- 1.2.4.6** Broad form property damage coverage.
- 1.2.4.7** Severability of interest (the CGL policy shall apply to each named insured as if that named insured was the only named insured and the policy shall apply separately to each insured against whom claim is made or suit is brought).
- 1.2.4.8** Underground, explosion, and collapse coverage.
- 1.2.4.9** Personal injury coverage, including employees (with no exclusions pertaining to employment).
- 1.2.4.10** Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
- 1.2.4.11** For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

1.2.5 Automobile liability: Contractor shall purchase and maintain comprehensive automobile liability insurance against 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, including owned, non-owned, and hired motor vehicles. In light of standard policy provisions concerning (a) loading and unloading, and (b) definitions pertaining to motor vehicles licensed for road use versus unlicensed or self-propelled construction equipment, it is recommended that the comprehensive automobile liability insurance policy and the commercial

general liability policy be written by the same insurance carrier, though not necessarily in one the policy. The comprehensive automobile liability policy shall be written on an occurrence basis.

- 1.2.6 Umbrella or excess liability:** Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, aviation liability and automobile liability insurance described in the paragraphs above and in Section 1.2.10 below. The coverage afforded shall be at least as set for in Section 1.5.6. But if no box is checked in Section 1.5.6, then the umbrella/excess liability coverage limits will be \$2,000,000 per occurrence and \$2,000,000 general aggregate. The umbrella or excess liability insurance policy(ies) shall be an occurrence policy(ies)
- 1.2.7 Contractor's pollution liability insurance:** Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- 1.2.8 Railroad Protective Liability:** Contractor shall purchase and maintain a Railroad Protective Liability policy, where such an exposure exists, to provide coverage in the name of each railroad company having jurisdiction over rights-of-way across which Work under the Contract Documents is to be performed. The form of the policy and the limits of liability shall be determined by the railroad company(ies) involved.
- 1.2.9 Contractor's professional liability insurance:** If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall purchase and maintain applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- 1.2.10 Aviation Liability Insurance:** If required on this project as indicated by a check mark in Section 1.5.10, Contractor shall procure and maintain for the duration of the Contract insurance against claims for injuries to persons or damage to property which may arise from or in connection with the ownership, maintenance or use of Manned or Unmanned Aerial Vehicles, including but not limited to drone(s).
- 1.2.10.1 Minimum Scope and Limit of Insurance:** Aviation Liability Insurance on an "occurrence" basis, including products and

completed operations, property damage, bodily injury with limits no less than \$1,000,000 per occurrence, and \$2,000,000 in the aggregate. This coverage may also be provided by endorsement to the Contractor's Commercial General Liability policy.

1.3 The policies of insurance required to be purchased and maintained by the Contractor shall:

1.3.1 Additional insureds: The Contractor's commercial general liability, automobile liability, umbrella or excess, pollution liability policies and aviation liability insurance, shall include and list as additional insureds the Owner and Engineer, and the following individuals and entities:

Name

City of Muskegon

933 Terrace Street, Muskegon, MI 49440 231-724-6707

Prein&Newhof,

3355 Evergreen Drive NE, Grand Rapids, MI 616-364-8491

The additional insured coverage shall include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and every additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements. Each additional insured endorsement shall state that each additional insured is entitled to the same rights as the named insured in the event of cancellation, including but not limited to prior notice of cancellation.

1.3.2 Deductible Liability: Any and all deductibles in the policies described in this Insurance Specification shall be assumed by, for the account of, and be the sole responsibility of Contractor. The amount of any deductible is subject to approval by the Owner.

1.3.3 Insurance will be primary: The insurance required to be purchased and maintained by the Contractor under this Insurance Specification shall be primary (i.e. pay first) as respects any insurance, self-insurance or self-retention maintained by the Owner, Engineer, and any other insureds. Any insurance, self-insurance or self-retention maintained by the Owner, Engineer, or any other

insureds, shall be in excess of the insurance purchased and maintained by the Contractor under this Insurance Specification, and shall not contribute with it.

- 1.3.4 Coverages:** Include at least the specific coverage's provided in this Insurance Specification.
- 1.3.5 Minimum Limits:** Be written for not less than the limits of liability provided in this Insurance Specification and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
- 1.3.6 Notice of Cancellation:** Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least ten (10) days prior written notice has been given to Contractor. Within three (3) days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
- 1.3.7 Duration:** Remain in effect at least until final payment (and longer if expressly required in this Insurance Specification or the Supplementary Conditions) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
- 1.3.8** Be appropriate for the Work being performed and provide protection to Contractor, Owner, Engineer, and any other additional insured, from claims that may arise out of or result from Contractor's, Sub-contractor's or Supplier's performance of the Work, 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.
- 1.3.9** The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

1.4 Contractor's Insurance - Property

- 1.4.1 Builder's Risk:** If required on this project as indicated by a check mark in Section 1.5.7, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in this Insurance Specification, or the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1.4.1.1** Include the interests of Owner, Contractor, Subcontractors, Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors, of any of them, and any other individuals or entities required by this Insurance Specification and/or the Supplementary Conditions to be insured under such builder's risk policy. Each of whom shall be listed as a named insured (the parties required to be insured shall collectively be referred to as "insureds").

- 1.4.1.2** 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; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; 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 this Insurance Specification and/or the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
- 1.4.1.3** Cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
- 1.4.1.4** Cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
- 1.4.1.5** Extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
- 1.4.1.6** Extend to cover damage or loss to insured property while in transit.

- 1.4.1.7** Allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 - 1.4.1.8** Allow for the waiver of the insurer's subrogation rights, as set forth below.
 - 1.4.1.9** Provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 - 1.4.1.10** Not include a co-insurance clause.
 - 1.4.1.11** Include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 - 1.4.1.12** Include performance/hot testing and start-up.
 - 1.4.1.13** 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 Insured.
- 1.4.2 Notice of Cancellation or Change:** All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this section shall contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least ten (10) days prior written notice has been given to the purchasing policyholder. Within three (3) days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- 1.4.3 Deductibles:** Contractor shall pay for costs not covered because of the application of a policy deductible.
- 1.4.4 Partial Occupancy or Use by Owner:** If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04 of the General Conditions of the Contract, then Owner, through Contractor, will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- 1.4.5 Additional Insurance:** If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this section, it may do so at Contractor's expense.
- 1.4.6 Insurance of Other Property:** If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity

or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

1.4.7 Waiver of Rights: All policies purchased in accordance with this Section 1.4, expressly including the builder's risk policy, 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 insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the 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 Engineer, its consultants, all Subcontractors, all individuals or entities identified in this Insurance Specification, or the Supplementary Conditions as insureds, 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 or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

1.4.8 Sub-Contractors Waiver of Rights: Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in this Insurance Specification or the Supplementary Conditions, as insureds, the Engineer and its consultants, 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 builder's risk insurance and any other property insurance applicable to the Work.

1.4.9 Receipt and Application of Property Insurance Proceeds: Any insured loss under the builder's risk and other policies of insurance required by this section will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by this section shall distribute such proceeds in accordance with such agreement as the parties in

interest may reach, or as otherwise required under the dispute resolution provisions of the Contract or applicable Laws and Regulations.

If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

1.5 Minimum limits

1.5.1 The minimum limits for the insurance required by this Insurance Specification shall provide coverage for not less than the following amounts or greater where required by Laws or Regulations:

1.5.2 Owner's & Contractor's Protective Liability Policy

1.5.2.1	Each Occurrence	\$1,000,000
1.5.2.2	General – Aggregate	\$2,000,000

1.5.3 Contractor's Commercial General Liability Policy

1.5.3.1	General – Aggregate	\$2,000,000
1.5.3.2	Products – Completed Operations Aggregate	\$2,000,000
1.5.3.3	Personal and Advertising Injury	\$1,000,000
1.5.3.4	Each Occurrence	\$1,000,000
1.5.3.5	Fire damage	\$50,000
1.5.3.6	Medical Expense	\$5,000

1.5.4 Comprehensive Automobile Liability Policy (In accordance with Michigan's No Fault Statute)

1.5.4.1	Combined Single Limit of	\$1,000,000
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1.5.5 Worker's Compensation and Employer's Liability Policy

1.5.5.1	Michigan	Statutory Limits
1.5.5.2	Employer's Liability	
1.5.5.2.1	Each accident	\$ 500,000
1.5.5.2.2	Disease – each employee	\$ 500,000
1.5.5.2.3	Disease – policy limit	\$ 500,000
1.5.5.3	Federal, if applicable (e.g. FELA, Longshoreman's, etc. . . .)	Statutory Limits

1.5.6 Excess or Umbrella Liability Policy

Unless increased limits are required as checked below, the limits shall be:

1.5.6.1	General Aggregate	\$2,000,000
1.5.6.2	Each Occurrence	\$2,000,000

Owner may select increased limits for this project as checked below; otherwise, the above limits shall apply if neither below option is checked:

Option One ☐ Check if required

1.5.6.1	General Aggregate	\$5,000,000
1.5.6.2	Each Occurrence	\$5,000,000

Option Two ☐ Check if required

1.5.6.1	General Aggregate	\$10,000,000
1.5.6.2	Each Occurrence	\$10,000,000

1.5.7 Builder's Risk "all risk" policy Full Replacement Cost

☐ Check if required

Items to be covered by Builder's Risk include:

1.5.8 Contractor's Pollution Liability Policy \$1,000,000

1.5.9 Railroad Protective Liability

☐ Check if required \$

1.5.10 Aviation Liability Insurance

☐ Check if required

1.5.10.1	General – Aggregate	\$2,000,000
1.5.10.2	Products – Completed Operations Aggregate	\$2,000,000
1.5.10.4	Each Occurrence	\$1,000,000

1.5.11 Other insurance ☐ Check if required (List Type) \$



CERTIFICATE OF LIABILITY INSURANCE

OP ID: JF

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER - - - -	Phone:	CONTACT NAME:	
	Fax:	PHONE (A/C, No, Ext):	FAX (A/C, No):
		E-MAIL ADDRESS:	
		PRODUCER CUSTOMER ID #:	
		INSURER(S) AFFORDING COVERAGE	
		NAIC #	
INSURED Owner's Name and Address - -	INSURER A: INSURANCE COMPANY		AM BEST FINANCIAL
	INSURER B:		
	INSURER C:		
	INSURER D:		
	INSURER E:		
	INSURER F:		

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
-- - - -	GENERAL LIABILITY						EACH OCCURRENCE \$ 1,000,000
	<input type="checkbox"/> COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence) \$
	<input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR						MED EXP (Any one person) \$
	<input checked="" type="checkbox"/> Owner's & Contractor's Prot						PERSONAL & ADV INJURY \$
							GENERAL AGGREGATE \$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG \$
	<input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						\$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident) \$
	<input type="checkbox"/> ANY AUTO						BODILY INJURY (Per person) \$
	<input type="checkbox"/> ALL OWNED AUTOS						BODILY INJURY (Per accident) \$
	<input type="checkbox"/> SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident) \$
	<input type="checkbox"/> HIRED AUTOS						\$
	<input type="checkbox"/> NON-OWNED AUTOS						\$
	UMBRELLA LIAB	<input type="checkbox"/> OCCUR					EACH OCCURRENCE \$
	EXCESS LIAB	<input type="checkbox"/> CLAIMS-MADE					AGGREGATE \$
	DEDUCTIBLE						\$
	RETENTION \$						\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATUTORY LIMITS
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y / N <input type="checkbox"/>	N / A				OTHER
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. EACH ACCIDENT \$
							E.L. DISEASE - EA EMPLOYEE \$
							E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

Contractor's Name and Address - -	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

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CERTIFICATE OF LIABILITY INSURANCE

OP ID: JF

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER - - - -	Phone:	CONTACT NAME:	
	Fax:	PHONE (A/C, No, Ext):	FAX (A/C, No):
		E-MAIL ADDRESS:	
		PRODUCER CUSTOMER ID #:	
		INSURER(S) AFFORDING COVERAGE	
		NAIC #	
INSURED Contractor's Name and Address - -	INSURER A: INSURANCE COMPANY		AM BEST FINANCIAL
	INSURER B:		
	INSURER C:		
	INSURER D:		
	INSURER E:		
	INSURER F:		

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
-	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC						EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 2,000,000
-	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input checked="" type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ \$
-	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DEDUCTIBLE RETENTION \$						EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$ \$
-	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y / N If yes, describe under DESCRIPTION OF OPERATIONS below		N / A				<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
-	Builder's Risk "ALL RISK" PROPERTY POLLUTION LIABILITY						CONTENTS Full Replacement Cost \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Name of Additional Insured

CERTIFICATE HOLDER**CANCELLATION**

Owner's Name and Address -	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

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SECTION 2

SPECIFICATIONS FOR EXCAVATING, TRENCHING, & BACKFILLING FOR UTILITIES

2.01 DESCRIPTION OF WORK

The work must consist of furnishing all materials, equipment, and labor for excavating, trenching, and backfilling for utilities. The work also must include the necessary clearing, sheeting and shoring, boring and jacking, dewatering, pipe embedment, and other appurtenant work.

The work must be performed in accordance with the specifications and drawings, the MDOT 2020 Standard Specifications for Construction and the following specifications.

2.02 CLEARING, BRUSHING & TREE REMOVAL

2.02.01 General

The Contractor must perform all clearing, brushing, and tree removal required for the proposed construction. Where indicated on the drawings for a specific area, that area must be completely cleared in accordance with Sections 201 and 202 of the MDOT 2020 Standard Specifications for Construction. The Contractor must notify the Engineer 48 hours (two working days) prior to commencement of clearing, brushing and tree removal. Clearing and brushing must be confined to the limits of the right-of-way or easements unless otherwise directed and must be kept to a practicable minimum.

Trees marked "Remove" on the drawings must be taken down and removed from the right-of-way in a manner that does not endanger the adjoining property or persons or traffic using the right-of-way. Unless approved otherwise by the Engineer, stumps of trees are to be removed. All stump removal must be considered included in the major items of work to the project.

Selective pruning of trees will be permitted to allow operation of the Contractor's equipment. Trees must be pruned neatly, and the scars from pruning or other damage by the Contractor's equipment must be covered with a preservative.

Tree removal and clearing must be performed in accordance with Federal, State, and Local requirements including seasonal limitations. If work cannot be completed within seasonal limitations, and additional evaluation is required to proceed, the Contractor must pay for such services.

2.02.02 Preservation of Trees

Because of the special concern for preservation of trees, all trees six (6) inches in diameter and larger, measured at a point 4-1/2' above the ground line at the base of the

tree, which are to be removed have been marked on the drawings. Where there is more than one tree that has grown from a common stump, each tree is measured as a separate tree. All other trees are to be preserved unless written permission for removal is obtained from the Owner and/or the Engineer. Where tunneling is necessary to preserve a tree, it must be included in the major items of work. Trees that may have to be tunneled may or may not be specified on the drawings. Where tunneling is necessary, excavation may have to be done by hand to prevent damage to the tree or to its roots. When tunneling or excavating is done close to a tree to be preserved, every effort must be made to preserve the main roots.

2.02.03 Disposal of Debris

All trees, brush, and stumps from clearing and brushing operations must be disposed of by the Contractor by hauling from the site, or other suitable means approved by the Engineer. Burning of debris will be allowed if approved by the Engineer and Owner. The Contractor must obtain the necessary burning permits and must comply with the safety regulations required.

2.02.04 Measurement & Payment

The cost of all clearing, brushing, tunneling, and protection of trees which are left standing must be considered included in the major items of work unless specific items have been provided in the Proposal in which case the prices must be payment in full for performing this work as specified herein. All tree preservation must be included in the major items of work to the project. Trees will be measured at a point 4-1/2' above the ground line at the base of the tree. Where more than one tree has grown from a common stump, each tree is measured as a separate tree. Trees smaller than six (6) inches in diameter will not be considered pay items.

2.03 **REMOVAL OF SURFACE IMPROVEMENTS**

Surface improvements such as sidewalks, improved lawns, drives, curb and gutter, and all types of pavement must be removed just prior to excavating or trenching operations. All improvements must be cut at the expected trench width prior to excavating using suitable equipment which does not damage the improvement outside of the trench area.

Concrete and bituminous pavement and drives must be cut with a pavement cutting saw. The depth of the cut must be the full depth of the pavement. Pavement crushers or breakers of any type are prohibited unless specifically authorized by the Engineer. Pavement which is removed must not become mixed with backfill material. Power equipment may be used for pavement removal, provided that damage is not caused to improvements which are to remain.

Removal of surface improvements must be included in the major items of work and no specific payment will be made therefore unless specific Proposal items are provided, in which case the prices bid must be payment in full for performing this work as specified herein.

2.04 EXISTING SOIL / SUBSURFACE CONDITIONS

Where provided, the soil borings shown on the construction drawings are being furnished for the convenience and general information only. The data shown on the boring logs represents soil and ground water conditions encountered at the respective boring locations at the time of boring. Variations may occur between these locations. Additionally, the stratigraphic lines represent the approximate boundaries between soil types; however, transitions may be more gradual than what is shown. The Contractor will be responsible for making themselves familiar with subsurface conditions by whatever means they deem necessary and shall make their own determinations therefrom.

2.05 EXISTING UNDERGROUND UTILITIES & STRUCTURES

2.05.01 Location

No less than three (3) working days prior to excavating, the Contractor is to call “MISS DIG” at 1-800-482-7171 or 811. Existing utilities are shown only at their approximate locations based on information and data furnished to the Engineer by the owners of such underground facilities. Neither the Engineer nor the Owner guarantees the accuracy or completeness of any such information or data. The Contractor must be solely responsible for determining their exact elevations and location in the field. The Contractor must notify the owners of all underground utilities before starting any work. House sewer connections, water and gas services, and other utility lines may not be indicated on the drawings. However, the Contractor must make every effort to locate all underground utilities from information obtained from the utility owner or by prospecting in advance of trench excavation.

2.05.02 Replacement

Certain underground utilities such as sewers may require removal and subsequent replacement in lieu of supporting or bracing during the proposed construction, or the Contractor may elect this option when temporary provisions to maintain essential services have been previously approved by the Engineer.

Unless otherwise specified, any utilities removed during the proposed construction must be replaced by the Contractor. Materials and installation must be equal to or better than original construction in every way. Salvaged materials may be reused when they are in good condition, and a satisfactory installation can be accomplished in the judgment of the Engineer.

Replacement of existing utilities must be considered included in the major items of work unless specific items have been provided in the Proposal, in which case the prices bid must be payment in full for performing this work as specified herein.

2.05.03 Relocation

Should any pipe or other existing utility require raising or lowering or moving to another location because of interference with the pipe or structure being constructed under these specifications, such changes which in the opinion of the Engineer are necessary must be made by the Contractor unless otherwise specified. Relocation of the utility shall be coordinated with the utility owner and comply to their requirements. Relocation of existing utilities must be included in the major items of work unless specific items are provided in the Proposal.

2.05.04 Reconnection

Where lateral services, house connections, or other pipelines require reconnection to the proposed utility, as is the case when an existing utility is being reconstructed, the Contractor must make these connections as specified or as shown on the drawings. All costs for making these connections, including provisions for maintaining flows and providing temporary service during the proposed construction, must be included in the major items of work unless specific items are provided in the Proposal.

2.05.05 Utilities to be Abandoned

When pipes, conduits, sewers, or other structures are removed from the trench leaving dead ends in the ground, such ends must be fully plugged or sealed with brick and mortar by the Contractor to obtain a soil-tight condition. Abandoned structures such as manholes or chambers must be entirely removed unless otherwise specified or shown on the drawings.

All materials from abandoned utilities which can be readily salvaged must be removed from the excavation by the Contractor and stored on the site or loaded on the Owner's truck as directed by the Engineer. Owner must have first claim to salvageable materials. The Contractor is responsible to dispose of salvageable materials not desired to be kept by the Owner.

All costs for abandoning utilities and for removing and salvaging materials, when required, must be considered included in the major items of work unless specific items have been provided in the Proposal, in which case the prices bid must be payment in full for performing this work as specified herein.

2.06 EXCAVATING & TRENCHING

2.06.01 General

Excavating and trenching operations must at all times be conducted in a safe, orderly manner using methods and equipment designed and suited to the intended use by personnel experienced in the work being performed.

None of the requirements or provisions specified herein or shown on the drawings must nullify or restrict any safety provisions required by any regulation or law governing the protection and/or safety of persons or property.

2.06.02 Width of Trench

The width of the trench must be ample to permit the pipe to be laid and joined properly and the pipe embedment material and backfill to be placed and compacted per pipe manufacturer's recommendations. Trenches must be of sufficient extra width when required as will permit the convenient placing of trench supports, sheeting, and bracing.

When the trench width above the top of the pipe is appreciably greater than that which is reasonably required by project conditions in the judgment of the Engineer, any additional cost for backfill material, surface restoration, or other items that are the result of such excess width must be borne by the Contractor.

When installing pipes in areas of rock, refer to section 2.06.05 for minimum trench clearance.

2.06.02.01 Width of Trench for Rigid Pipe

In order to limit excessive loads on rigid pipe, the maximum width of trench for pipe 36 inches and larger in diameter must not be more than twice the nominal diameter. For smaller sizes of pipe, the maximum width of trench must be not more than 3 feet greater than the nominal diameter of the pipe except as otherwise specified or directed. The above limiting restrictions on trench width apply from outside bottom of pipe to outside top of pipe.

Where the width of trench within these limits exceeds the maximum limit specified, the Contractor must install a heavier class of pipe or use other means to provide additional load-carrying capacity at no additional cost to the Owner. Any changes in class of pipe or other variation must be approved in writing by the Engineer before the work progresses.

2.06.02.02 Width of Trench for Flexible Pipe

Unless otherwise specified or approved by the Engineer, the minimum width of trench must be per pipe manufacturer's recommendation based on the pipe material, native soil conditions, and selected embedment material, or the minimum width to achieve specified compaction, whichever is greater.

2.06.03 Excavating to Grade

The trench must be excavated to a depth required for the proper installation of the pipe and placing of the pipe embedment material as specified.

Any part of the bottom of the trench excavated below the specified subgrade must be refilled with approved materials compacted to 95% of maximum unit weight in accordance with MDOT procedures at no additional cost to the Owner. If additional excavation is required to correct unstable foundation conditions, payment will be made as specified in Section 2.07.

2.06.04 Sheeting, Shoring, Bracing, & Shelving

2.06.04.01 General

The Contractor must brace or slope back the sides of all excavations in accordance with current MIOSHA regulations. The Contractor must be responsible for compliance to such regulations and for the design, installation, and maintenance of all excavation safety measures.

2.06.04.02 Measurement & Payment

Unless otherwise specified in the Proposal, the costs incurred in the installation of bracing, sheeting, shoring, and shelving must be included in the unit price bid for the work being performed.

If during the course of construction, field conditions require sheeting to be left in place as directed by the Engineer, the Engineer will negotiate payment with the Contractor in accordance with the contract provisions for extra work unless specific items have been provided in the Proposal.

2.06.05 Rock Excavation

2.06.05.01 General

Wherever the word rock is used in these specifications, it means boulders, solid ledge rock, and other minerals geologically placed and of a hardness when first exposed of 3 or greater in scales of mineral hardness, which in the opinion of the Engineer requires continuous use of drilling and blasting or special power equipment for its removal.

Soft disintegrated rock which can be removed with a power-operated excavator or with hand tools and loose, shaken, or previously blasted rock and broken stone in rock fillings will not be classified as rock, nor will it be included in measurements for payment.

2.06.05.02 Hardness

The Engineer will determine the hardness of the material or minerals in question. The following accepted hardness will be used as a guide in the field for specific situations:

- Gypsum - hardness of 2
- Fingernail - hardness of approximately 2-1/2
- Calcite - hardness of 3
- Copper Coin - hardness of approximately 3
- Brass Pin - hardness of approximately 3

A mineral with a hardness of 3 will scratch a copper coin and can be scratched with a brass pin. Determinations of hardness which cannot readily be determined in the field will be resolved by laboratory analysis of the material in question.

2.06.05.03 Blasting

Where blasting is necessary, the Contractor must obtain the required permits and licenses at its own expense. This work must be done with due regard to the safety of workmen, other people, and public and private property. The method of covering blasts, amounts of charges used, and the general procedure for doing this work must conform to the standard practice and must meet all requirements of local ordinances and other regulations and will be subject to the approval of the Engineer.

2.06.05.04 Clearance

Rock must be removed to provide a clearance for all pipes, appurtenances, or structures of at least eight (8) inches below, and a minimum of eight (8) inches on each side of the pipe, appurtenance, or structure.

The specified minimum clearances are the minimum clear distance which will be permitted between any part of the pipe or appurtenances being laid and any part, point, or projection of the rock.

2.06.05.05 Measurement

Only boulders of 1 cubic yard or greater in volume that cannot be removed with power excavating equipment or rock as defined herein will be measured for payment. Measurements of rock will be made by the Engineer after rock is removed from the excavation by measuring the trench before the pipe is installed.

The cross-sectional area will be measured at 25-foot intervals or closer if required to accurately measure the trench. The maximum depth which will be measured for payment must be from the top of the rock formation to the specified subgrade for the pipe embedment material. The maximum width of trench to be considered for payment must be as follows:

1. Below outside top of pipe, maximum width must be the outside diameter of the pipe bell plus 12 inches but not less than 30 inches.
2. From outside top of pipe to top of rock formation, maximum width must be computed based on a 5 on 1 slope vertically for the sides of the trench.

The volume will be computed by the Engineer using the method of average end areas based on measurements of rock actually removed subject to the maximum limits specified.

2.06.05.06 Basis of Payment

Rock excavation will be paid for at the contract price per cubic yard, which price will be payment in full for completing all work as specified herein including removal and disposal of the rock.

If a unit price has not been established in the Proposal, payment to the Contractor will be based on the contract provisions for extra work.

2.06.06 Dewatering

The Contractor must provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water including water or sewage from exposed sewers or water mains, from all excavations and trenches, or other parts of the work. Each excavation must be kept dry during the preparation of the subgrade and continually thereafter until the structure to be built or the installation of the pipe line is completed to such extent that no damage from hydrostatic pressure, flotation, or other cause will result.

Where work is in soil containing an excessive amount of water, the Contractor must provide, install, and maintain suitable well points or wells connected to manifolds or reliable pumping equipment, or other suitable groundwater dewatering methods, and must so operate the dewatering system to ensure proper construction of the work.

Contractor must submit a groundwater dewatering plan to the Owner. The plan must include the proposed dewatering strategy, including anticipated discharge rate(s) and location(s). Trench underdrain systems, or similar, will require additional information subject to project specific requirements. Discharge of water from groundwater dewatering operations shall be in accordance with all Federal, State and Local requirements, including discharge rate limitations. The Contractor must filter groundwater dewatering discharge and make every effort to prevent sand, sediment, or debris from entering any existing pipeline or conduit which they may use for drainage purposes.

The repair or cleaning of drainage structures made necessary by the Contractor's operations must be performed by and at the expense of the Contractor. Arrangements for discharge of groundwater into any public sewer must be previously approved by the Owner of the receiving sewer. Should the Contractor identify potential contamination in

the water from the groundwater dewatering operation, via visual and/or odor, the Contractor shall immediately notify the Engineer.

Dewatering including the use of stone or gravel for dewatering purposes when required will not be paid for separately but will be included in the contract price for the major items of work.

The Contractor must limit the dewatering operation to the minimum time and depth required for construction. The Contractor will be required to furnish temporary water service and/or provide potable water at the direction of the Engineer to property owners whose wells are affected by the dewatering operations.

2.07 SUBGRADE

The subgrade for pipe and/or structures must be firm, dense, and thoroughly compacted and consolidated, free from mud and muck, and sufficiently stable to remain firm and intact underfoot.

2.07.01 Unstable Foundation

When the soil beneath the normal pipe embedment area is soft or unstable, even with adequate dewatering, or in the opinion of the Engineer cannot support the pipe or utility, further depth must be excavated and refilled to the proposed grade with MDOT Class II granular material (for plastic pipe the material must comply with ASTM D2321) compacted in twelve (12) inch layers to 95% of maximum unit weight in accordance with MDOT procedures, or other approved means must be employed to assure a firm foundation for the utility. The volume of unstable foundation removed and replaced with approved materials for which payment will be allowed will be determined in cubic yards of material, compacted in place, unless otherwise specified on the drawings or in the proposal. Volume will be based on the actual width and depth of material removed and replaced, subject to Engineer review and approval.

Payment for removal, disposal and replacement of unstable foundation will be paid under the contract provisions for extra work, unless specific Proposal items have been provided, in which case, the unit price bid must be payment in full for performing the work as specified. If the soil in the bottom of trench is soft due to excessive amounts of ground water, and/or the Contractor's method of operation, stabilization of the trench bottom must be at the Contractor's expense.

2.07.02 Special Foundations

Where the subgrade at the bottom of the excavation consists of soil which is unstable or yielding to such a degree that, in the opinion of the Engineer, it cannot properly support the pipe or structure, the Contractor must construct such additional foundation or reinforcement of the subgrade as may be specified, such as timber piling, geotextiles, or other means as approved by the Engineer to provide a proper foundation.

The construction of special foundations will be paid for separately based on the contract provisions for extra work, unless specific Proposal items have been provided, in which case the unit price bid must be payment in full for performing the work as specified.

2.08 PIPE EMBEDMENT

2.08.01 General

Pipe embedment must include the furnishing and placing of approved materials as specified or as directed from 4 inches under the outside bottom of the pipe to 12 inches over the outside top of the pipe. Various classes of pipe embedment may be specified or shown on the drawings or details in which case the limits of the various types will also be specified.

Unless otherwise specified or shown on the Drawings, all pipe embedment must be Class B pipe embedment as shown on the Standard details. When the soil in the bottom of the trench at pipe subgrade meets all the requirements for Granular Material Class II as specified in the MDOT 2020 Standard Specifications for Construction, Section 902.07 and in the opinion of the Engineer will provide suitable bedding for the pipe, such soil may be utilized as bedding material and prepared to receive the pipe as specified without undercutting and subsequent replacement.

2.08.02 Flexible Pipe Embedment

Flexible pipe is any pipe having a pipe stiffness of less than 60 psi. as defined under the requirements of ASTM Designation D2412 (this includes all plastic pipe except Composite (Truss) pipe, and may include corrugated metal pipe, ductile iron pipe, and steel pipe, depending on pipe diameter and wall thickness).

Plastic pipe embedment must comply with ASTM D2321. Bedding material must meet the requirements of Section 902.07 of the MDOT 2020 Standard Specifications for Construction for granular materials Class II, modified to 100% passing a 1" sieve must be used. If stone is used for bedding, it must meet the requirements of ASTM D2321 (Table 1 – Embedment Classes for Plastic Pipe) for Class 1A crushed stone. An Engineer approved geotextile filter fabric must wrap around all stone in areas where Class 1A crushed stone pipe embedment is used. Transition zones between crushed stone and sand embedment must be separated by a geotextile fabric.

2.08.03 Special Pipe Embedment

Various types of special pipe embedment may be specified or shown on the Drawings in locations where special conditions require their use. The Contractor must perform all the work of constructing special pipe embedment where specified.

2.08.04 Placing Pipe Embedment Material

Pipe embedment material must be placed in the bottom of the trench and shaped by hand to provide a firm and uniform bearing for the barrel of the pipe with additional shaping to accommodate the bells on bell and spigot pipe. After each pipe has been graded, aligned, and placed in final position on the bedding material and jointing is complete, additional embedment material must be carefully placed, not exceeding 6-inch lifts, and compacted under and around each side of the pipe and over the pipe until it is completely covered by 12 inches of embedment material. Said material must be distributed along both sides of the pipe uniformly and simultaneously to prevent lateral displacement of the pipe. All granular embedment material must be compacted to 95% of maximum unit weight in accordance with MDOT procedures.

All the work of placing pipe embedment must be considered an integral part of installing the pipe and must be completed immediately after the pipe is laid to the correct alignment and grade.

2.08.05 Basis of Payment

All the work of furnishing and/or placing pipe embedment material as specified must be included in the contract items for the proposed work.

When one or more contract items have been provided in the Proposal for special pipe embedment, payment to the Contractor will be based on the prices bid for the respective items. When no specific items have been provided in the Proposal, the cost for completing this work as specified must be included in the major work items except for authorized extra work in which case the contract provisions for extra work must apply.

2.09 BACKFILLING ABOVE PIPE EMBEDMENT

2.09.01 General

All backfill material must be free from cinders, ashes, refuse, sod, organic material, boulders, or rocks larger than 3 inches in diameter, frozen material or other material which in the opinion of the Engineer is unsuitable. The soil excavated from the trenches must be used for backfilling when it is classified as suitable by the Engineer. If all or a portion of the excavated material is classified as unsuitable for backfilling, the Contractor must remove and dispose of the unsuitable material and must furnish and place granular material meeting the requirements of Section 902.07 of the MDOT 2020 Standard Specifications for Construction for Granular Material Class II.

All backfilling and compaction must be performed by the Contractor using methods and equipment approved by the Engineer.

2.09.02 Trenches Requiring Compacted Granular Backfill

Trenches and excavations in the following locations must be backfilled with approved granular material meeting the requirements of Section 902.07 of the MDOT 2020 Standard Specifications for Construction for Granular Material Class II:

- a. Improved areas, including drives, sidewalks, parking areas, around structures, etc.
- b. Within the limits of the roadway (within a 1 on 1 slope beginning two (2) feet from the edge of pavement or back of curb towards the right-of-way line).
- c. Within the limits of future improvements (shown on Drawings).
- d. Within limits specified on Drawings.
- e. All sanitary sewer lateral trenches within the limits of the right-of-way.

All backfill within these areas must be placed in layers not exceeding twelve (12) inches thick and must be compacted to 95% of maximum unit weight in accordance with MDOT procedures. Trenches transverse to undisturbed roadway shall be compacted to 98% of maximum unit weight in accordance with MDOT procedures. Tests for compaction will be made by the Engineer or other representative designated by the Engineer at no cost to the Contractor. When tests indicate a density which is less than that required, the methods or equipment being used must be modified to obtain the density specified, and the section in question must be recompacted until the required density is obtained. The cost of retesting must be borne by the Contractor.

2.09.03 Trenches Not Requiring Compacted Granular Backfill

Where not otherwise specified or directed, backfilling above the pipe embedment must be made with material which is originally excavated, which is suitable. Backfill materials must be consolidated by mechanical equipment working longitudinally in the trench, or by other approved methods, so as to be free of large voids with any excess material mounded over the trench or removed as directed by the Engineer. The trench must be graded to a reasonable uniformity and left in a neat condition.

2.09.04 Basis of Payment

Payment for backfilling including compaction must be made as follows:

When a contract item has been provided in the Proposal for special backfill, payment will be made under this item as specified in Section 2.10 for approved granular material obtained off the site or when no specific item for special backfill has been provided in the Proposal, this work must be included in the major items of work.

2.10 SPECIAL BACKFILL - MEASUREMENT AND PAYMENT

2.10.01 Measurement

When an item has been provided in the Proposal for special backfill, approved granular material obtained off the site which is required by these specifications or authorized by the Engineer must be included in this item. Special backfill will be measured compacted in place. The Contractor must furnish a delivery ticket for each truck load at the time the material is delivered to the project. The delivery ticket must be prepared at least in duplicate, one copy of which must be furnished to the Engineer or their representative, the other copy to be retained in the Contractor's file. No payment will be made for special backfill unless the individual truck delivery tickets are furnished in this manner. The Engineer will use the delivery tickets when calculating the compacted in place quantity.

2.10.02 Payment

The Proposal unit price per cubic yard for special backfill must include payment in full for furnishing, placing, and compacting the special backfill and for disposing of the material excavated from the trench as directed and in accordance with the Drawings and Specifications.

Stone used specifically for dewatering procedures must not be classified as special backfill and no specific payment will be made therefor.

2.11 DISPOSAL OF EXCESS EXCAVATION

All excavated material in excess of that needed for backfill or that material classified as unsuitable by the Engineer must be disposed of by the Contractor. However, the Engineer reserves the right to direct the Contractor to haul all or a portion of the material not required for backfilling to an area designated by the Engineer which is not more than 1,000 feet outside the project and which is reasonably accessible. This work, when directed, must be performed at no additional cost to the Owner.

2.12 LIMITATIONS ON OPERATIONS

The Contractor must at all times conduct their work so that there is a minimum of inconvenience to the residents and businesses in the vicinity of this project. To this end, the Contractor must complete their backfill and remove all debris and unsuitable backfill to a point as close to the actual pipe installation as is practical and keep the area where the pipe construction and backfill has been completed in a neat condition. Open excavations must be protected by signs, lights, barricades, and/or fence at all times when work is not actually taking place at that excavation. The placement of excavated earth along the line of the trench must be controlled by the public's use of the street or right-of-way and must always be confined to approved limits.

Not more than 300 consecutive feet of street must be closed at one time, and vehicular traffic through any street must not be stopped for a period longer than two weeks without the written permission of the Engineer. Not more than one cross street must be closed to vehicular traffic at the same time except by permission of the Engineer. Contractor must maintain access for emergency vehicles at all times.

2.13 SOIL EROSION AND SEDIMENTATION CONTROL

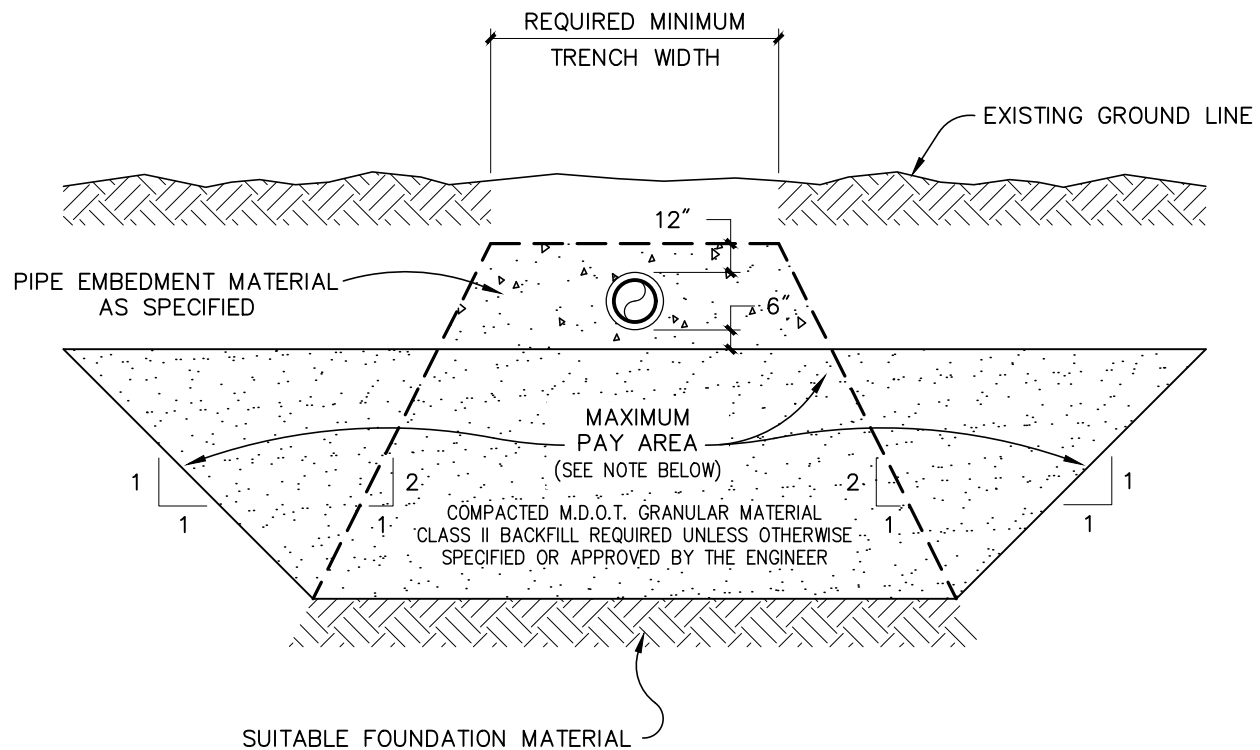
The Contractor must conduct operations in such a manner that all soil is confined within the project limits and prevented from entering storm sewers, water courses, rivers, lakes, reservoirs, or wetlands.

The Contractor must place a filter or barrier composed of straw, stone or other approved material around all catch basins or other inlets to the storm sewer or drainage courses to prevent sedimentation in these structures. After the construction operations are completed, the Contractor must remove these filters and clean all the sediment and debris from the catch basins, ditches or other storm sewer structures.

Soil erosion and sedimentation control measures if indicated on the Drawings are considered as minimum requirements and are not to be considered as complete and all-inclusive. Additional control measures as may be required due to circumstances or conditions at the time of construction or as directed by the Engineer, or the designated Soil Erosion Control agency, must be placed as required to insure conformance with the Part 91 of PA 451 of 1994. Deviations from or additions to the erosion control measures shown on the Drawings must be subject to the approval of the Engineer or enforcing agency.

The Contractor is responsible to have a certified storm water operator and complete all such reports as required by regulatory agencies as it relates to storm water and soil erosion and sedimentation control.

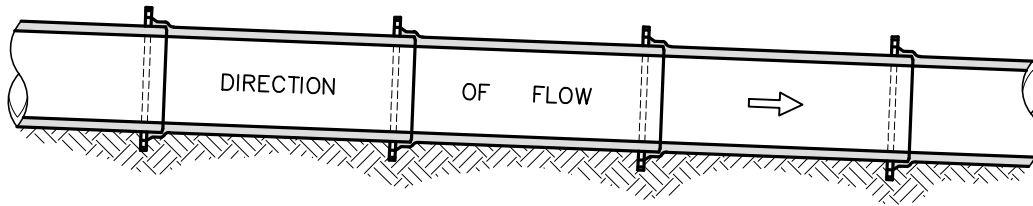
The cost of this work and other control measures which may be required or directed by the Engineer must be included in the major work items to the cost of the project unless specific items have been provided in the proposal.



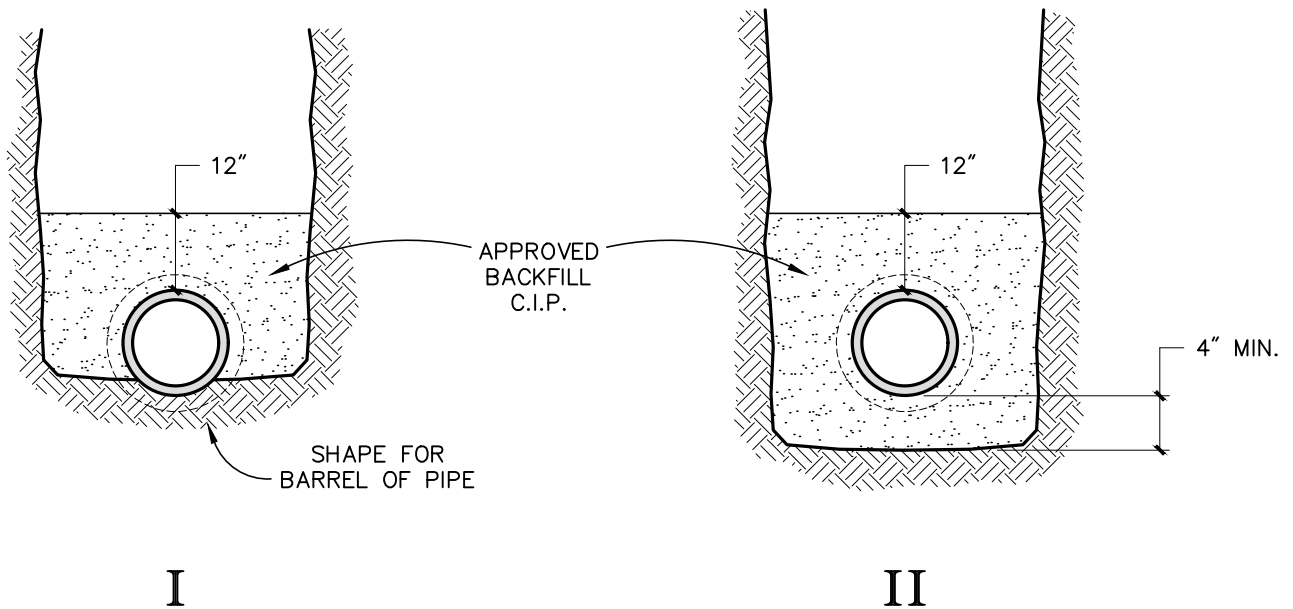
UNSTABLE SOIL REMOVAL FOR UTILITY

NOTE

PAYMENT WILL BE PER CUBIC YARD OF MATERIAL, COMPACTED IN PLACE. VOLUME WILL BE BASED ON THE ACTUAL WIDTH AND DEPTH OF MATERIAL REMOVED AND REPLACED, SUBJECT TO ENGINEER REVIEW AND APPROVAL, BUT SHALL NOT EXCEED THE CROSS-SECTION OF THE DETAIL ABOVE.



EXCAVATION FOR BELLS



CLASS B PIPE EMBEDMENT

NOTES

1. ALL BACKFILL INDICATED MUST BE COMPACTED TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH M.D.O.T. PROCEDURES.
2. METHOD I MUST BE USED IN AREAS OF UNCONSOLIDATED SOILS. (e.g. SAND, GRAVEL)
3. METHOD II MUST BE USED IN AREAS OF CONSOLIDATED SOILS (e.g. CLAY, HARDPAN, ROCK)
4. IF STONE IS USED FOR BEDDING, A NON-WOVEN GEOTEXTILE SEPARATOR (PER MDOT 910) MUST BE PLACED AROUND ALL AREAS WHERE STONE PIPE EMBEDMENT IS USED.
5. TRANSITION ZONES BETWEEN STONE AND SAND EMBEDMENT MUST BE SEPARATED BY A NON-WOVEN GEOTEXTILE SEPARATOR.

SECTION 3

SPECIFICATIONS FOR SURFACE CONSTRUCTION

3.01 DESCRIPTION OF WORK

All areas disturbed by construction operations must be reconstructed per the Drawings. Disturbed areas with no specific reconstruction plans must be restored to the original condition thereof as determined by the Engineer using information from drawings, surveys, and photographs or video when available.

The work must be performed in accordance with the Project Specifications and Drawings, the MDOT 2020 Standard Specifications for Construction, and the following specifications.

3.02 EARTHWORK

All streets, walks, and other improved surfaces disturbed by construction operations must be replaced to uniform lines and grades established by the Engineer. The finish grade line will be established within three (3) inches of the existing ground profile shown on the Drawings unless a proposed grade is shown which indicates otherwise.

The Contractor must perform all grading, compacting, shaping, and related work required to prepare the subgrade per the Prein&Newhof Specifications for Construction Section 2 to the satisfaction of the Engineer.

3.03 SAND SUBBASE

Where specified, imported sand subbase will be placed on all subgrade prior to placement of aggregate base material. Imported sand subbase will be a minimum of twelve (12) inches thick and will be of materials as specified below.

3.03.01 Materials

Imported subbase material must meet the requirements specified in Section 301 of the MDOT 2020 Standard Specifications for Construction. All material must be taken from stockpiles that have been tested within a year by the county road commission, MDOT, or an independent laboratory. Copies of test data must be provided to Engineer prior to placement.

If existing subgrade material is sand meeting MDOT Class II requirements, the contractor may use the existing material for subbase, if approved by the Engineer.

3.03.02 Construction Methods

Placement of imported sand subbase must be in accordance with the applicable portions of Section 301 of the MDOT 2020 Standard Specifications for Construction.

3.03.03 Measurement & Payment

All placement of imported subbase will be measured in cubic yards (compacted in place) and will include all disposal of existing material and grading/shaping of proposed material required. The dimensions of subbase will be as detailed on the Drawings or as described in this specification.

If a pay item is not included in the Bid Proposal, sand subbase work will be considered a part of the major items of work.

3.04 AGGREGATE SURFACING AND SHOULDERS

Aggregate roads, streets, and driveways must be constructed in accordance with the typical section(s) shown on the Drawings or the cross section(s) detailed in the Project Specifications and will consist of a minimum of six (6) inches of aggregate surface course as specified below.

Aggregate shoulders must be constructed in accordance with the typical section(s) shown on the Drawings, the cross section(s) in the Project Specifications, or (in the case of replacement) will match the original width and thickness of the existing shoulder.

3.04.01 Materials

Aggregate surface course must meet the requirements specified in Section 306 of the MDOT 2020 Standard Specifications for Construction. Aggregate shoulder must meet the requirements specified in Section 307 of the MDOT 2020 Standard Specifications for Construction. All surface course and shoulder material must be taken from stockpiles that have been tested within a year by the county road commission, MDOT, or an independent laboratory. Copies of test data must be provided to Engineer prior to placement.

Aggregate surface material that is removed from roadways, driveways, and shoulders must not be reused but must be replaced with an equivalent depth of newly compacted aggregate conforming to MDOT 23A in Section 902 of the MDOT 2020 Standard Specifications for Construction.

3.04.02 Construction Methods

Placement of aggregate surface course and shoulders must be in accordance with the applicable portions of Sections 306 and 307 of the MDOT 2020 Standard Specifications for Construction.

3.04.03 Measurement & Payment

Placement of aggregate surfacing of roads, streets and driveways will be measured in square yards and must include all grading, shaping, and compaction required.

Placement of aggregate shoulders will be measured in square yards and must include all grading, shaping, and compaction required. If there is no Proposal item for shoulder restoration, it should be considered included in the major items of work.

3.05 **HOT MIX ASPHALT (HMA) STREETS AND DRIVEWAYS**

Hot Mix Asphalt (HMA) streets and driveways must be constructed in accordance the cross section shown on the Drawings, the Project Specifications, and unless otherwise specified, must consist of 165 lbs/syd MDOT 5EL (top) over 220 lbs/syd MDOT 4EL (base) over six (6) inches of compacted 21AA aggregate base.

3.05.01 Materials

Aggregate base for HMA streets must meet the requirements of 21AA in Section 902 of the MDOT 2020 Standard Specifications for Construction. All aggregate material will be taken from stockpiles that have been tested within a year by the county road commission, MDOT, or an independent laboratory. Copies of test data must be provided to Engineer prior to placement.

HMA for base, Leveling, and top courses must be as specified, and must conform to the requirements of Section 501 of the MDOT 2020 Standard Specifications for Construction. Materials for bond coat must be as specified in Section 501 of the MDOT 2020 Standard Specifications for Construction.

3.05.02 Construction Methods

Aggregate base for HMA streets must be placed in accordance with Section 302 of the MDOT 2020 Standard Specifications for Construction.

HMA mixtures must be placed in accordance with the applicable portions of Section 501 of the MDOT 2020 Standard Specifications for Construction. For placement of valley gutters, pavers must be equipped with an extension to the vibrating screed adjustable to fit the typical section shown on the Drawings.

The Contractor must not place the aggregate base course until the subgrade has been approved by the Engineer. The Contractor must not place the first HMA course and each successive HMA course until the underlying aggregate or HMA course has been approved by the Engineer.

3.05.03 Measurement & Payment

Aggregate Base for HMA placement will be measured in square yards per a specified depth.

HMA placement will be measured in tons. Load tickets for HMA clearly stating the mix, date, and other information as required by Section 501 of the MDOT Standard Specifications for Construction are required. If tonnage remains after the paving operation, a weigh back will be required to be supplied from the Contractor to the Engineer.

The cost of HMA bond coat at rate specified in the Drawings will be considered part of the bituminous paving.

Payment for all HMA items must be limited to the measured area multiplied by the proposed application rate plus ten (10%) percent, or the actual tons installed, whichever is less. Any overruns will not be paid for by the Owner.

3.06 **HOT MIX ASPHALT (HMA) PATH**

HMA path installation must be in accordance with the Prein&Newhof Specifications for Construction Section 9. If the Prein&Newhof Specifications for Construction Section 9 is not included with the Specifications, the Contractor must follow the requirements detailed in section 3.05 of the above specifications and Section 806 of the MDOT 2020 Standard Specifications for Construction.

3.07 **PATCHING OF AGGREGATE SURFACE OR HOT MIX ASPHALT (HMA) PAVED AREAS**

When the Drawings and Project Specifications do not require that the Contractor replace an entire street, the surface that is disturbed will be replaced as specified herein.

3.07.01 Materials

Hot Mix Asphalt (HMA) patching of paved areas must be constructed in accordance the cross section shown on the Drawings and unless otherwise specified, must consist of 165 lbs/syd MDOT 5EL (top) over 220 lbs/syd MDOT 4EL (base) over six (6) inches of compacted 21AA aggregate base. When existing seal coat pavement is disturbed, a HMA patch must be placed.

Patching of aggregate surface must be replaced with an equivalent depth of newly compacted aggregate conforming to MDOT 23A in Section 902 of the MDOT 2020 Standard Specifications for Construction.

3.07.02 Construction Methods

When an aggregate surface is disturbed by the Contractor's operations, the edges of the existing aggregate surface must be trimmed and must be free of all foreign material before the new aggregate is placed. The aggregate must be placed in layers not to exceed six (6) inches and must be compacted per section 302 of the MDOT Standard Specifications for Construction.

When a HMA surface is disturbed by the Contractor's operations, that surface must be replaced at a thickness equal to the thickness of the existing pavement adjacent to the trench but not less than one and one-half (1-1/2) inches thick. If existing pavement is greater than two (2) inches in thickness, the replacement pavement must be placed in two or more lifts. Aggregate base must be replaced at a thickness equal to the adjacent aggregate base (minimum six inches) as specified for aggregate patches above. After placement of the aggregate base but prior to its final shaping and compaction, the edges of the existing pavement must be trimmed to straight lines a minimum of one (1) foot from the edge of the trench to permit a straight and uniform surface between the existing and new aggregate base. Trimming of the existing pavement must be by saw cutting or other suitable means approved by the Engineer.

All bituminous valley gutter located in disturbed HMA surface areas must be replaced by the Contractor. Replacement of valley gutter in disturbed HMA areas will be considered part of the HMA replacement.

3.07.03 Measurement & Payment

Placement of aggregate base as surface or under HMA will be measured in square yards. HMA patching will be measured in tons. Load tickets clearly stating the mix, date, and other information as required by Section 501 of the MDOT Standard Specifications for Construction are required.

Payment for all HMA items must be limited to the measured area multiplied by the proposed application rate plus ten (10%) percent, or the actual tons installed, whichever is less. Any overruns will not be paid for by the Owner.

3.08 **CONCRETE PAVEMENT AND DRIVEWAYS**

The Contractor must place all concrete drives, and pavement as detailed on the Drawings.

3.08.01 Materials

Concrete must meet the requirements for Grade 3500 Concrete as specified in Section 1004 of the MDOT 2020 Standard Specifications for Construction. Other materials must meet the requirements of the applicable portions of the MDOT 2020 Standard Specifications for Construction.

The Contractor must provide concrete testing in accordance with the minimum frequency of Quality Control testing in accordance with the MDOT 2020 Standard Specifications for Construction, and the Manual for Michigan Test Methods. Prior to placement of concrete the Contractor must provide a concrete testing plan for review by the Engineer.

3.08.02 Construction Methods

The thickness of the concrete must be the same as the concrete adjacent to the trench but must not be less than six (6) inches.

The alignment and grade and the contour and finish of the surface must be the same as the concrete adjacent to the trench unless otherwise directed by the Engineer.

Pavements and drives must be sawcut at the edges of the trench or removed to existing joints. The depth of the saw cut must not be less than the full depth of the concrete.

The forms and joints and the methods of placing, curing, and protection must be consistent with the MDOT 2020 Standard Specifications for Construction Section 602, standard practice, and the requirements of the latest MDOT Standard Plans.

3.08.03 Measurement & Payment

Concrete pavement and drives will be measured in square feet or square yards of actual concrete surface replaced. Concrete that has been broken by the Contractor outside the limits of the trench will not be considered for payment unless otherwise specified.

3.09 **CONCRETE SIDEWALK**

Sidewalk installation must be in accordance with the Prein&Newhof Specifications for Construction Section 9. If the Prein&Newhof Specifications for Construction Section 9 is not included with the Specifications, the Contractor must follow the requirements of Section 803, 806, 1001, and 1004 of the MDOT 2020 Standard Specifications for Construction, the latest MDOT Standard Plans, current ADA standards, and the Prein&Newhof Specifications for Construction Section 3.08 for sidewalk installation.

3.10 **CONCRETE CURB AND GUTTER**

The contractor must install curb and gutter as detailed on the Drawings.

3.10.01 Materials

Concrete for curb and gutter must meet the requirements for Grade 3500 Concrete as specified in Section 1004 of the MDOT 2020 Standard Specifications for

Construction. Other materials must meet the requirements of the applicable portions of the MDOT 2020 Standard Specifications for Construction.

The Contractor must provide concrete testing in accordance with the minimum frequency of Quality Control testing in accordance with the MDOT 2020 Standard Specifications for Construction, and the Manual for Michigan Test Methods. Prior to placement of concrete the Contractor must provide a concrete testing plan for review by the Engineer.

3.10.02 Construction Methods

Concrete curb must be constructed per Section 802 of the 2020 MDOT Standard Specifications for Construction. Unless otherwise specified, MDOT Detail F4 curb will be used in urban applications, and MDOT Detail B2 curb will be used in rural areas in accordance with the latest MDOT Standard Plans.

New curb and gutter must be formed to match existing curb and gutter sections at tie-in points.

3.10.03 Measurement & Payment

Concrete curb and gutter will be considered part of the construction of the utility line unless a specific item is provided in the Proposal for its replacement. If so specified, the concrete curb and gutter will be paid for per foot measured along the face of a header curb or along the flow line of gutter when constructed as part of the curb. All reinforcement, forms, and other item incidental to placement of the curb and gutter is included in payment for curb and gutter. Concrete that has been broken by the Contractor outside the limits of the trench will not be considered for payment unless otherwise specified.

3.11 **REPLACEMENT OF LAWN IMPROVEMENTS**

3.11.01 Underground Sprinkling and Low-Voltage Equipment

Underground sprinkling lines, valves & heads, water system curb stops and boxes, and underground low voltage wires for dog fences and lawn maintenance are specifically excluded from the pay items. The Contractor must take the necessary precautions to preserve this equipment during construction. Any underground sprinkling and/or low-voltage equipment disturbed by the Contractor must be replaced at the Contractor's expense.

All underground sprinkling and/or low-voltage equipment must be replaced in a timely fashion to minimize damage to the lawn areas. The Contractor will be responsible for any lawn damage caused by delayed replacement of the equipment.

3.11.02 Fences

Fences, which are removed for construction, must be replaced with equal or better type and size. The cost of removing and replacing the fences will be considered part of the major items of work found in the Proposal unless otherwise specified.

3.11.03 Ornamental Shrubbery and Bushes

Ornamental shrubbery and bushes that are removed during construction must be replaced in kind and size in a vigorous growing condition. Replacement costs will be considered part of the major items of work found in the Proposal unless otherwise specified. All shrubs and bushes replaced must be insured by a one-(1) year warranty commencing from the date of installation.

3.12 TURF RESTORATION

All areas of established turf must be replaced as nearly as possible to their original condition.

3.12.01 Topsoil

Topsoil must be placed at a minimum depth of four (4) inches over all areas disturbed by the Contractor's operations. The subgrade must be graded to conform to the adjacent contours and must be approved by the Engineer before placing topsoil. The topsoil must then be placed in accordance with Section 816 of the MDOT 2020 Standard Specifications for Construction.

The soil must be dark, organic natural surface soil, exclusive of muck or peat, suitable for the establishment of grass or other vegetable growth.

3.12.02 Fertilizer

In all disturbed areas, after topsoil has been placed, Class A fertilizer must be installed per Section 816 of the MDOT 2020 Standard Specifications for Construction. Fertilizer must be applied just before the placing of the seed to retain its full benefit before unfavorable weather can cause deterioration.

3.12.03 Seeding

All previously seeded lawn areas must be reseeded with MDOT TUF seed mixture per Section 816 of the MDOT 2020 Standard Specifications for Construction. Temporary seed must be placed for erosion control or temporary soil stabilization of stockpile areas.

Seed mixtures, application rates, and methods must be in accordance with Section 816 of the MDOT 2020 Standard Specifications for Construction.

Seasonal limitations on seeding in Section 816 of the MDOT 2020 Standard Specifications for Construction are waived. The Contractor must repeat the seeding procedure as often as necessary to produce a close stand of weed-free grass.

3.12.04 Mulching

All seeded areas must be mulched immediately following the seeding. Mulching must be applied to all newly seeded areas at a rate of two (2) tons per acre in accordance with the requirements of Section 816 of the MDOT 2020 Standard Specifications for Construction, or as directed by the Engineer. Separate loose straw mulch is prohibited on residential lawn areas.

3.12.05 Hydro Application

All fertilizing, seeding, and mulching must be applied by an approved Hydro seeding and mulching process unless separate applications as heretofore described are approved by the Engineer.

3.12.06 Erosion Control

All erosion control measures must be installed and maintained in accordance with the Soil Erosion and Sedimentation Control plan and permit. Unless otherwise specified, mulch blanket and high velocity blanket must be placed in accordance with Section 816 of the MDOT 2020 Standard Specifications for Construction.

3.12.07 Sod

Sod must be placed only where directed by the Engineer or as noted on the Drawings or Specifications.

All sod must be nursery grown, conforming to MDOT requirements for MDOT TUF seed mixture. Sod must be approved by the Engineer before placing and must be placed in accordance with the requirements of Section 816 of the MDOT 2020 Standard Specifications for Construction. The base on which the sod is to be laid must consist of a minimum of four (4) inches of topsoil placed, watered, and fertilized in the same manner required for seeding.

3.12.08 Measurement & Payment

Turf restoration will be measured in feet along the centerline of the main utility line being constructed. Payment will be made according to the appropriate item for seeding or sod. Topsoil, fertilizer, mulch, and erosion control will be incidental to these items unless specific proposal items are provided. Any area disturbed by the Contractor's operations outside of the limits of the trench must be restored by the Contractor to its original condition but will not be considered for payment.

3.13 SCHEDULING OF RESTORATION WORK

Initial restoration (rough grading, temporary aggregate if necessary, removal of excess excavated material and debris) must be done each day to the extent necessary to allow the movement of local traffic and permit access to all properties for emergency vehicles. Maintenance of streets, drives, sidewalks, etc. are the responsibility of the Contractor (including dust control, grading, stabilization, etc.) until the restoration is complete and has been accepted by the Engineer.

Restoration of each street or section of utility line must follow the construction in a timely fashion to minimize inconvenience to the adjacent property owners and the general public.

3.14 LIMITS FOR MEASUREMENT & PAYMENT FOR SURFACE RESTORATION

All work necessary to return the area of construction operations to its original condition, other than the items listed in the Proposal, will be considered incidental to the construction, and no specific payment will be made therefor.

Payment will be made for the proposal items only. All of the work specified above and indicated on the Drawings will be considered included in the unit prices.

SECTION 5

SPECIFICATIONS FOR STORM SEWER

5.01 DESCRIPTION OF WORK

The work must consist of furnishing and installing storm sewer pipe of the specified sizes in a trench and must include the construction of manholes, catch basins, and other appurtenant work. Excavating, trenching, and backfilling is specified in Section 2.

The work must be performed in accordance with the specifications and drawings, the MDOT 2020 Standard Specifications for Construction and the following specifications.

5.02 MATERIALS

All materials furnished by the Contractor must conform to the specifications which follow. Where reference specifications are used, they must be considered as referring to the current edition or latest issue.

5.02.01 Sewer Pipe

All sewer pipe must be of the materials and strengths shown on the Drawings or as specified.

5.02.01.01 Reinforced Concrete Sewer Pipe

Reinforced concrete sewer pipe, fittings, and accessories must conform to the requirements of ASTM C76 for the various classes specified. All reinforced concrete sewer pipe must be supplied by a producer on the MDOT approved products list or be an ACPA QCast or NPCA Certified Producer.

Unless otherwise specified, joints for reinforced concrete sewer pipe must be watertight premium rubber joints conforming to the requirements of ASTM C443. Rubber gaskets must meet the physical requirements of ASTM C1619.

Unless otherwise specified, the joint surface must also be evenly wrapped with a three (3) foot wide geotextile blanket meeting the requirements of Section 910.03A and Table 910-1 of the MDOT 2020 Standard Specifications of Construction, Geotextile Blanket for pipe wrap.

Geotextiles must be stored, handled, and placed in accordance with the manufacturer's recommendations. Torn or punctured geotextiles must not be used.

Geotextile fabric which has deteriorated due to ultraviolet exposure (sunlight) during storage or has been damaged in placing will be rejected.

5.02.01.02 Reinforced Concrete Elliptical Pipe

Reinforced concrete elliptical pipe, fittings, and accessories must conform to the requirements of ASTM C507 for the various classes specified. All reinforced concrete sewer pipe must be supplied by a producer on the MDOT approved products list or be an ACPA QCast or NPCA Certified Producer.

Unless otherwise specified, joints for reinforced concrete elliptical pipe must be watertight and conform to one of the following requirements:

Premium rubber joints conforming to the requirements of ASTM C443. Rubber gaskets must meet the physical requirements of ASTM C1619.

External sealing bands conforming to the requirements of ASTM C877.

Where specifically specified, soil tight joints must conform to the following requirements:

Bituminous mastic conforming to the requirements of Section 909.09 of the MDOT 2020 Standard Specifications of Construction must completely fill the annular space in the joint. Any excess mastic squeezed into the interior of the conduit must be troweled smooth.

The joint surface must also be evenly wrapped with a three (3) foot wide geotextile blanket meeting the requirements of Section 910.03A and Table 910-1 of the MDOT 2020 Standard Specifications of Construction, Geotextile Blanket for pipe wrap.

Geotextiles must be stored, handled, and placed in accordance with the manufacturer's recommendations. Torn or punctured geotextiles must not be used. Geotextile fabric which has deteriorated due to ultraviolet exposure (sunlight) during storage or has been damaged in placing will be rejected.

5.02.01.03 Reinforced Concrete Box Culvert Pipe

This section covers precast reinforced concrete box culverts and joints to be furnished and installed as specified and as shown on the drawings.

Box culverts must be furnished and installed complete with all fittings, specials, jointing materials, and other necessary appurtenances.

Except as modified or supplemented herein, the manufacture and design of concrete box culvert must conform to the requirements of ASTM C1577, as applicable.

Unless otherwise specified herein, all materials used in the manufacture of culvert, fittings, joints, and accessories must conform to the requirements of ASTM C1577, as applicable.

Unless otherwise specified, joints for reinforced concrete box culverts must be watertight and conform to one of the following requirements:

Premium rubber joints conforming to the requirements of ASTM C443. Rubber gaskets must conform to ASTM C1677.

Butyl rope gaskets conforming to the requirements of ASTM C990 with primer.

All watertight joints must also be wrapped with external sealing bands conforming to the requirements of ASTM C877. The width of the bands must be twelve (12) inches. External sealing bands must be installed in accordance with the sealing band manufacturer's recommendations. Care must be taken to ensure stretch of the band along the bottom surface of the conduit, and to prevent pulling of the sealing band into the bottom of the joint, by keeping the weight of the conduit off of the bedding until the sealing band is fully installed.

Where specifically specified, soil tight joints must conform to the following requirements:

Bituminous mastic conforming to the requirements of Section 909.09 of the MDOT 2020 Standard Specifications of Construction must completely fill the annular space in the joint. Any excess mastic squeezed into the interior of the conduit must be troweled smooth.

The joint surface must also be evenly wrapped with a three (3) foot wide geotextile blanket meeting the requirements of Section 910.03A and Table 910-1 of the MDOT 2020 Standard Specifications of Construction, Geotextile Blanket for pipe wrap.

Geotextiles must be stored, handled, and placed in accordance with the manufacturer's recommendations. Torn or punctured geotextiles must not be used. Geotextile fabric which has deteriorated due to ultraviolet exposure (sunlight) during storage or has been damaged in placing will be rejected.

Except for fittings, bends, tees, and closure pieces, each piece of culvert must be not less than six (6) feet long. Shorter length to help align precast holes may be allowed with the approval of the Engineer.

The total area of longitudinal steel reinforcement must meet or exceed ASTM C1577. Longitudinal reinforcement must be spaced uniformly around the culvert, and must be continuous in each cage. The cover over the reinforcement must not be

less than 5/8 inch, as measured from the internal surface or the external surface of the culvert, except the cover over the reinforcement for the external surface of the top slab of box culverts with less than two (2) feet of cover must not be less than 1-5/8 inches.

In addition to the requirements of ASTM C1577, as applicable, each culvert and fitting must have plainly and permanently marked thereon:

Identification of specials to show the location in the line.

On bends, the angle turned.

All bends, tees, closure pieces, wall fittings, end sections, and other fittings which are indicated on the drawings, or required to complete the work must be furnished. Except as modified or otherwise provided herein, the design and manufacture of fittings must be governed by the same requirements as the connecting culvert.

Concrete box culverts must not be delivered to the site until concrete control cylinders representing such culverts have attained a compressive strength of at least eighty (80) percent of the specified minimum twenty-eight (28) day strength.

Concrete culvert and fittings must be handled carefully and must not be bumped or dropped. Hooks must not be permitted to come in contact with joint surfaces. Use of lifting holes will be permitted with a minimum of four holes. Holes must be plugged with non-shrink grout or other means acceptable to the Engineer, after installation.

Bedding for concrete box culverts must be at least twelve (12) inches below the bottom of the box culvert. The bedding must be a 9-inch-thick layer of course aggregate 6A with 80% minimum crushed material, covered with a 3-inch thick layer of 34G aggregate, 34R aggregate, 26A aggregate, or approved equal. Prior to placing the 3-inch-thick layer, the 9-inch-thick layer must be thoroughly compacted. Compact the 3-inch-thick layer with at least one pass of a vibrating plate compactor. Bedding material must extend a minimum of one (1) foot beyond the outside faces of the culvert.

Culvert laying must begin at the lowest elevation, with the female ends facing the direction of laying, except when reverse laying is permitted by the Engineer.

The interior of all culvert and fittings must be thoroughly cleaned before installation and must be kept clean until the work has been accepted. All joint contact surfaces must be kept clean until the joint is completed.

Jointing of precast concrete box culvert must be as specified. Joints must not be made when weather conditions may interfere with obtaining a satisfactory seal.

The gap width between successive box culvert sections after placement must be a maximum of $\frac{3}{4}$ inch at the nearest surfaces of the joint, and two (2) inches maximum at any other location as measured on the interior exposed edge of the joint. This permissible tolerance must not affect the lines and grades and their permissible tolerances as shown on the drawings and specified.

Box culverts delivered to the job site with patching will not be accepted. If the Contractor wishes to seek acceptance for a patched box culvert, it must be inspected by the Engineer prior to patching at the point of manufacture, and accepted subject to an approved method of patching.

Drawings, specifications, schedules, and other data showing complete details of the fabrication and construction of box culvert and fittings, together with complete data covering all materials proposed for use, must be submitted to the Engineer for approval. The drawings and data must include, but not be limited to, the following for each size culvert:

Details of joints.

Details of fittings and specials.

Details of end sections and tees.

Test reports.

Laying schedules.

Details of reinforcement at openings in the top or sides of the box culvert.

5.02.01.04 Corrugated Metal Pipe

Corrugated metal pipe must conform to the applicable requirements of Sections 401 and 402 of the MDOT 2020 Standard Specifications of Construction for the various types and gauges specified.

Premium soil tight joints will be required.

5.02.01.05 Smooth Lined Corrugated Plastic Pipe

Smooth Lined Corrugated Plastic Pipe in sizes up to twenty-four (24) inch diameter must conform to the requirements of ASTM F2881 and AASHTO M-330. The pipe material must be polypropylene. Pipe must have annular corrugations, and joints must have integral bell & spigot with gaskets and be watertight. Gaskets must be placed in annular corrugations. Gaskets must be solid cross section rubber seals conforming to ASTM F477. A protective removable shrink wrap material must be placed on all exposed gaskets at the factory. Gaskets and sleeves must be lubricated

prior to insertion as required by the pipe manufacturer. Pipe fittings must conform to AASHTO M-330. Installation and testing must be as required in Section 2, “Excavating, Trenching, and Backfilling for Utilities”, except a minimum of three (3) feet of cover must be maintained over any pipe during construction staging when construction equipment is crossing the pipe. The cost of temporary cover must be incidental to the item of work.

5.02.01.06 Polyvinyl Chloride (PVC) Pipe – (Storm Sewer Laterals Only)

Solid wall PVC plastic pipe must be extra strength conforming to the requirements of ASTM D3034, with a standard dimension ratio of 26 (SDR-26).

Joints for PVC plastic may be chemically welded. Manufacturers are required to “guide line” the uncoupled end of each joint of pipe so that in the field, it can be visually determined that the joint is properly constructed.

Joints for PVC must be integral bell & spigot design.

PVC solid wall schedule 80, ASTM D1785, is also permitted.

5.02.02 Storm Sewer Laterals

All storm sewer laterals must be extra strength pipe, and unless otherwise specified, must be of any material specified in Paragraph 5.02.01. Where bends or curves are specified they must be smooth long radius type curve. No mitered or segmented type bends will be approved.

5.02.03 Wyes and Tees

Wyes and Tees must be cast fittings of the same material and joints as the main sewer, or may be an approved fabricated special fitting which provides a suitable connection for the lateral to the main sewer. If approved by the engineer for pipes 12-inch and larger, lateral connections may be completed with cored-in compression style tees, such as Kor-N-Tee, Inserta-Tee, or approved equal.

Details of special fittings and/or adaptors for connecting laterals of a material different from the main sewer must be approved by the Engineer before they are manufactured.

5.02.04 Plugs and Stoppers

Plugs or stoppers for plugging the ends of laterals, risers, or storm sewer mains, which are not extended must make a watertight seal. Design must be such that they can be readily removed without damage to the pipe.

5.02.05 Underdrains

Materials for underdrains must conform to the requirements of Section 404 of the MDOT 2020 Standard Specifications of Construction.

5.02.06 Cement Mortar

Mortar must consist of one part of Portland Limestone Cement, and two parts of masonry sand. These proportions must be measured by volume.

The sand and cement must be mixed dry in a clean tight box until a mixture of uniform color is produced, after which water must be added until the required consistency is obtained. Mortar must be mixed only in such quantities as needed for immediate use. The retempering of mortar will not be permitted.

5.02.06.01 Cement

Air Entraining Portland Limestone Cement must conform to the requirements for Type 1L of the MDOT 2020 Standard Specifications for Construction for Air Entraining Portland Limestone Cement, ASTM C595.

5.02.06.02 Masonry Sand

Masonry Sand must conform to the requirements of "Natural Sand, 2MS" of the MDOT 2020 Standard Specifications for Construction.

5.02.06.03 Water

Water for mixing mortar must be obtained from the public water supply unless otherwise approved by the Engineer.

5.02.07 Concrete

Concrete for pipe encasement, special pipe embedment, manhole bases and similar items must meet the requirements of the 2020 MDOT Standard Specifications for Construction for Grade 3000 concrete. Grade 3000 concrete must have the strength of 3,000 psi at 28 days.

5.02.08 Manhole and Catch Basin Materials

5.02.08.01 Adjusting Rings

Precast grade adjusting rings must conform to the requirements of ASTM C478.

5.02.08.02 Precast Units

Precast reinforced concrete manhole risers and precast reinforced concrete manhole conical top sections must conform to the requirements for reinforced concrete manhole risers and tops, ASTM C478.

Joints for precast sections must be premium rubber, butyl rubber composition seals, "RAM-NEK", or approved equal.

5.02.08.03 Castings

Castings must meet the requirements specified in the MDOT 2020 Standard Specifications for Construction Section 908. Manhole covers and rings and similar combinations of castings must be machined to provide an even bearing.

Unless otherwise specified, manhole castings must be EJ No. 1045Z frame with 1040B vented cover, or approved equal.

Unless otherwise specified, catch basin castings at curb inlets must be EJ No. 7045Z, with Type M1 grate and Type T1 back, or approved equal.

5.02.08.04 Steel Reinforcement

Steel reinforcement must conform to the requirements for steel reinforcement of Section 905 of the MDOT 2020 Standard Specifications for Construction.

5.02.08.05 Manhole Steps

Unless otherwise specified, manhole steps must be plastic coated steel steps conforming to the requirements of ASTM C478, or approved equal, spaced at 16" on center.

5.03 INSPECTION

5.03.01 Shop Inspection

All materials furnished by the Contractor are subject, at the discretion of the Owner, to inspection and approval at the Manufacturer's plant. The inspection in the plant of the manufacturer of materials furnished by the Contractor will be made at the expense of the Owner.

5.03.02 Field Inspection

It must be the responsibility of the Contractor to inspect all materials for cracks, flaws or other defects before they are incorporated into the work.

5.03.03 Disposition of Defective Material

All material found during the progress of the work to have cracks, flaws, or other defects will be rejected by the Engineer. All defective materials furnished by the Contractor must be promptly removed from the site. Any material furnished by the Owner and found defective will be set aside and removed from the site of the work by the Owner.

5.04 RESPONSIBILITY FOR MATERIAL

5.04.01 Responsibility for Material Furnished by Contractor

The Contractor must be responsible for all material furnished by it and must replace at its own expense all such material found defective in manufacturing or damaged in handling after delivery by the manufacturer. This must include the furnishing of all material and labor required for the replacement of defective or damaged installed material discovered prior to the final acceptance of the work.

5.04.02 Responsibility for Material Furnished by Owner

The Contractor's responsibility for material furnished by the Owner must begin at the point of its delivery to the Contractor. Materials already on the site must become the Contractor's responsibility on the day of the award of the contract. The Contractor must examine all material furnished by the Owner at the time and place of delivery to the Contractor and must reject all defective material. Any material furnished by the Owner and installed by the Contractor without discovery of such defects will, if found defective prior to final acceptance of the work, be exchanged for sound material by the Owner. The Contractor, however, must at its own expense, furnish all supplies, labor, and facilities necessary to remove said defective material and install the sound material in a manner satisfactory to the Engineer.

5.04.03 Responsibility for Safe Storage

The Contractor must be responsible for the safe storage of material furnished by or to it, and accepted by it, and intended for the work, until it has been incorporated in the completed project. The interior of all pipe, fittings, and other accessories must be kept free from dirt and foreign matter at all times.

5.04.04 Replacement of Damaged Material

Any material furnished by the Owner that becomes damaged after acceptance by the Contractor must be replaced by the Contractor at its own expense

5.05 HANDLING OF MATERIAL

The Contractor must use care and proper equipment during the unloading and distribution of storm sewer materials on the job site to ensure the materials are not damaged.

Pipe and/or fittings must not be rolled or skidded off the truck beds against previously unloaded materials.

5.06 LAYING PIPE

5.06.01 Alignment and Grade

5.06.01.01 Laser Method

The Contractor must use the laser beam method of maintaining line and grade for storm sewer main line construction for all sewer runs greater than 30 feet in length between storm structures, unless otherwise approved by the Engineer. The Contractor must provide a qualified operator to handle the laser beam equipment during construction.

The Engineer will place line and grade stakes at each manhole, or more often, as determined by the Engineer. The Contractor must check the line and grade at the very point at which a stake has been placed.

5.06.02 Handling

Pipe must be protected during unloading and handling against impacts, shocks and free fall. Pipe handled on skid-ways must not be skidded or rolled against pipe already on the ground.

5.06.03 Direction of Laying

Excavation of trenches and laying of pipe must begin at the outlet for the sewer and proceed upgrade with the individual pipe being laid with the spigot end downstream.

5.06.04 Placing

Unless otherwise specified, installation of precast concrete sewer, storm drain, and culvert pipe must conform to the requirements of ASTM C1479, as applicable. Unless otherwise specified, installation of plastic pipe must conform to the requirements of ASTM D2321.

The pipe must be placed on the prepared sub-grade and held firmly in place during subsequent pipe jointing and embedment operations. Successive pipes must be carefully positioned so that when laid they form a sewer with a uniform invert true to line and grade.

Sufficient pressure must be applied by an approved method to each pipe as it is laid to ensure that the spigot is all the way home in the bell. Care must be exercised to prevent joints from opening up as successive lengths of pipe are placed. The Contractor must take the necessary precautions when using a trench box to prevent joint separation when the box is pulled ahead.

5.06.05 Cleaning Sewer

The interior of the sewer must be cleaned of all jointing material, dirt and debris as the work progresses.

In small sewers where cleaning after laying may be difficult, a swab or drag may be required in the pipeline to satisfactorily complete this work. Where possible, a plug must be installed on the downstream end of the sewer to prevent any sand and debris from entering the existing sewer.

5.07 PIPE JOINTS

Pipe joints must be made in strict accordance with the pipe manufacturer's recommendations unless otherwise specified herein. All lubricants, gaskets and other materials required to make the joints must be supplied or recommended by the pipe manufacturer and approved by the Engineer.

Pipe layers must be fully qualified and experienced in the work being performed and must check each joint after it is completed to see that no part of the joint material is left on the inside of the pipe and that the joint is properly made.

5.08 LOCATION OF WYES AND TEES

The approximate locations of wyes or tees are shown on the Drawings. These locations may be adjusted where necessary to best serve the various properties. Exact locations will be determined by the Engineer before the wyes or tees are installed.

The Contractor must keep an accurate record of measurements from the nearest downstream manhole to each wye or tee which is installed, the length of each lateral, and the depth at the end of each lateral. These measurements must be recorded on the record drawings to be furnished by the Contractor.

5.09 LATERALS

5.09.01 General

Installation of storm sewer laterals must meet all requirements specified for storm sewer main lines. All laterals must be inspected by the Engineer before the trench is backfilled. The end of all laterals must be connected to an existing lateral or properly sealed with a standard stopper or plug, unless directed otherwise by the Engineer.

5.09.02 Length

All laterals must be laid at right angles to the storm sewer main line and must extend to the street right-of-way (property line) unless otherwise directed. No payment will be made for pipe laid beyond this point unless specifically ordered by the Engineer.

The Contractor must measure and record the horizontal length of the lateral from the main line sewer to the end of the lateral and provide this information to the Engineer.

5.09.03 Grade

The lateral must be laid with a minimum rise of one-quarter (1/4) inch per foot (2.08%) unless otherwise directed.

5.09.04 Markers and Measurements

After installation of the lateral, but prior to backfilling, the Contractor must provide and install a 2" x 2" wood marker for each unconnected service. The wood markers must be set vertically from the end of the lateral to twelve (12) inches above finish surface elevations. Also, a 1/2" diameter by 3' long metal stake must be placed vertically and adjacent to the wood marker with 6" cover. The Contractor must assist the Construction Observer in locating the end of each lateral and in recording the location by measuring to the nearest downstream manhole.

After the record locations have been recorded and checked by the Construction Observer, the Contractor must cut off the markers as follows: in improved areas, the markers must be cut off two inches below grade; and in undeveloped areas, the markers must be cut off six inches above grade.

5.10 MANHOLE AND CATCH BASIN CONSTRUCTION

Manholes and catch basins must be constructed in accordance with the standard details and as specified herein.

Unless otherwise specified, or approved by the Engineer, all manholes and catch basins must be precast.

Precast bases must be installed on the subbase in such a way as to provide a uniform bearing under the manhole base.

Precast concrete adjusting rings must be used to bring existing and new drainage structure covers within the proposed pavement to grade. Adjusting rings must be set in a bed of mortar. Internal void spaces between the adjusting rings and casting must be filled with mortar and finished to create a smooth surface. All castings must be recessed one-quarter ($\frac{1}{4}$) to one-eighth ($\frac{1}{8}$) inch below the top of HMA pavement and flush with the top of surface for concrete pavement. After the cover is brought to grade, the entire hole created by excavating to raise the casting must be filled in three-inch (3") lifts with Hot Mix Asphalt (HMA) to the top of the leveling course and air tamped to achieve proper compaction. HMA mixture must be the same mixture placed for the leveling course, unless otherwise approved by the Engineer. Special care must be taken to prevent debris from entering sewers.

Precast manholes and catch basins with integral bottom and channel may be used; however, any changes to the structure due to minor field adjustments of alignment and/or grade required to meet construction conditions, must be made by the Contractor at no additional cost to the Owner.

Stubs must be provided in manholes for future connections as shown on the Drawings or as directed by the Engineer. All such stubs must be sealed with standard plugs or brick bulkheads, in accordance with Section 403.03 of the MDOT 2020 Standard Specifications for Construction.

5.11 CUT-INS

When cutting into an existing manhole or catch basin, the opening must be no larger than is necessary to admit the new sewer. All broken or surplus materials falling inside the structure must be removed. For reinforced concrete pipe to manhole connections the opening around the pipe must then be properly sealed with brick and mortar, non-shrink grout, or by other approved means which will result in a watertight and durable repair to the structure. For plastic pipe to manhole connections a compression connector type or rubber boot must be used, conforming to ASTM C923 or ASTM C1478.

Flow channels must be constructed as specified or as directed to accommodate the sewer being cut in.

Cut-ins to existing manholes must be considered included in the major items of work and no specific payment will be made therefor.

5.12 CONNECTIONS TO EXISTING SEWER PIPE

When connecting concrete storm sewer pipe to an existing rigid sewer pipe, the connection must be made with a soil-tight concrete collar. Prior to placing concrete, the joint must be evenly wrapped with a three (3) foot wide geotextile blanket meeting the requirements of Section 910.03A and Table 910-1 of the MDOT 2020 Standard Specifications of Construction, Geotextile Blanket for pipe wrap. The concrete collar must be cast at least three (3) inches thick and extend six (6) inches on each side of the joint. Other methods of connecting to existing sewer pipe require approval of the Engineer before construction.

5.13 ACCEPTANCE TESTS

5.13.01 Alignment and Grade

Each section of sewer may be checked by the Engineer for alignment and grade using lights and mirrors, television inspection, or other similar means. The Contractor must assist the Engineer in the performance of these tests when necessary.

5.13.02 Pipe Deflection Tests (Plastic Pipe Only)

The completed installation of plastic pipe must at no point have out-of-round deflections in the main sewer pipe greater than five percent (5%) of the pipe's actual original inside diameter. Go/no go gauging tests, using an approved pointed mandrel with a minimum of nine (9) points, must be performed by the Contractor in the presence of the Engineer, or its authorized representative after the trench is backfilled and prior to pavement surfacing or completion of final grade. The Contractor may use laser profile technology to measure deflection as an approved alternative to mandrel testing. Pipe with deflections greater than five percent (5%) must be re-laid by the Contractor at no additional expense to the Owner. Use of mechanical devices or equipment to complete the go/no go tests and vibratory re-rounding of failed sections are prohibited. A minimum of 30 days must elapse between installation with backfilling and deflection testing.

5.13.03 Televising (Plastic Pipe Only)

Televising of plastic pipe must be performed in accordance with Section 402.03J of the MDOT 2020 Standard Specifications of Construction, Video Inspection of Sewer Pipe. The video recordings and documentation must be performed in accordance with the National Association of Sewer Service Companies (NASSCO) standards. Closed-circuit television (CCTV) inspection must be conducted in compliance with the North American Pipeline Assessment and Certification Program (PACP) standards for sewer defect identification and assessment. Work must be performed by a PACP-certified operator. The sewer inspection software must be PACP-certified by NASSCO. The recorded video will be reviewed by the

Engineer for evidence of compliance with the Contract Documents for workmanship and materials.

5.14 MEASUREMENT AND PAYMENT

5.14.01 General

All proposed construction will be measured for payment by the Engineer in accordance with the items listed in the proposal.

The unit price bid for each proposal item will be payment in full for completing the work, ready for use as specified.

5.14.02 Storm Sewer Removals

Storm sewers, manholes, catch basins, and other storm drainage infrastructure called out for removal in the plans will be paid for in accordance with the units established in the proposal. When no proposal item is provided, removal will be considered part of the major items of work.

5.14.03 Storm Sewer Main Lines

Measurement of the length of the sewer will be in feet along the centerline of the sewer main from center to center of manhole or catch basin structures.

Where depth classifications are provided, the depth of the sewer connecting two adjacent structures must be considered as being the average of the depth from earth grade to the sewer invert at these structures.

5.14.04 Manholes and Catch Basins

Manholes and catch basins will be paid for in accordance with the units established in the proposal. When no proposal item is provided for castings, the work will be considered part of the major items of work.

5.14.05 Wyes or Tees

When a specific item is provided in the proposal for wyes or tees the unit price bid will be the additional cost of furnishing and placing the wye or tee over and above the cost of furnishing and laying the sewer pipe.

When no proposal item is provided, the work will be considered part of the major items of work.

5.14.06 Laterals

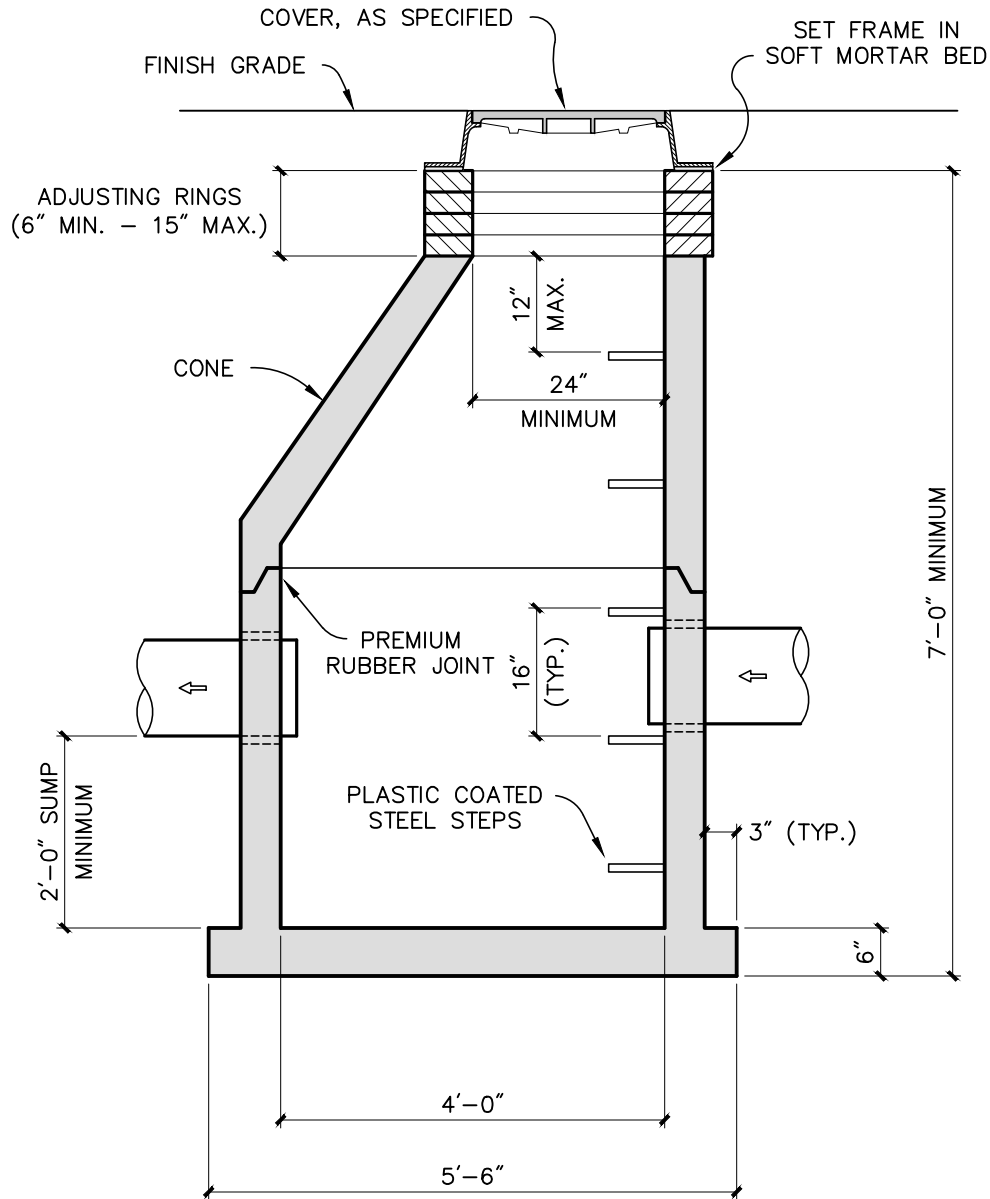
The length of storm sewer laterals will be measured horizontally from the center of the main sewer to the end of the lateral as specified.

5.14.07 Cut-Ins

Where no proposal item is provided, cut-ins will be considered part of the major items of work and no specific payment will be made therefor.

5.14.08 Stubs

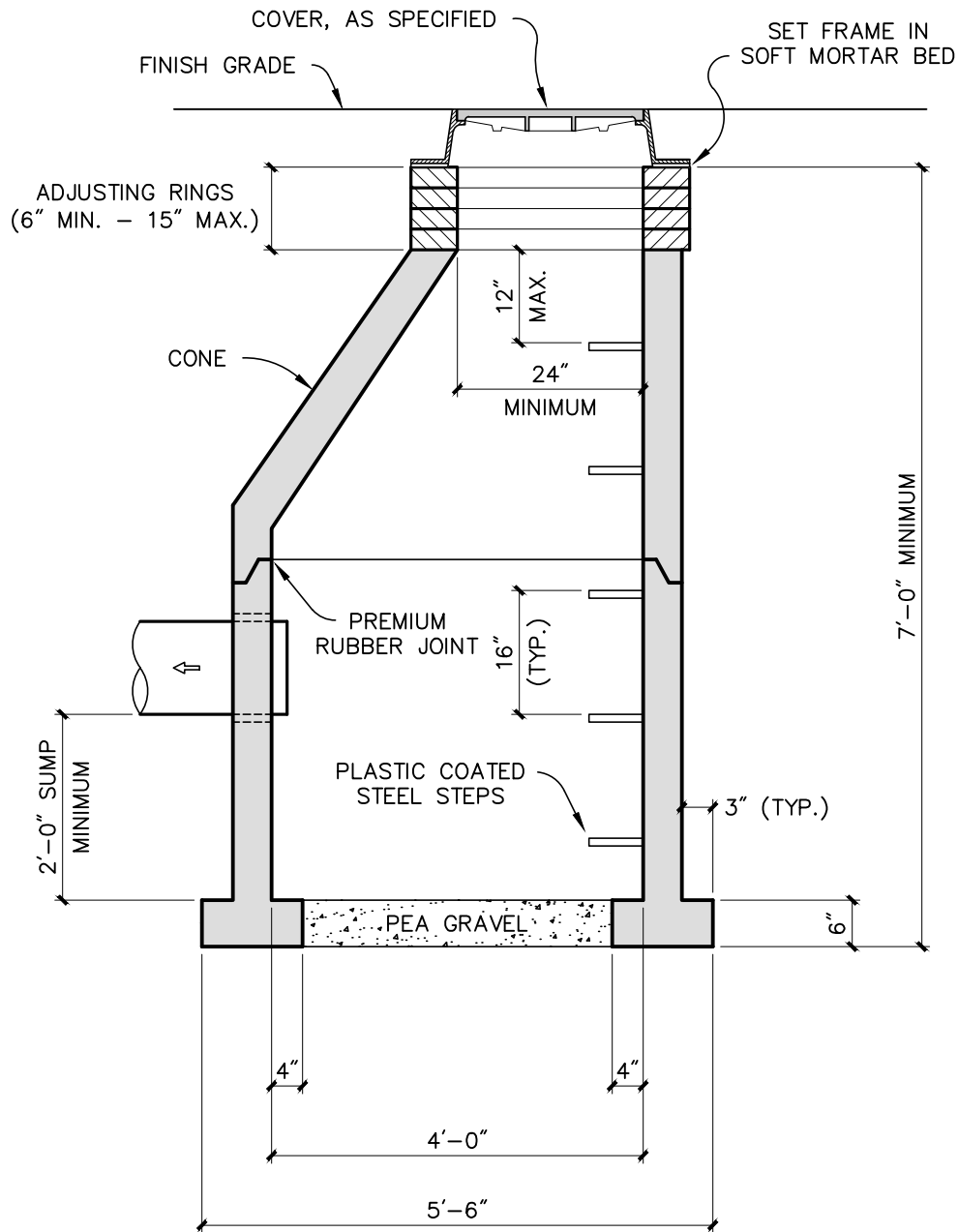
Stubs will be considered part of the major items of work and no specific payment will be made therefor.



STANDARD CATCH BASIN

NOTES

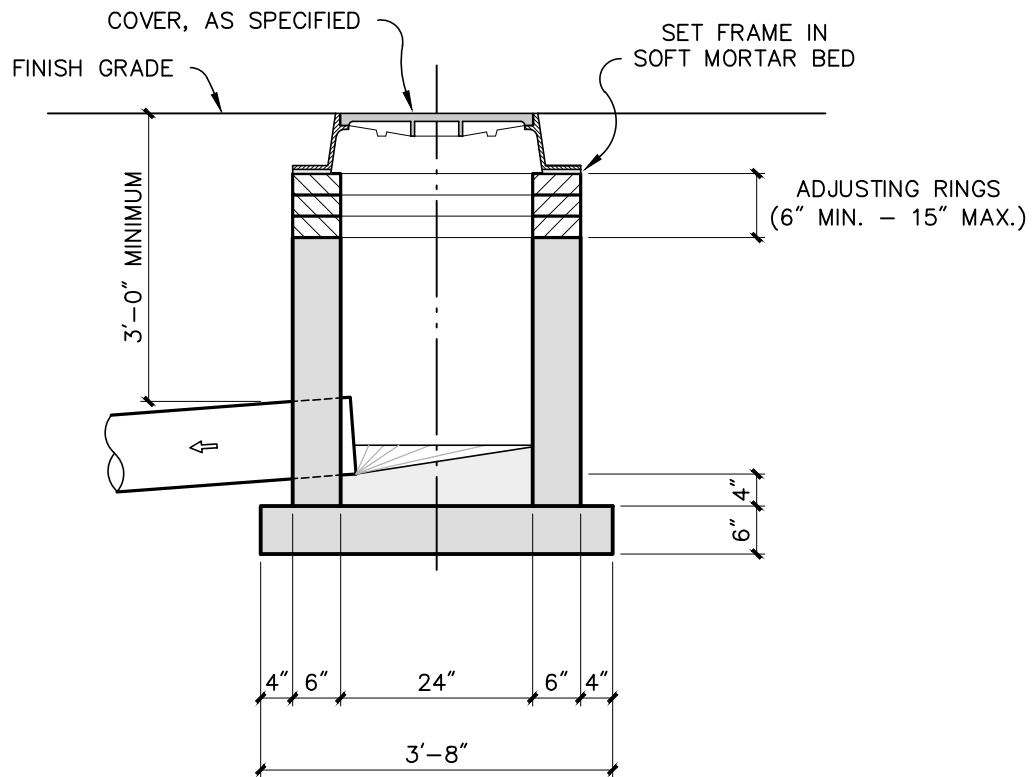
1. PRECAST CONCRETE CATCH BASIN MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED WITH GEOTEXTILE FABRIC.
3. STD. 4'-0" DIAMETER INLET SAME AS CATCH BASIN WITHOUT SUMP.



DRYWELL CATCH BASIN

NOTES

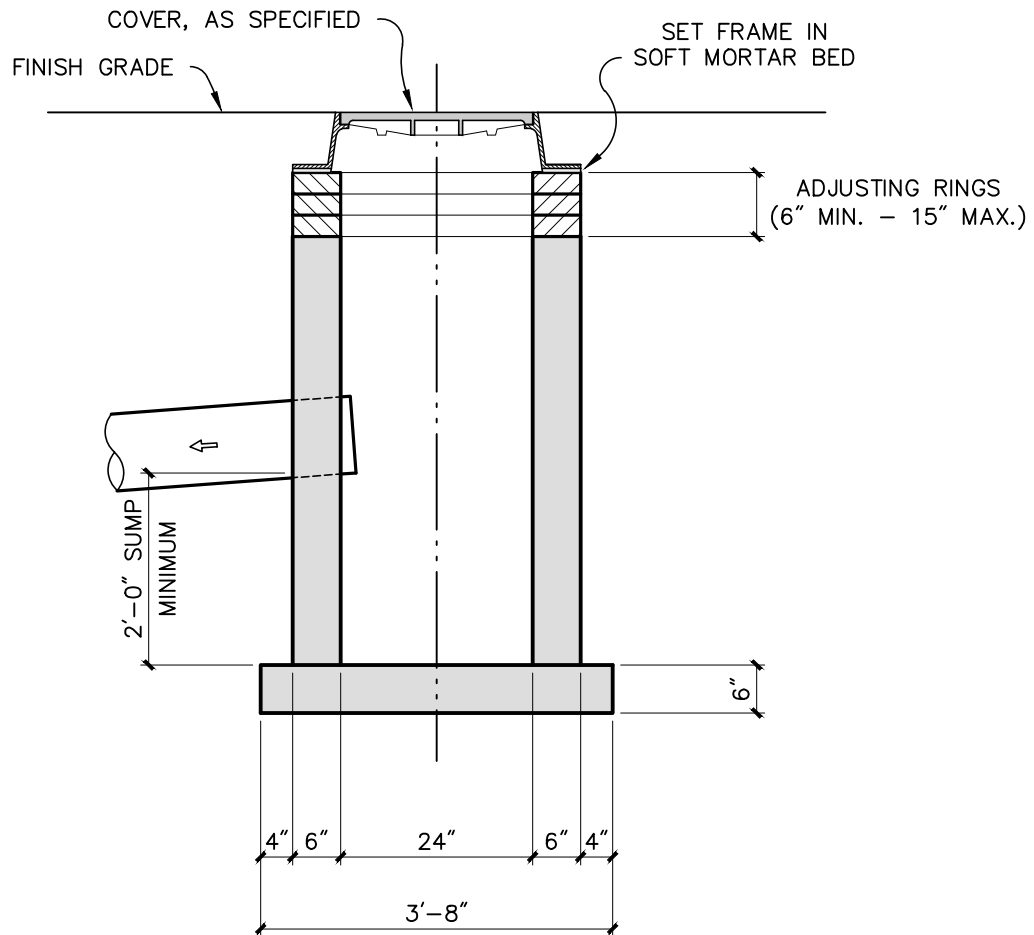
1. PRECAST CONCRETE CATCH BASIN MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED IN GEOTEXTILE FABRIC.
3. STD. 4'-0" DIAMETER INLET SAME AS CATCH BASIN WITHOUT SUMP.



2' DIAMETER INLET

NOTE

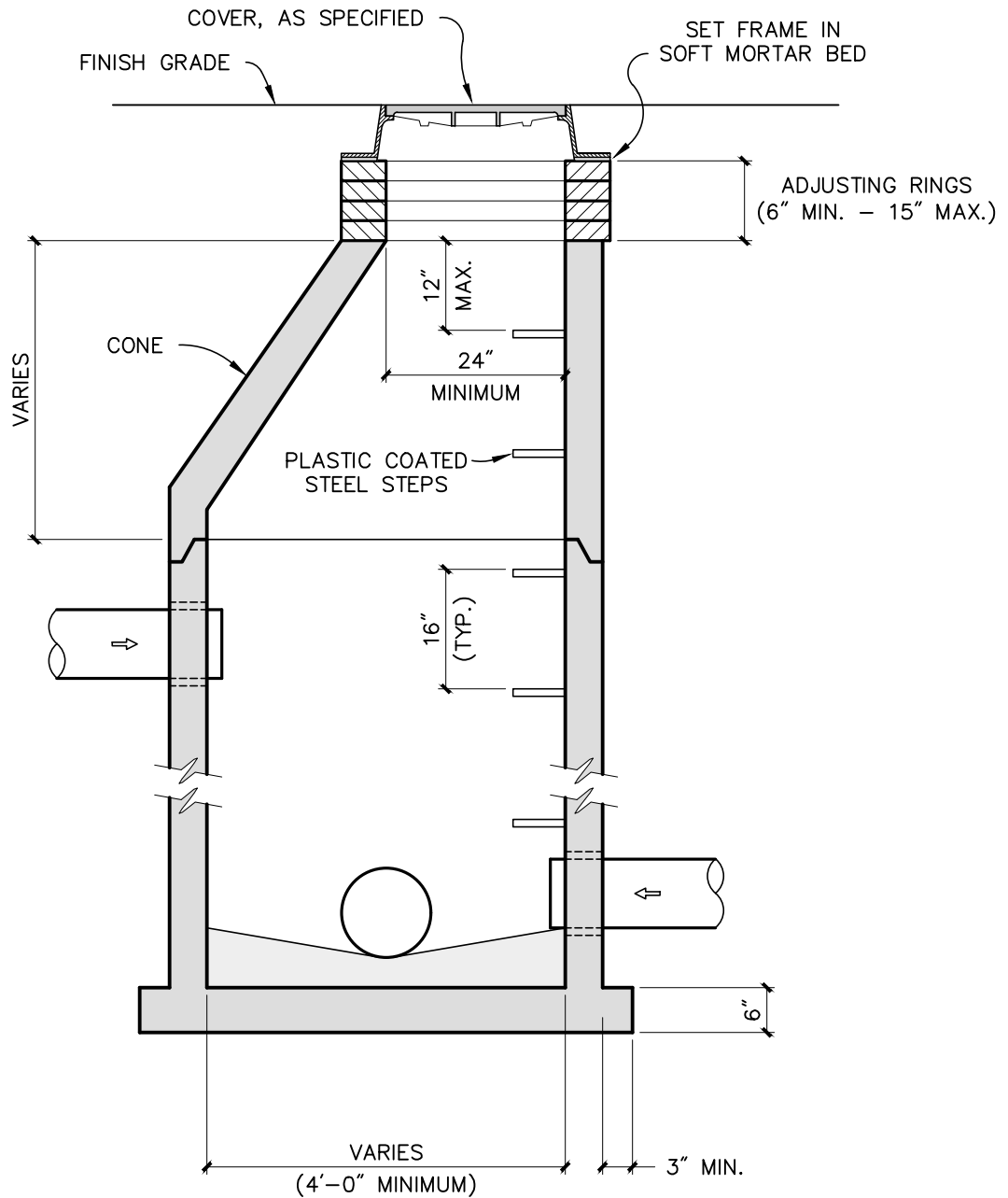
1. PRECAST CONCRETE INLET MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED WITH GEOTEXTILE FABRIC.



2' DIAMETER INLET w/SUMP

NOTE

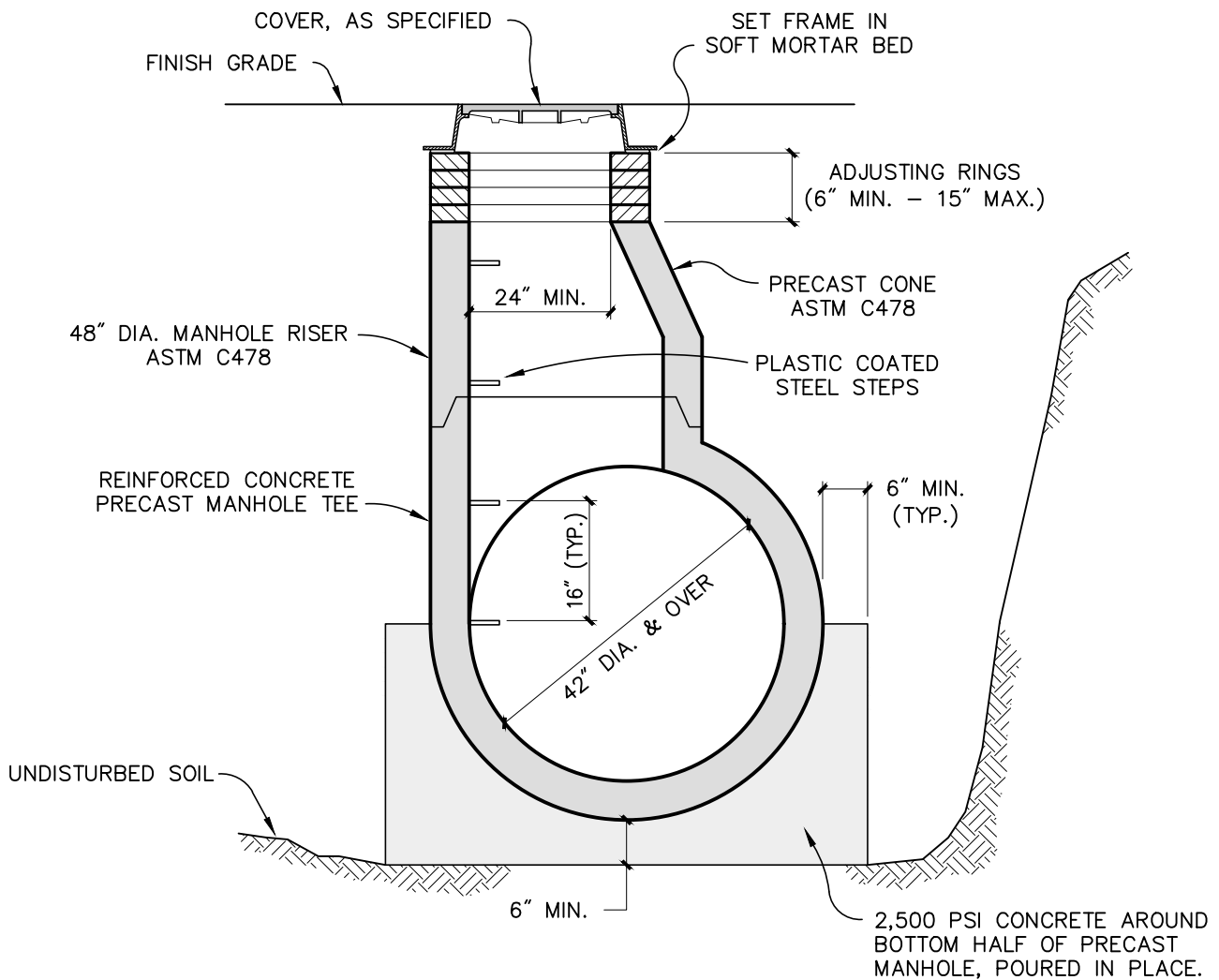
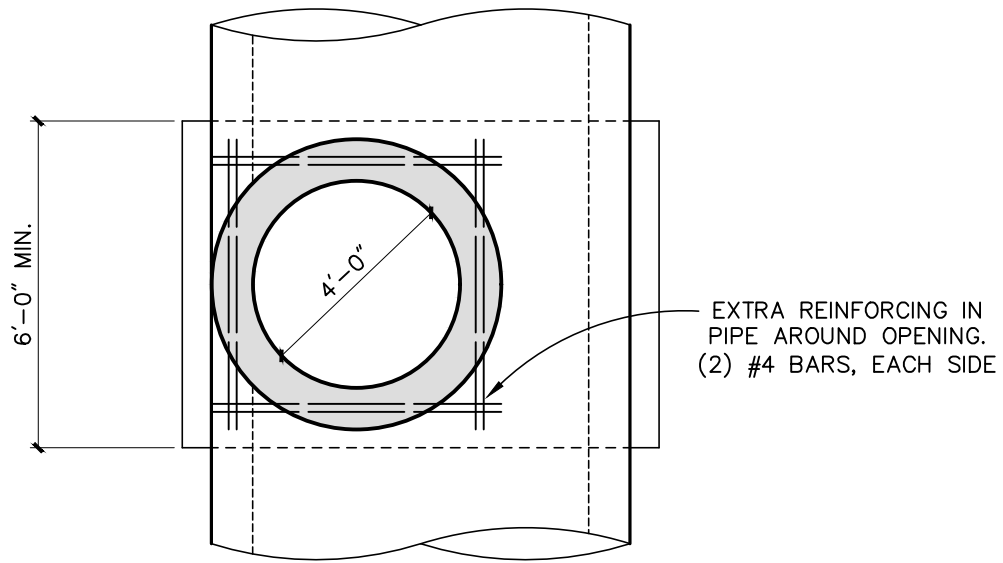
1. PRECAST CONCRETE INLET MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED WITH GEOTEXTILE FABRIC.



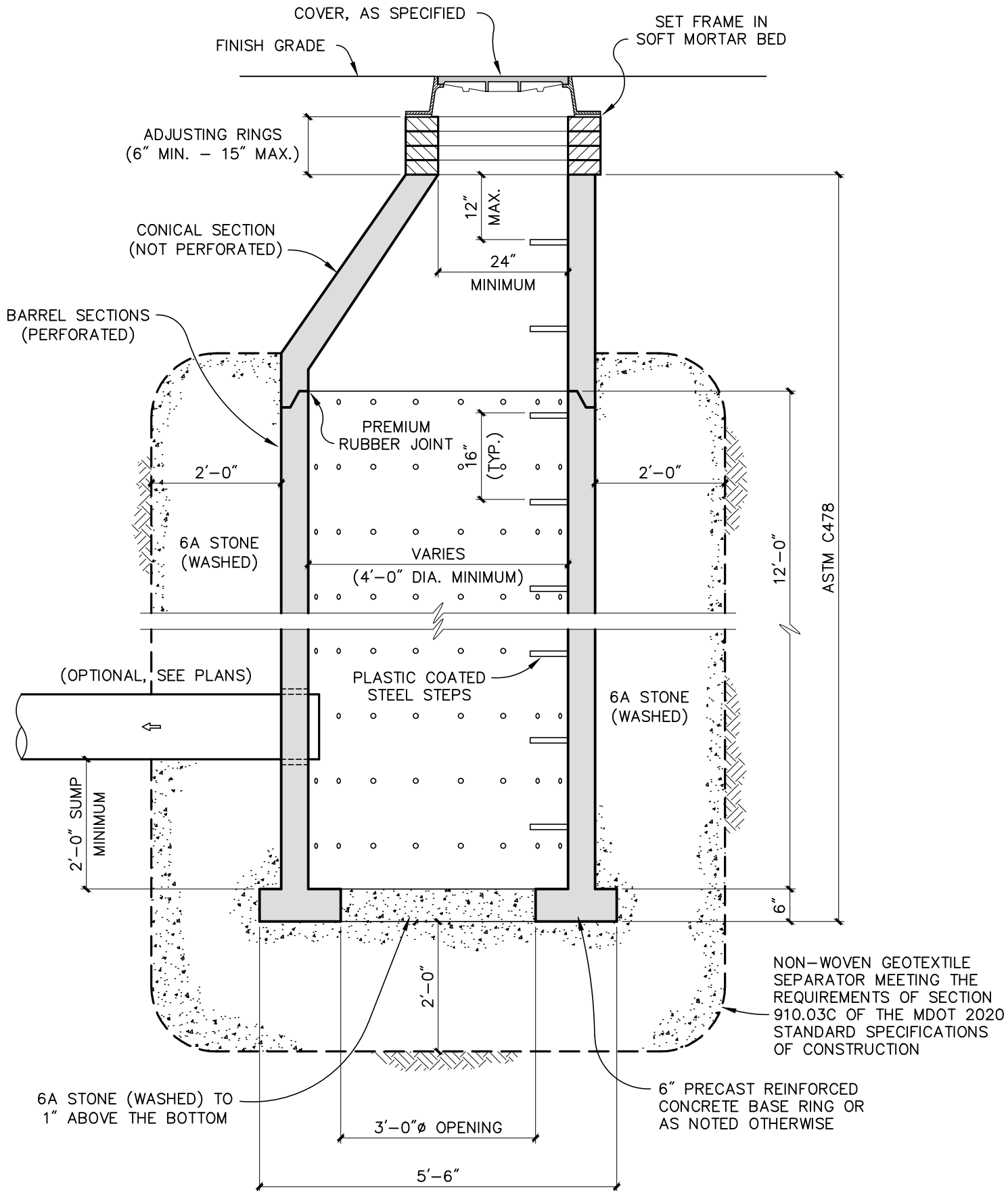
STANDARD STORM SEWER MANHOLE

NOTES

1. PRECAST CONCRETE MANHOLE MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED IN GEOTEXTILE FABRIC.
3. CONE MAY BE ROTATED TO ALIGN STEPS TO VARIOUS LOCATIONS IN MANHOLE.



STANDARD STORM SEWER TEE MANHOLE



LEACHING BASIN

SECTION 6

SPECIFICATIONS FOR SANITARY SEWER

6.01 DESCRIPTION OF WORK

The work consists of furnishing and installing sanitary sewer pipe of the specified sizes in a trench and includes the construction of manholes, lateral connections to adjacent properties and other appurtenant work. Excavating, trenching, and backfilling must be as specified in Section 2.

The work must be performed in accordance with the Project Specifications and Drawings, the MDOT 2020 Standard Specifications for Construction and the following specifications.

Codes and standards referenced in the following specifications must be the current code or standard in effect at the time proposals are received.

6.02 MATERIALS

All materials furnished by the Contractor must conform to the following specifications. Contractor must provide certified affidavits of compliance and/or manufacturer strength test reports to the Engineer upon request.

6.02.01 Sewer Pipe

All sewer pipe must be of the materials and strengths shown on the Drawings or as specified below.

6.02.01.01 Polyvinyl Chloride (PVC) Solid-Wall Pipe

PVC solid-wall pipe less than 18 inches in diameter must conform to the requirements of ASTM D3034, with a minimum wall thickness equal to a standard dimension ratio of 35 (SDR-35).

PVC solid-wall pipe 18 inches in diameter and larger must conform to the requirements of ASTM F679, with a minimum pipe stiffness of 46 psi (PS-46).

Installations over 18 feet deep, based on the average depth of the manholes for each section of pipe, must utilize SDR-26 or PS-115 pipe.

Pipe must be made of PVC compound having a cell classification of 12454 or 12364 in accordance with ASTM D1784.

6.02.01.02 PVC Composite (Truss) Pipe

PVC Truss Pipe must conform to the requirements of ASTM D2680.

The PVC compound used in the Truss pipe must have a minimum cell classification of 12454 in accordance with ASTM D1784.

6.02.01.03 Profile PVC Pipe

Profile PVC pipe may be used only when specifically approved by the Owner and Engineer.

Profile PVC pipe must conform to the requirements of ASTM F794 and F949 for dual wall corrugated profile pipe, and ASTM F1803 for closed profile pipe.

Pipe must have a minimum pipe stiffness of 46 psi (PS-46).

Pipe must be made of PVC compound having a cell classification of 12454 or 12364 in accordance with ASTM D1784.

6.02.01.04 PVC Pipe Joints

Joints must be flexible elastomeric sealed type joint in accordance with ASTM D3212.

Gasket materials must meet requirements of ASTM F477.

Joint lubricant must be supplied and/or approved by the pipe manufacturer and must have no detrimental effect on the gasket or pipe.

6.02.02 Sewer Fittings

Fittings must be cast of the same material as the main sewer or may be an approved fabricated special fitting. Fitting joints must meet the same standards as the adjoining sewer.

Fittings must be manufactured and supplied in accordance with ASTM D3034 or ASTM F679. PVC molded and fabricated fittings may be supplied in accordance with ASTM F1336. Fittings must be heavy wall SDR 26, unless otherwise specified. Pipe used in fabricated fittings must have a wall thickness equal to or greater than the wall thickness of the pipes to which the fitting will be joined.

6.02.02.01 Wyes and Tees

Details of special fittings and/or adapters for connecting laterals of a material different from the main sewer must be approved by the Engineer before they are manufactured. Fabricated special fittings must provide a suitable connection for the lateral to the main sewer.

Wyes and Tees will be required as follows:

6" Wyes on main sewer of up to 24" diameter

6" Inserta-Tee, Kor-N-Tee, or approved equal, on main sewer of 24" diameter or larger.

6.02.02.02 Couplings

Couplings used to connect new and existing sanitary sewer piping must be gasketed solid sleeve PVC couplings where possible. PVC couplings must meet sewer fittings specification herein.

Where solid sleeve PVC couplings cannot be utilized, flexible transition couplings in accordance with ASTM C1173 and ASTM D5926 may be utilized, subject to Engineer approval.

Flexible transition couplings must be appropriately sized for the connecting materials and must include stainless steel clamp bands and an external stainless steel shear ring with a minimum thickness of 0.012". Coupling must be Fernco Strong Back RC Couplings, Indiana Seal Couplings with Amazon Shear Rings, or Engineer approved equal.

6.02.03 Sanitary Sewer Laterals

6.02.03.01 Lateral Piping

Sewer lateral piping must be PVC solid-wall pipe conforming to the requirements of ASTM D3034, with a standard dimension ratio of 26 (SDR-26).

PVC pipe joints and PVC compound must meet the sanitary sewer pipe material specification herein.

6.02.03.02 Lateral Fittings

Sewer lateral fittings must be manufactured and supplied in accordance with ASTM D3034. Molded and fabricated fittings may be supplied in accordance with ASTM F1336. Fittings must be heavy wall SDR 26, unless otherwise specified. Pipe used in fabricated fittings must have a wall thickness equal to or greater than the wall thickness of the pipes to which the fitting will be joined.

Any specified bends must be smooth, long-radius type curves. No mitered or segmental type bends will be approved.

Joints must be flexible elastomeric sealed type joint in accordance with ASTM D3212. Gasket materials must meet requirements of ASTM F477 or ASTM F913.

Fittings must be made of PVC compound having a cell classification of 12454 or 13343 in accordance with ASTM D1784.

6.02.03.03 Lateral Couplings

Lateral couplings must meet the requirements for sanitary sewer pipe couplings.

6.02.03.04 Lateral Plugs

Plugs, stoppers, or glued caps for plugging the ends of laterals or risers which are not extended must make a watertight seal and be of such a design that they can be readily removed without damage to the pipe.

6.02.04 Cement Mortar

Mortar must consist of one part Portland Limestone Cement and two parts masonry sand. These proportions must be measured by volume.

The sand and cement must be mixed dry in a clean tight box until a mixture of uniform color is produced, after which water must be added until the required consistency is obtained. Mortar must be mixed only in such quantities as needed for immediate use. The retempering of mortar will not be permitted.

6.02.04.01 Cement

Portland Limestone Cement must conform to the requirements for Type 1L of the MDOT 2020 Standard Specifications for Construction for Portland Cement, ASTM C595.

6.02.04.02 Masonry Sand

Masonry Sand must conform to the requirements of “Natural Sand, 2MS” of the MDOT 2020 Standard Specifications for Construction.

6.02.04.03 Water

Water for mixing mortar must be obtained from the public water supply unless otherwise approved by the Engineer.

6.02.05 Concrete

Concrete for pipe encasement, special pipe embedment, manhole bases and similar items must meet the requirements of the MDOT 2020 Standard Specifications for Construction for Grade 3000 concrete. Grade 3000 concrete must have a minimum compressive strength of 3,000 psi at 28 days.

6.02.06 Manhole Materials

6.02.06.01 Precast Units

Unless otherwise specified, all manholes must be precast and watertight.

Where manholes are anticipated to have corrosive conditions due to septicity, force main connection or other causes, additional corrosion protection or alternative manhole materials may be specified on the Drawings or in the Project Specifications.

Precast reinforced concrete manhole risers and precast reinforced concrete manhole conical top sections must conform to the requirements of ASTM C478. Bituminous waterproofing must be applied to the outer surface of the manhole at a rate of one gallon per 100 square feet. Manholes must be free of holidays and open pinholes.

Unless otherwise specified, joints for precast sections must be premium rubber joints conforming to the requirements of ASTM C443. Rubber gaskets must meet the physical requirements of ASTM C1619.

6.02.06.02 Steel Reinforcement

Steel Reinforcement must conform to the requirements for steel reinforcement of Section 905 of the MDOT 2020 Standard Specifications for Construction.

6.02.06.03 Flexible Manhole Connectors (Rubber Boots)

Flexible manhole connectors (also called rubber boots) must be "Kor-N-Seal" by Trelleborg, "PSX: Direct Drive" by Press Seal Gasket Corporation; or approved equal. Flexible manhole connectors must conform to the requirements of ASTM C923.

6.02.06.04 Manhole Steps

Unless otherwise specified, manhole steps must be plastic coated steel steps conforming to the requirements of ASTM Designation C478, or approved equal, spaced at sixteen inches (16") on center.

6.02.06.05 Adjusting Rings

Unless otherwise specified, adjusting rings must be precast and conform to the requirements of ASTM C478.

6.02.06.06 Castings

Castings must meet the requirements specified in the MDOT 2020 Standard Specifications for Construction Section 908. Manhole covers and rings and similar combinations of castings must be machined to provide an even bearing.

Unless otherwise specified, manhole castings must be provided with a minimum 24-inch opening and must be EJ No. 1045Z or approved equal. Casting cover must be EJ No. 1040AGS or approved equal.

Where indicated on the plans, pressure-tight manholes castings must be provided. Casting frame must be EJ No. 1045ZPT or approved equal. Casting cover must be EJ No. 1040APT or approved equal. Within unimproved areas, pressure-tight casting frames must be anchored to the manhole per the standard details.

Cover must be labelled "SANITARY SEWER" and include the Owner's community logo, if available. Pickholes must be enclosed.

6.02.06.07 Manhole Encapsulation

The casting frame, adjusting rings, and a minimum 4 inches of the top section of all manholes must be wrapped with a heat activated, high shrink, rubber-backed membrane to minimize infiltration into the manhole. Material must be Infi-Shield External Uni-band Seal by Sealing Systems, Wrapid Seal by CANUSA-CPS, or approved equal.

6.03 INSPECTION

6.03.01 Shop Inspection

All materials furnished by the Contractor are subject, at the discretion of the Owner, to inspection and approval at the Manufacturer's plant. The inspection in the plant of the manufacturer of materials furnished by the Contractor will be made at the expense of the Owner.

6.03.02 Field Inspection

It must be the responsibility of the Contractor to inspect all materials for cracks, flaws or other defects before they are incorporated into the work.

6.03.03 Disposition of Defective Material

All material found during the progress of the work to have cracks, flaws, or other defects will be rejected by the Engineer. All defective materials furnished by the Contractor must be promptly removed from the site. Any material furnished by the Owner and found defective will be set aside and removed from the site of the work by the Owner.

6.04 RESPONSIBILITY FOR MATERIAL

6.04.01 Responsibility for Material Furnished by Contractor

The Contractor must be responsible for all material furnished by it and must replace at its own expense all such material found defective in manufacturing or damaged in handling after delivery by the manufacturer. This must include the furnishing of all material and labor required for the replacement of defective or damaged installed material discovered prior to the final acceptance of the work.

6.04.02 Responsibility for Material Furnished by Owner

The Contractor's responsibility for material furnished by the Owner must begin at the point of its delivery to the Contractor. Materials already on the site must become the Contractor's responsibility on the day of the award of the contract. The Contractor

must examine all material furnished by the Owner at the time and place of delivery to the Contractor and must reject all defective material. Any material furnished by the Owner and installed by the Contractor without discovery of such defects will, if found defective prior to final acceptance of the work, be exchanged for sound material by the Owner. The Contractor, however, must at its own expense, furnish all supplies, labor, and facilities necessary to remove said defective material and install the sound material in a manner satisfactory to the Engineer.

6.04.03 Responsibility for Safe Storage

The Contractor must be responsible for the safe storage of material furnished by or to it, and accepted by it, and intended for the work, until it has been incorporated in the completed project. The interior of all pipe, fittings, and other accessories must be kept free from dirt and foreign matter at all times.

6.04.04 Replacement of Damaged Material

Any material furnished by the Owner that becomes damaged after acceptance by the Contractor must be replaced by the Contractor at its own expense.

6.05 HANDLING OF MATERIAL

The Contractor must use care and proper equipment during the unloading and distribution of sanitary sewer materials on the job site to ensure the materials are not damaged.

Material handling and storage must be in accordance with manufacturer's guidelines.

Pipe and/or fittings must not be rolled or skidded off the truck beds against previously unloaded materials.

6.06 LAYING PIPE

Pipe must be installed in accordance with ASTM D2321 for PVC pipe and ASTM D2680 for PVC Truss pipe, in addition to manufacturer instructions and the following specifications for all pipe types.

Pipe layers must have demonstrated experience in the laying and joining of the specific products to be utilized.

6.06.01 Alignment and Grade

The Contractor must use the laser beam method of maintaining line and grade for sewer construction, unless otherwise approved by the Engineer. The Contractor must provide a qualified operator to handle the laser beam equipment during construction.

The Engineer will place line and grade stakes at each manhole, or more often, as determined by the Engineer. The Contractor must check the line and grade at every point at which a stake has been placed.

Unless otherwise specified, horizontal alignment must be within 0.5' and vertical grades must be within 0.03' of the design line and grades shown on the Drawings.

6.06.02 Handling

Pipe and piping materials must be handled with care to avoid damage.

Contractor must only use nylon ropes, slings, or other lifting devices that will not damage the surface of the pipe.

6.06.03 Direction of Laying

Excavation of trenches and laying of pipe must begin at the outlet for the sewer and proceed upgrade with the individual pipe being laid with the spigot end downstream.

6.06.04 Placing

Prior to installation, each pipe length must be carefully inspected for damage and the pipe ends carefully cleaned.

The pipe must be placed on the prepared sub-grade and held firmly in place during subsequent pipe jointing and embedment operations. Successive pipes must be carefully positioned so that when laid, they form a sewer with a uniform invert true to line and grade.

6.06.05 Joint Making

Pipe joints must be installed in strict accordance with the pipe and fitting manufacturer's recommendations and the following requirements.

A thin film of joint lubricant must be applied to the inside of the gasket and the outside of the spigot prior to inserting the spigot into the bell. Lubricated spigot ends must be kept free of soil and debris.

The spigot end of the pipe must be carefully inserted into the bell and sufficient pressure applied until the reference mark or maximum insertion mark on the spigot is flush with the bell. The spigot must not be inserted into the bell past the reference mark or maximum insertion mark.

When using a field cut plain end piece of pipe, the pipe end must be beveled to the same angle and length as provided on the factory-finished pipe and an insertion mark redrawn on the pipe end using a factory-marked spigot from the same manufacturer as a guide.

Care must be exercised to prevent joint movement as successive lengths of pipe are placed. The Contractor must take the necessary precautions when using a trench box to prevent joint separation when the box is pulled ahead.

Joint deflection is not permitted unless specifically noted on the Drawings or in the Project Specification. If permitted, joint deflection must not exceed the Pipe Manufacturer's recommendation.

6.06.06 Connections to Structures and Casings

For sewers 18" in diameter and greater, a pipe joint must be located within two-to-four feet (2'-4') of all structure faces and casing ends, unless otherwise specified.

6.06.07 Protection of Existing Sewer

The interior of the sewer must be kept clean of all jointing material, dirt, and debris. In smaller sewer where cleaning after laying may be difficult, a swab or drag may be required in the pipeline to satisfactorily complete this work.

Where possible, a plug must be installed on the downstream end of the sewer to prevent any sand and debris from entering the existing sewer. The plugs must not be removed until the new sewer has been cleaned and accepted by the Owner.

At the end of the workday, the open ends of the pipe must be sealed with a water-tight plug or other means approved by the Engineer.

6.07 LOCATION OF WYES AND TEES

Location of proposed wyes or tees shown on the Drawings is approximate and may be adjusted where necessary to best serve the various properties. Contractor must coordinate with the Engineer in advance of mainline sewer construction to determine exact wye and tee location.

On existing and/or replacement sewer runs with existing lateral connections, Contractor is required to locate the existing sanitary lateral at the proposed connection point prior to commencing mainline sewer installation to ensure proper location of the wye and tee.

Contractor must keep an accurate record of measurements from the nearest downstream manhole to each wye or tee which is installed and furnish a copy of these measurements to the Engineer.

6.08 SANITARY SEWER LATERALS

6.08.01 General

Installation of sanitary sewer laterals must meet all requirements specified for sanitary sewers. All laterals must be inspected by the Engineer before the trench is backfilled.

In general, sanitary sewer laterals must be laid at right angles to the sanitary sewer mainline unless otherwise shown on the Drawings.

The minimum grade on laterals is 2 percent (1/4 in/ft). When minimum grade cannot be obtained and when approved by the Engineer, minimum grades may be reduced to 1 percent (1/8 in/ft).

Cleanouts are required at lateral connections where alignment and/or grade are not continuous, or as directed by the Engineer. Cleanouts must be constructed in accordance with the standard details or as shown on the Drawings.

6.08.02 Replacement Laterals

Connections to existing sanitary laterals must be made within one foot of the street right of way or easement limit unless otherwise directed or shown on the Drawings.

If the outer diameter of the existing sanitary lateral is less than the inner diameter of the proposed sanitary lateral, then a minimum 2" of the existing sanitary lateral must extend into the proposed sanitary lateral.

The engineer must be notified if existing lateral grades prohibit minimum grade on the replacement lateral.

Installation of a main line riser must be approved by the Engineer. Riser must be constructed in accordance with the standard details or as shown on the Drawings. Backfill must be carefully placed and compacted around the riser in an approved manner which will not damage the sewer or riser.

6.08.03 New Laterals

It is intended that the ends of laterals at property lines will be deep enough to service the lowest floor of all existing buildings by gravity flow.

Where the elevation of the end of the lateral to serve an existing structure is not shown on the drawings it must be set at 3 feet below basement grade for standard houses (11 feet below first floor) or 4 feet below basement grade for houses with walkout basements (12 feet below first floor) where the setback is 50 feet or less.

When the house is set back further than 50 feet it may be set at 2 feet below the basement elevation for standard houses (3 feet for walkouts) plus an additional depth of 2 percent multiplied by the setback distance to the structure.

The minimum depth of the end of the lateral at the property line in all cases must be a minimum 9 feet below centerline of the street.

Main line risers must only be installed where specified and must be constructed in accordance with the standard details or as shown on the Drawings. Backfill must be carefully placed and compacted around the riser in an approved manner which will not damage the sewer or riser.

Property line risers must be constructed at the end of the lateral and must extend to one (1) foot above the normal groundwater table or four (4) feet below grade, whichever is the closest to finished grade. In all cases the lateral must have a minimum of two (2) feet of cover.

New sanitary laterals must extend to a point one foot outside the street right of way or easement limit unless otherwise directed. No payment will be made for pipe laid beyond this point unless specifically required by the Engineer.

Contractor must provide and install a 2" x 2" wood marker and 1/2" diameter by 3' long metal stake for each service. The wood marker must be set vertically from the

end of the lateral to twelve (12) inches above finish surface elevations and the metal stake must be set adjacent to the wood marker with 6 inches of cover.

6.08.04 Record Measurements

Contractor must keep accurate records for each lateral installed and furnish a copy of the measurements shown in the Standard Lateral As-Built Detail, or owner-specific measurements, to the Engineer.

6.09 MANHOLE CONSTRUCTION

Manholes must be constructed in accordance with the standard details and as specified herein. Manholes must be watertight.

Precast bases must be installed on sand or gravel subbase in such a way as to provide a uniform bearing under the manhole base.

Precast manholes with integral bottom and channel may be used; however, any changes to the structure due to minor field adjustments in alignment and grade required to meet construction conditions, must be made by the Contractor at no additional cost to the Owner.

Benching must be constructed from the invert to the crown on the pipe for the entire length of the manhole or junction point. Benches must be sloped no less than ½ inch per foot (4 percent). No lateral sewer, service connection, or drop manhole pipe must discharge onto the surface of the bench.

Stubs must be provided in manholes for future connections as shown on the drawings or as directed by the Engineer. All such stubs must be sealed with standard watertight, removable plugs.

All openings in manholes for the purpose of receiving pipes (including openings for future pipes) must be fitted with a flexible manhole connector. Flexible manhole connectors must be factory installed. Openings for future connections must be sealed by an approved prefabricated cap or plug.

Precast concrete adjusting rings must be used to bring existing and new manhole structure covers to grade. Adjusting rings and casting frame must be set on a full mortar bed, and all cracks and gaps in the mortar bed must be filled and finished to create a smooth surface. All castings must be recessed one-quarter (1/4) to one-eighth (1/8) inch below the top of HMA pavement and flush with the top of concrete pavement. After the cover is brought to grade, the entire hole created by excavating to raise the casting must be filled in three-inch (3") lifts with Hot Mix Asphalt (HMA) to the top of the leveling course and air tamped to achieve proper compaction. HMA mixture must be the same mixture placed for the leveling course, unless otherwise approved by the Engineer. Special care must be taken to prevent debris from entering sewers.

6.10 CUT-INS

When cutting into an existing manhole, the opening must be no larger than is necessary to admit the new sewer. The opening must be made by a concrete drilling or coring machine and must have a mechanically compressed flexible joint connection installed. All broken or surplus material falling inside the structure must be removed.

Flow channels and/or drop connections must be constructed as specified or as directed to accommodate the sewer being cut-in.

Unless otherwise specified, cut-ins will be considered part of the major items of work, and no specific payment will be made therefor.

6.11 ACCEPTANCE TESTS

6.11.01 Alignment and Grade

Each section of sewer may be checked by the Engineer for alignment and grade using lights and mirrors, television inspection, or other similar means. The Contractor must assist the Engineer in the performance of these tests when necessary.

If a section of sewer is determined by the Engineer not to be acceptable for alignment or grade, the Contractor must relay the sewer at no additional cost to the Owner.

6.11.02 Leakage Tests

The completed sewer must be free from leaks. Manholes will be visually inspected for leakage. No more than 1,000 feet of main sewer will be considered for partial payment until it has been satisfactorily tested and approved.

The Contractor must provide all necessary labor, equipment, and supervision to perform leakage testing in accordance with these requirements.

6.11.02.01 Air Test

All sewers must be subjected to an air test, unless otherwise specified in the Project Specifications. In lieu of air testing reconstructed sanitary sewer pipe and/or sanitary laterals, Contractor may perform a Televising inspection, subject to Engineer approval.

The air test must be performed on each section of pipe between manholes after laterals are installed. Testing must conform to ASTM F1417. The section of pipe being tested must be sealed at each manhole using inflatable plugs or other approved devices. All plugs must be adequately braced.

Testing pressure is determined by the expected water table level in a dewatered or partially dewatered trench and by the actual groundwater level in a non-dewatered trench, as determined by the soil borings. In a non-dewatered trench, the test pressure is determined by adding 0.43 psi per foot of groundwater above the invert of the pipe to a baseline of 3.5 psig.

For example, in a non-dewatered trench with a groundwater table approximately 2 feet above the pipe invert, the beginning test pressure would be 4.36 psi ($3.5 + 0.43 \times 2 = 4.36$).

At no time must internal pressure exceed 9 psig.

TABLE 1

BEGINNING AIR TESTING PRESSURE FOR LEAKAGE TEST

Dewatered Trench	Expected Groundwater Level Above Pipe Invert [ft]	Beginning Test Pressure [psig]
	0'-7'	3.5
	7'+	4.5
Non-Dewatered Trench	Groundwater Level Above Pipe Invert [ft]	Beginning Test Pressure [psig]
	1	3.9
	2	4.4
	3	4.8
	4	5.2
	5	5.7
	6	6.1
	7	6.5
	>7	Coordinate with Engineer

The air pressure in the section under test must be raised to an initial pressure of 0.5 psig above the beginning test pressure and allowed to stabilize for a minimum of five (5) minutes. Air must be added during this stabilization period as required to maintain the pressure at or above the beginning test pressure.

The minimum time interval for a satisfactory test is in accordance with Table 1 following this section. Ending test pressure after the minimum time interval must not be less than 1.0 psig below the beginning test pressure. Makeup air must not be added during the time interval.

In the event the Engineer determines that the results of the air test are inconclusive because of visible infiltration, unsatisfactory or incomplete records, or improper application of testing methods or equipment, or other similar reasons, the Engineer may require additional leakage testing for the section or sections of sewer involved.

6.11.02.02 Infiltration and Exfiltration Tests

Infiltration and exfiltration testing are not required unless otherwise specified in the Project Specifications or directed by the Engineer due to a failed leakage test.

Allowable leakage rate from an infiltration and exfiltration test must not exceed 25 gal/in of internal pipe diameter/mile/day.

6.11.03 Pipe Deflection Tests

A pipe deflection test is required for all pipe with a stiffness of 115 psi or less as defined under the requirements of ASTM Designation D2412. Truss pipe will not require a deflection test if it has less than twelve feet (12') of cover.

Deflection requirements are for the flexible pipe only. Where the pipe interacts with other appurtenances, such as connections to structures, laterals, other pipes or other materials, deflection requirements may be more prescriptive.

The completed installation of flexible pipe less than 24" in diameter must at no point have out-of-round deflections in the main sewer pipe greater than five percent (5%) of the pipe's base inside diameter.

The completed installation of flexible pipe 24" in diameter and greater must at no point have out-of-round deflections in the main sewer pipe greater than three percent (3%) of the pipe's base inside diameter.

Go/no go gauging tests, using an approved pointed mandrel with nine (9) points, must be performed by the Contractor in the presence of the Engineer, or his authorized representative after the trench is backfilled, and prior to pavement surfacing or completion of final grade.

Pipe with deflections greater than the amount specified must be relaid by the Contractor at no additional expense to the Owner. Use of mechanical devices or equipment to complete the go/no go tests and vibratory rerounding of failed sections are prohibited. A minimum of thirty (30) days must elapse between backfilling and deflection testing.

6.11.04 Televising

After the pipe deflection test, placement of base course (when the pipe is proposed under pavement), and pipe cleaning (when the sewer has been live prior to televising), the Contractor must conduct a continuous video recording inspection of all sanitary sewers. The inspection and documentation must meet the requirements of the National Association of Sewer Service Companies (NASSCO) specification for television inspection of sewers. Closed-circuit television (CCTV) recording must be conducted in compliance with the North American Pipeline Assessment and Certification Program (PACP) standards for sewer defect identification and assessment. Work must be performed by a PACP- certified operator and delivered on professional quality recording media. The televising software must be PACP-certified by NASSCO and must be capable of both exporting to and importing from the standard PACP database.

If the television inspection of an entire section (manhole to manhole) cannot be successfully performed from one manhole, a reverse setup must be performed per PACP requirements as a second survey.

Each pipe inspected must include a video file in .mp4 or .mpeg format, a PDF report showing inspection results, and inspections and observations in GIS format (Shapefile or Esri File Geodatabase). The video file must show the name of the project, the purpose of inspection, the date and approximate time of recording, the name of the street, and the manhole numbers of each end of each run (the “from” and “to” manholes). The inspection must clearly show the pipe interior, joints, alignment, and wye locations and stations. The inspection will be reviewed by the Engineer for evidence of compliance with the Contract Documents for workmanship and materials. Data can be delivered via portable hard drive or cloud-based file sharing site.

6.12 MEASUREMENT AND PAYMENT

6.12.01 General

All proposed construction will be measured for payment by the Engineer in accordance with the items listed in the Proposal.

The unit price bid for each Proposal item must be payment in full for completing the work, ready for use as specified.

6.12.02 Sanitary Sewers

Measurement of the length of the sewer will be in lineal feet along the centerline of the sewer from center of manhole to center of manhole.

Where depth classifications are provided, the depth of the sewer connecting two adjacent structures will be considered as being the average of the depth from earth grade to the sewer invert at these structures.

Unit price for sanitary sewer includes all specified acceptance testing.

6.12.03 Manholes

Manholes will be paid for in accordance with the units established in the Proposal. When no Proposal item is provided for castings, the castings and their installation are considered part of the major items of work.

When corrosion protection is needed for existing manholes, this will be paid for separately in accordance with the units established in the Proposal. When called for on the drawings or in the project specifications for corrosion protection in new manholes, this will be paid for separately in accordance with the units established in the Proposal; if no Proposal item is provided, corrosion protection is considered included in the Proposal item for manholes.

6.12.04 Wyes or Tees

When a specific item is provided in the Proposal for Wyes or Tees the unit price bid will be the additional cost of furnishing and placing the wye or tee over and above the cost of furnishing and laying the sewer pipe.

When no Proposal item is provided, the wyes or tees and their installation are considered part of the major items of work.

6.12.05 Sanitary Sewer Laterals

The length of sewer laterals will be measured horizontally from the center of the main sewer to the end of the lateral as specified and must include all lateral risers.

6.12.06 Cut-Ins

Cut-ins are considered part of the major items of work and no specific payment will be made therefor.

6.12.07 Stubs

Stubs are considered part of the major items of work and no specific payment will be made therefor.

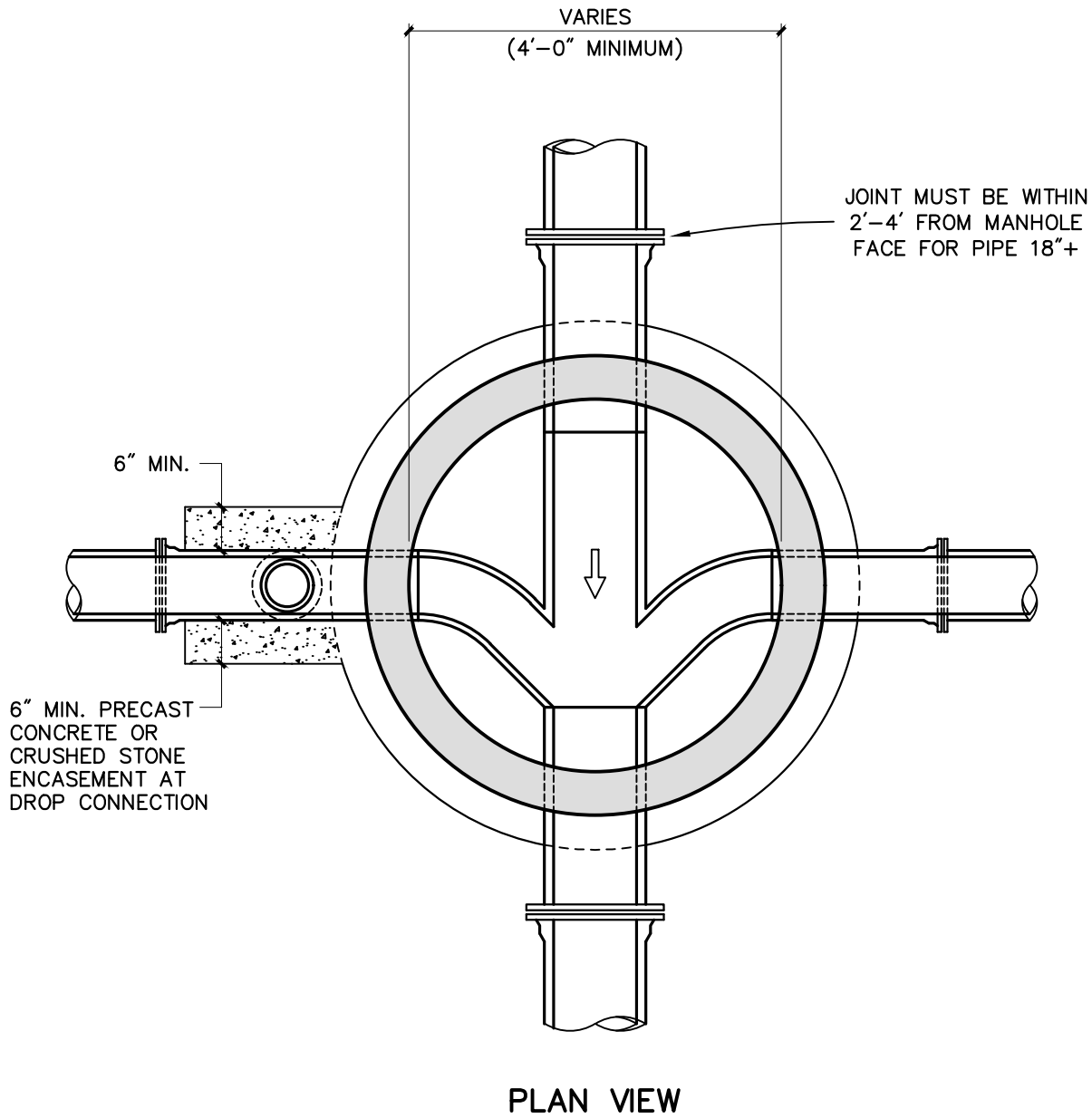
TABLE 1 – PVC PIPE

Pipe Diameter, in.	Minimum Time, min:s	Length for Minimum Time, ft	Time for Longer Length, s	Specification Time for Length (L) Shown, min:s							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
4	3:46	597	0.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46

Note: Table to be used when testing one diameter only.

When testing two sizes of pipe simultaneously, time shall be computed by the ratio of lengths involved.

$$\text{Time} = \frac{\text{Length 1} \times \text{Time 1} + \text{Length 2} \times \text{Time 2}}{\text{Length 1} + \text{Length 2}}$$

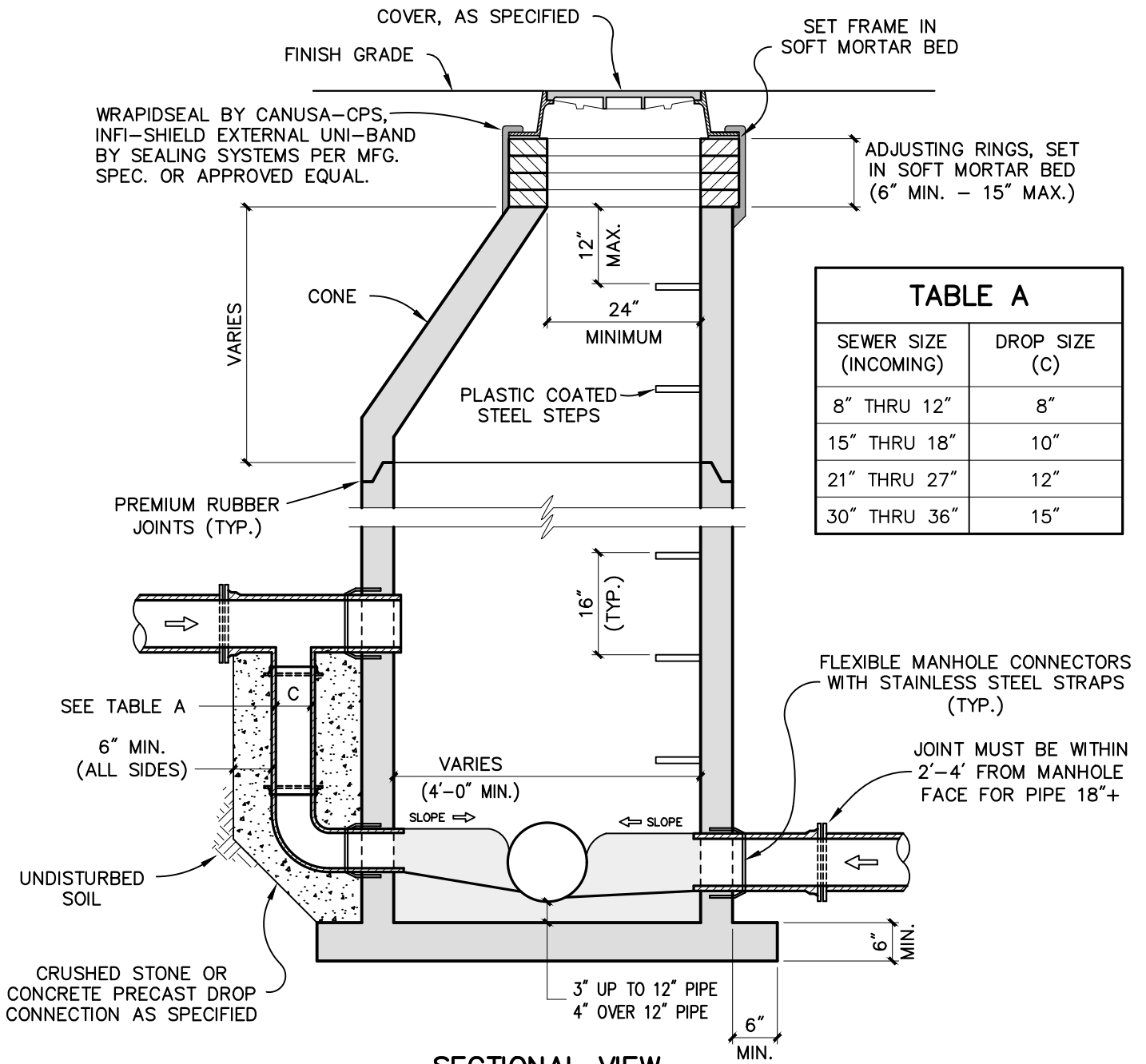


STANDARD SANITARY SEWER MANHOLE

(PRECAST CONCRETE)

NOTES

1. IF BOTTOM IS PRECAST CONCRETE, SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
2. CONE MAY BE ROTATED TO ALIGN STEPS TO VARIOUS LOCATIONS IN MANHOLE.
3. FLOW CHANNEL WALL HEIGHT SHALL BE EQUAL TO CROWN OF PIPE.



SECTIONAL VIEW

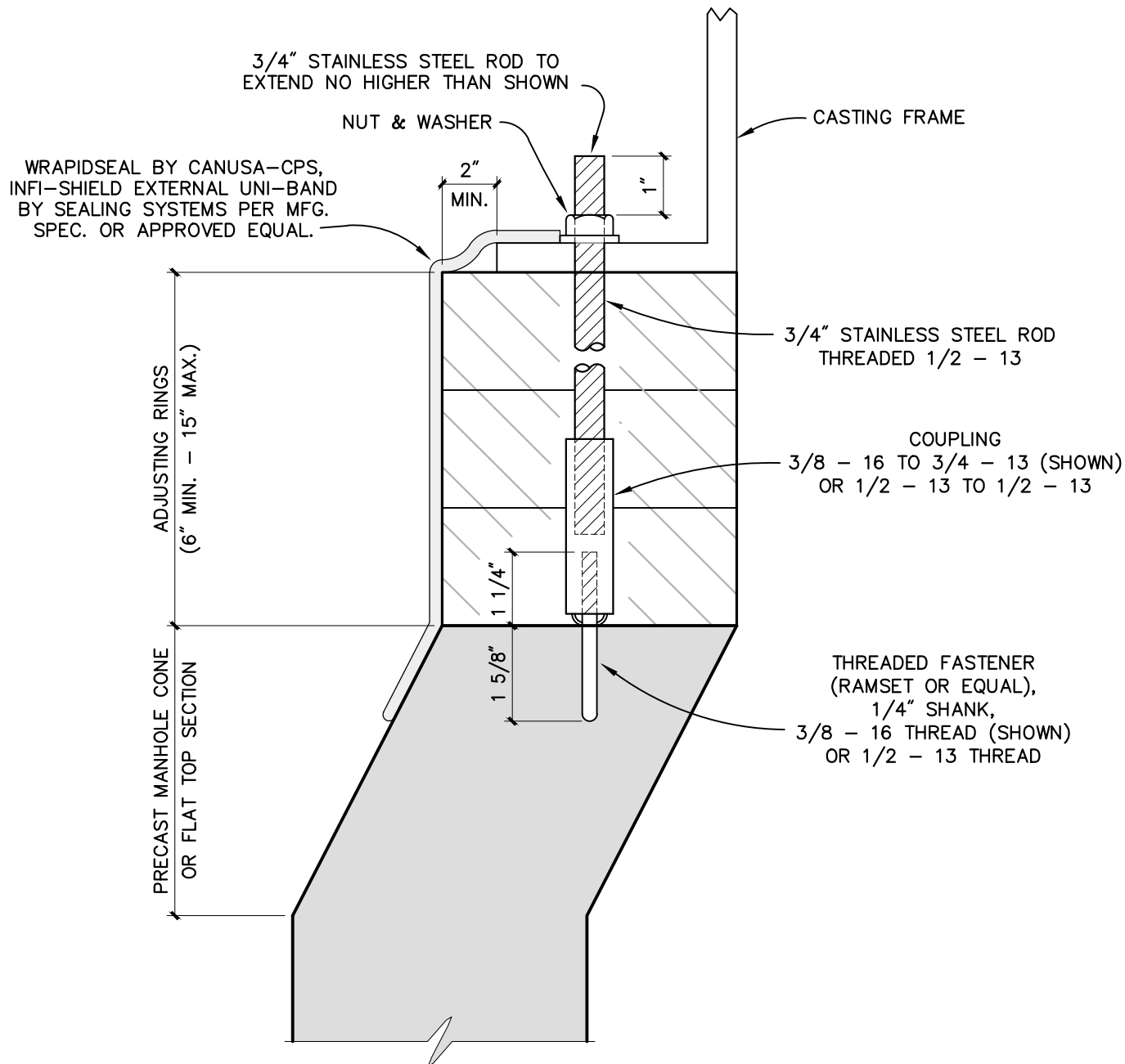
STANDARD SANITARY SEWER MANHOLE (PRECAST CONCRETE)

NOTES

1. PRECAST CONCRETE MANHOLE MUST MEET ASTM C478.
2. SET ON MINIMUM 4" SAND SUBBASE (CIP) OR CLASS 1A CRUSHED STONE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC.
3. CONE MAY BE ROTATED TO ALIGN STEPS TO VARIOUS LOCATIONS IN MANHOLE.
4. FLOW CHANNEL WALL HEIGHT SHALL BE EQUAL TO CROWN OF PIPE.

Prein & Newhof

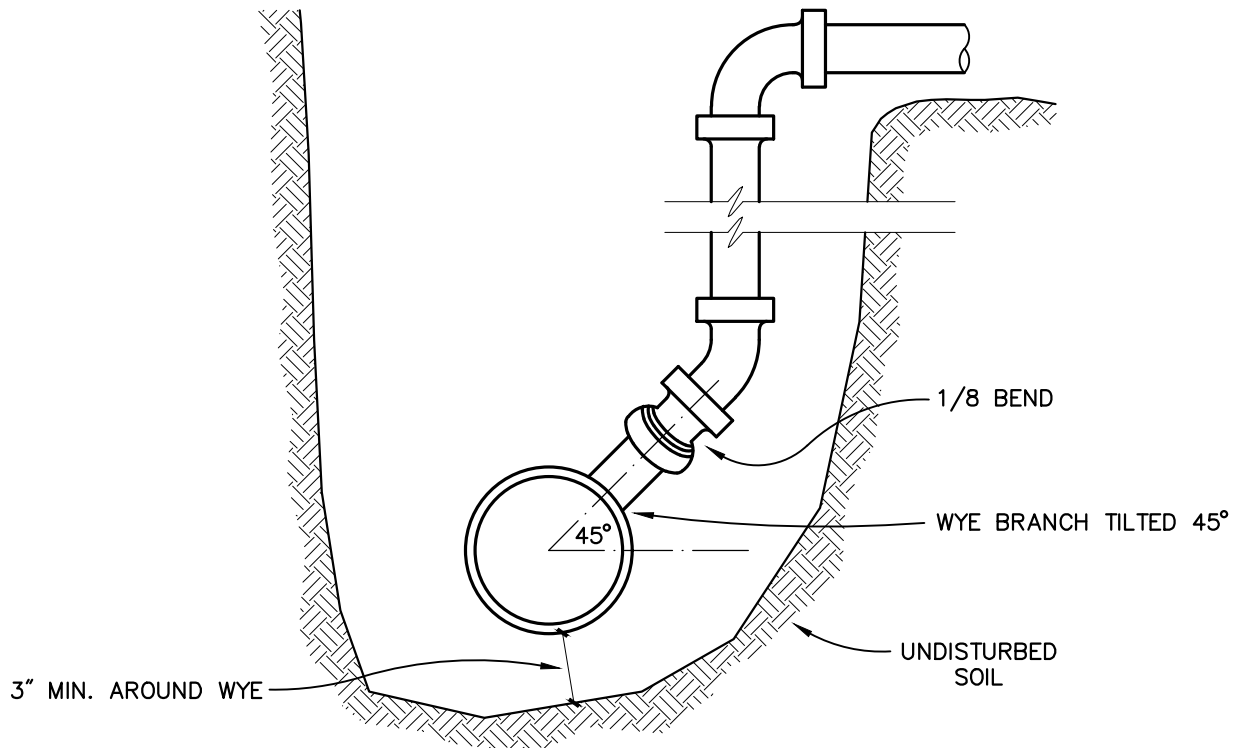
09/2024
Section 6 Sanitary



ANCHOR DETAIL

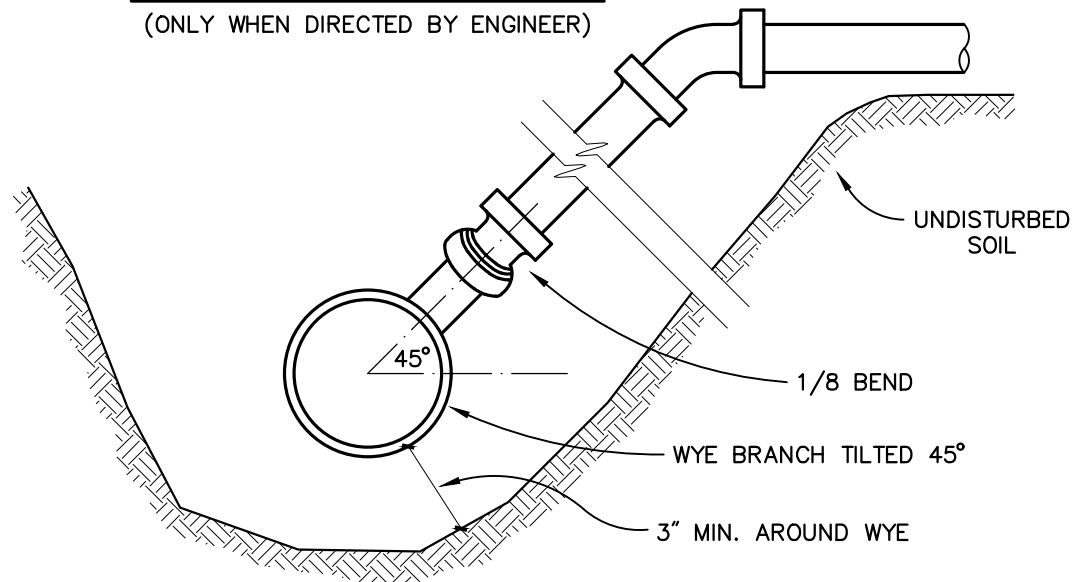
NOTE

FOR ALL PRESSURE TIGHT OR WATERTIGHT COVERS IN UNIMPROVED AREAS, FOUR (4) ANCHORS PER COVER



VERTICAL TRENCH

(ONLY WHEN DIRECTED BY ENGINEER)



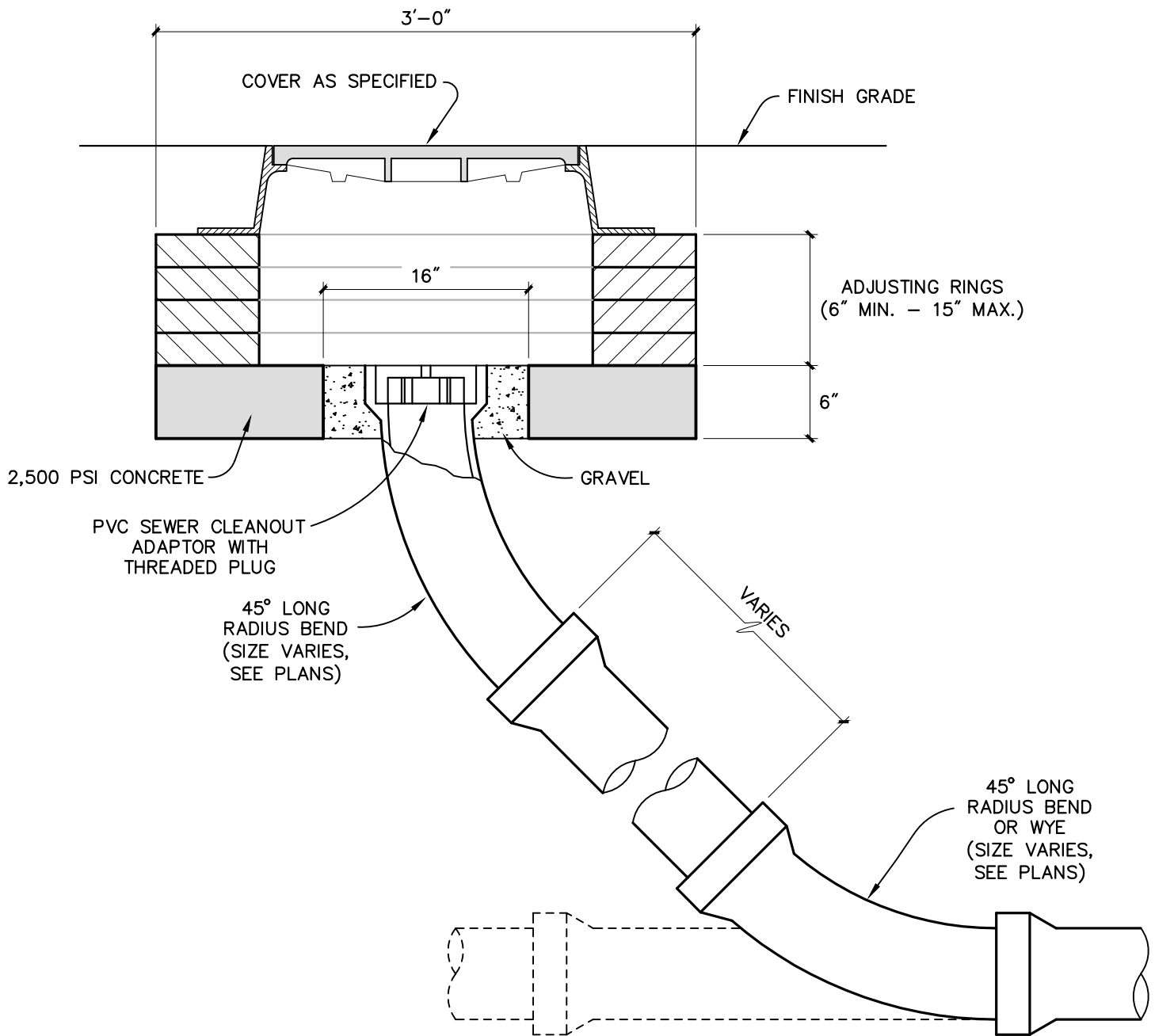
SLOPING TRENCH

(STANDARD)

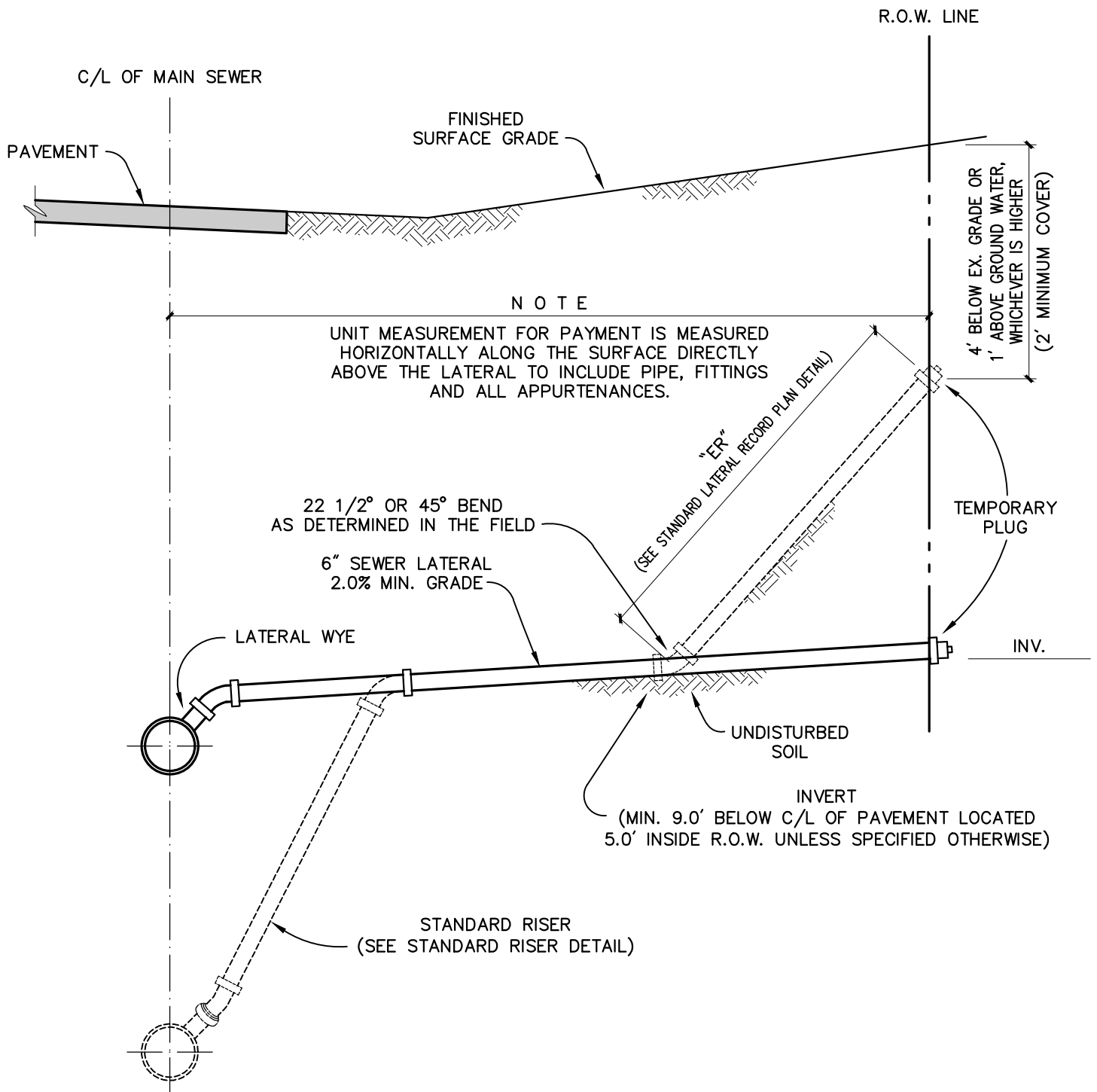
STANDARD RISER DETAILS

NOTE

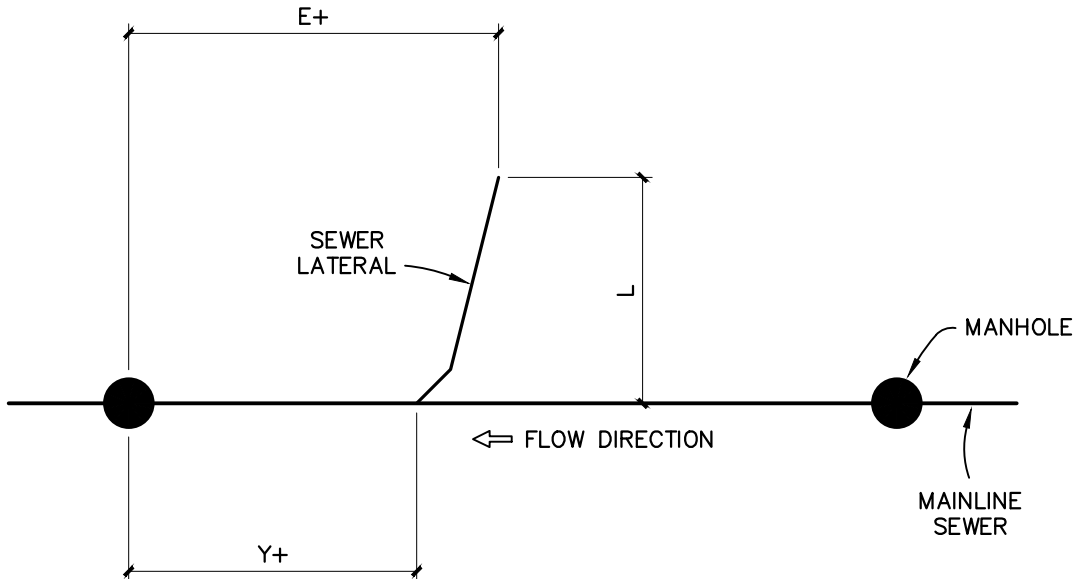
SEE PLANS OR SPECS FOR SIZE AND DEPTH OF LATERAL



CLEANOUT DETAIL



LATERAL AND PROPERTY LINE RISER DETAILS



STANDARD LATERAL RECORD PLAN DETAIL

Y+ =	DISTANCE TO WYE IN SEWER MAIN FROM DOWNSTREAM MANHOLE.
E+ =	DISTANCE ALONG SEWER MAIN FROM DOWNSTREAM MANHOLE TO A POINT WHERE THE END OF LATERAL IS AT 90 DEGREES TO THE SEWER MAIN.
L =	LENGTH FROM THE E+ LOCATION TO THE END OF THE LATERAL (I.E. DISTANCE FROM END OF LATERAL TO MAIN SEWER, MEASURED PERPENDICULAR TO MAIN SEWER). LENGTHS OF LATERALS (INCLUDING RISERS) ARE BASED ON HORIZONTAL MEASUREMENTS FROM THE CENTER OF THE SEWER MAIN.
ER =	LENGTH OF RISER THAT WAS INSTALLED ON THE END OF THE LATERAL. (SEE LATERAL AND PROPERTY LINE RISER DETAILS)
DEPTH =	INVERT ELEVATION AT END OF LATERAL OR AT CONNECTION TO EXISTING LATERAL. (SEE LATERAL AND PROPERTY LINE RISER DETAILS) RECORD ADDITIONAL INVERTS AT TOP AND BOTTOM OF RISERS.

CITY OF MUSKEGON SPECIFICATIONS FOR WATER MAINS

13.01 WATER MAIN

13.01.01 General

As used herein, water mains shall be considered to mean all pipes, conduits, and all necessary appurtenances to transport water, lying within public rights-of way or easements. All materials outlined in this Division shall be manufactured in the United States or be otherwise approved by the City Engineer.

13.01.02 Scope

The Contractor shall, unless otherwise noted, furnish all materials, equipment, tools and labor necessary to accomplish the work required under this contract in a safe and reliable manner, and all contract items are to be placed in proper operating conditions in full conformity with the contract and proposal, detail drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer and materials as approved by the engineer.

13.01.03 Location

The location, grade and the approximate depth of the proposed water main is shown on the plans with line and grade to be provided by the City of Muskegon unless otherwise noted. The Engineer reserves the right to make minor changes in alignment, grade and location of appurtenances, when such changes deemed necessary or advantageous. Major changes will be accomplished as described in Part 3, Section 1 Item 39 page 45 of the City of Muskegon Standard Contract.

13.01.04 Clean-Up

Surplus materials and appurtenances furnished by the City shall be delivered by the Contractor to the Public Service Building. Confirmation and/or receipts should be obtained from the Stockroom Manager and reported to the Project Inspector. All other surplus construction material shall be removed from the site by the Contractor. Trench backfill and surface replacement shall follow pipe laying operations so that the extent of open trench shall not exceed 500 feet, unless specific authorization is obtained from the Engineer. The finished site shall be free of debris and neat appearance.

13.01.05 Contractors "Notice to Proceed"

After receiving the "Notice to Proceed" the contractor shall give the City Engineer a minimum of 48 hours notice of start to allow for survey layout and assignment of inspection personnel. Whenever work is to be done by City forces or coordination with City forces, the contractor shall provide a

CITY OF MUSKEGON SPECIFICATIONS FOR WATER MAINS

minimum of 48 hours advance notice to the department from which the work is requested.

13.02 MATERIALS

13.02.01 General

All materials furnished by the Contractor must conform in all respects to the following standards. (Where reference specifications are used, they shall be considered as referring to the latest revised issue).

The Contractor shall be responsible for all material furnished and shall replace, at his own expense, all such material found defective during the life of the contract. For material furnished by the City of Muskegon, the Contractor shall become responsible from the time of delivery, and shall reject any defective materials within three calendar days of delivery, and such materials shall be replaced by the City. Any defective material furnished by the City and installed by the Contractor without discovery of such defect will, if found defective prior to final acceptance, be replaced with sound material by the owner. The Contractor, however, shall at his own expense, furnish all labor, equipment and supplies necessary to facilitate the above replacement.

The Contractor shall furnish to the Engineer a manufacturer's certification that all materials meet minimum requirements as detailed in the material specifications references (refer to paragraph 13.02.02). The Contractor's unit prices will be assumed to include an allowance for this responsibility.

All pipe and related items shall be stored as recommended by the manufacturer, on suitable timber skids free from contact with the ground. Gaskets shall be stored in as cool, clean and shaded a place as practicable.

Unloading shall be made so as to avoid damage to the castings or pipe. Under no circumstances shall materials be dropped. All special handling equipment and temporary supports shall be furnished by the Contractor.

No damaged or broken pipe shall be used, no damaged or broken cement lining in pipe or fittings shall be used, In the event coatings are damaged, the damaged area shall be recoated with an approved coating, at the Contractors expense, in a manner approved by the Engineer.

The water main pipe shall be handled by means of slings. No hooks or loader forks shall be permitted to come in contact with joint rings or be inserted in the ends of the pipe and fittings for any reason.

Any material found defective or flawed during the progress of work will be rejected and removed from the site. No attempt will be made to repair defective materials without written consent of the Engineer.

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13.02.02 Water main Specification Reference

- (a) Ductile Iron, Push-On Joint Pipe, 3”– 24” ANSI/AWWA C151/A21.51
- (b) Push-On Joint Detail, ANSI / AWWA C111 / A21.11
- (c) Ductile Iron, Mechanical Joint Pipe, 3”– 24” ANSI/AWWA C151/A21.51
- (d) Mechanical Joint Detail, ANSI / AWWA C111 / A21.11
- (e) Cement Lining, ANSI / AWWA C104 / A21.4 (Standard Thickness)
- (f) Ductile Iron Pipe Wall Thickness Determination, ANSI/AWWA C150/A21.50
- (g) Ductile Iron, Flanged Joint Pipe, 3”– 24” ANSI/AWWA C151/A21.51 and ANSI/AWWA C110
- (h) Mechanical Joint Fittings, ANSI / AWWA C153 / A21.53 and ANSI/AWWA C111/A21.11
- (i) Push-On Joint Fittings, ANSI / AWWA C110 / A21.10 and ANSI/ AWWA C111/A21.11
- (j) Flanged Fittings, ANSI/AWWA C110/A21.10
- (k) Flanges, ASA-B16.1 Standard Class 125
- (l) Copper Pipe, ASTM Spec B88-55 “Type K”
- (m) Retainer Glands EBAA MEGALUG 1100 Series or Equal
- (n) Fire Hydrants, ANSI/AWWA C502

13.02.03 Provisions for Electrical Thawing

(a) Serrated Silicon Bronze Wedges

Two per joint for 3” through 12” pipe, four for larger pipe. Each wedge is to be driven into the opening between the plain end and the bell until snug. When four wedges are used, they are inserted side by side, in pairs. Wedges can be used with push-on joints only.

(b) Copper Cable Bond Conductor

Installation of copper cable bond conductor across the joints of push-on and mechanical joint pipe and fittings. The copper cable shall be a

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minimum AGW size #4 copper cable, The copper cable shall be welded to the pipe on push-on joints and have cable ends that fit standard water main bolts for mechanical joints. The copper cable shall be of sufficient flexibility to withstand ground and pipe movement after installation.

(c) Copper Strap Bond Conductor

Installation of copper strap bond conductor across the joints of push-on joint pipe. The copper jumper strips shall be 1/16" x 3.4", 48 ounce soft copper, bolts shall be 5/16" x 3/4" silicon bronze hex head bolt and nut. The copper strap shall be welded to the pipe and be of sufficient flexibility to withstand ground and pipe movement after installation.

(d) Conductive Push-On Gaskets

These gaskets may be used in lieu of wedges, cable or strap bond conductors. Metal contact strips which are molded or inserted into the gasket must insure positive electrical contact between pipes. A thorough cleaning of gasket seating surface should be preformed prior to assembly.

(e) Payment

The payment for provisions for electrical thawing shall be included in the cost of the new water main. No other payment shall be made.

13.02.04 Fire Hydrant

A 5 1/4" M.V.O. East Jordan (5BR 250) hydrant shall be furnished and installed in the locations shown on the drawings and should be placed in a plumbed vertical position. Hydrants shall be of the non-compression type, and shall conform to ANSI / AWWA C502 as last adopted, and any Underwriter Laboratories requirements. Hydrants shall have two 2-1/2" hose connections and one 5" "STORZ" fitting; their barrels shall be 8-1/2 inches in diameter (minimum) with 5-14" valve openings and shall open to the left utilizing a 1" nut (measured flat to flat). All hydrants shall be painted red. Threaded connections shall conform to the City of Muskegon Standard Big Six (six threads per inch). Hydrant inlets shall have 6" diameter mechanical joint connections unless otherwise specified on the plans or in the special provisions. The hydrant assembly shall have all mechanical joints restrained with ductile iron MEGALUG glands. The hydrant shall be so designed so that the direction of the nozzles can be reoriented without digging up the assembly, and so that height extensions may be added at a later date. Hydrants shall have bronze interior parts including operating stems. Bronze to bronze main valve seats shall be required if seat removal is necessary for removing the valve assembly. All hydrants shall have a minimum bury of 6-1/2 feet. If the operating screw is located on the top it shall be bronze. When hydrants are placed in sand a 3/4" street "L" shall be placed in the drain holes and 1/2" cu. yd.

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“P” stone placed around the drains, in clay areas the drain holes will be plugged and a “P” painted on hydrant.

13.02.05 Gate Valves

All valves shall be iron body, bronze mounted, double disc. Parallel seat or compression resilient seated, with a 2” operating nut open to the right, with the direction indicated by an arrow cast on to the valve or the operating nut. Generally, end connectors shall be mechanical joint for all exterior ground-buried valves, unless otherwise specified. All valves shall have bronze stem, o-ring stem seal, non-rising stem, the stem shall have continuity with the body, and shall have a clean waterway equivalent in area, when open, equal to that of the connecting pipe. All valves shall be of new construction and complete with operating equipment and other appurtenances necessary for operation. All valves shall be designed to maintain a minimum 150 pound working pressure, tested at 300 pounds for sizes 14” through 48” or minimum 200 pound working pressure and tested at 400 pounds for sizes 2” through 12” and manufactured as per ANSI / AWWA C500 and C515. The valves shall be shipped as fully assembled as practicable. The exposed flanges and mounting pads shall be protected by wooden pieces bolted to them. All necessary skids and lifting devices shall be provided. Non-attached items shall be packed in boxes and properly labeled for assembly. The contractor may be required to furnish the services of a competent factory-trained serviceman to check final installation and supervise original start-up and operation of the equipment specified. Such services shall be included in the cost of the valve.

13.02.06 Butterfly Valves

Butterfly valves shall be manufactured to conform in all respects to the latest revisions of ANSI / AWWA C504, and coated inside and outside with standard bitumastic coating for water mains. The body, disc, shaft, seats, bearings and operators shall be designed based on Class 150B and may be the short or long body type. All butterfly valves shall have a working pressure of 150 psi, hydrostatically tested at 300 psi, and bubble-tight tested at 150 psi. The seat-ring shall be made of rubber body or disc mounted, and shall be adjustable and field replaceable in sizes 16” and larger. The shaft may be of the through type or stub type and shall be marked on the end to indicate the position of the valve disc with respect to the shaft and the shaft shall have continuity with the body. The shaft seals shall be of the “split-V” or “Chevron” type. The valve disc shall be of corrosion-resistant alloy cast iron. The valve disc shall be offset so as to prevent valve flutter in the full open position. The valves shall be equipped with a stainless steel stop in the operator to prevent the disk from rotating through the closed position. The valve operator shall be permanently lubricated and sealed for buried service and shall be equipped with a two-inch square operating nut. The operator shall be constructed such that the valve will open when the nut is turned to the right or in a clockwise direction, with the direction indicated by an arrow cast onto the operating nut. Operators for valves 16” and 20” in size may be of the

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traveling-nut or worn gear type. Operators for 24" and larger shall be of the worn gear type. Generally, end connectors shall be mechanical joint, unless otherwise specified. All valves shall be of new construction and be complete with all operating equipment and other appurtenances necessary for operation. The contractor may be required to furnish the services of a competent factory-trained serviceman to check final installation and supervise original start-up and operation of the equipment specified. Such services shall be included in the cost of the valve.

13.02.07 Tapping Sleeve and Valve

Tapping Sleeves shall be full stainless steel sleeve as manufactured by Romac Style SST or approved equal, meeting the requirements of ANSI B16.1 Class 125 and in accordance with MSS-SP60, the sleeve will be required when tapping into existing water mains. The valve shall conform to City of Muskegon Standard Specifications 13.02.05. The joint between the sleeve and valve will be flanged. The Contractor shall present for approval detailed shop drawings of the assembly. Payment shall be at the unit price as described in the proposal and shall represent payment in full for the sleeve, valve and box completely installed.

13.02.08 Valve Boxes

Valve boxes shall be of ductile cast iron, adjustable, and furnished complete including cover, top section, center section and base. Valve boxes shall be not less than five inches in diameter with a minimum adjustment of 24 inches above and below proposed grade. The covers shall have the appropriate name cast on it ("WATER"). All parts of valve boxes, base and covers shall be coated by dipping in hot bituminous varnish. The valve box shall be placed centered on the valve nut and be placed in a plum vertical position. Payment for the materials and labor to install this item shall be included in the cost of the valve, unless otherwise specified.

13.02.09 Adjusting Water Valve Boxes

The water box materials shall be placed centered on the valve nut and be placed in a plumb vertical position. Pavement placement shall be the same as for adjusting manholes, (Section 14.04) unless otherwise specified. No payment will be allowed for adjusting water valve boxes either existing or new unless stipulated in the proposal.

13.02.10 Fitting Restraints

All plugs, caps, tees and bends which deflect 11-1/4 degrees or more, shall be provided with suitable restraints to prevent movement, in a manner acceptable to the Engineer. The restraint shall be applied to joints in each direction from the fitting according to the pipe restraint schedule or as shown on the construction plans in order to resist the thrust of the test pressure.

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Details of all restraints, unless specified, are to be submitted to the Engineer for approval. All joint restraints shall be considered incidental to this section of work, and included in the cost of the fitting. When specified as being necessary MEGALUG retainer glands shall be used for all ductile iron mechanical joint pipe and fittings through 24" and fast-grip gaskets for push-on pipe. For sizes larger than those maximums, self-restraining joints such as Superlock, or Lockfast pipe shall be used, or as specified by the Engineer.

13.02.11 Retainer Glands

Retainer Glands shall conform to 2.04.05 specification for water main joints. Payment for this item shall be included with the new pipe and fittings. No additional payment will be allowed.

13.02.12 Flanged Joints

Where specified. Flanged joints shall be drilled using the Standard 125 pound Template.

13.02.13 Plugs and Caps

The caps (Tyler 5-155, or approved equal) plugs (Tyler 5-152, or approved equal) shall be ductile cast iron, and be 2" tapped with plug. Payment for caps and plugs in place shall be bid price as found in the proposal, or otherwise specified. No payment will be made for temporary caps and plugs used for testing purposes.

13.03 CONSTRUCTION METHODS

13.03.01 General Excavation

On any contract where the Engineer will supply grades, the Contractor will notify the Engineer at least 48 hours in advance. The trench shall be excavated true to line and grade and shall be of sufficient width to provide adequate working space for making joints, compacting back fill, sheeting, pumping and of sufficient depth so that the top of pipe will have a minimum cover of 5-1/2 feet as measured from the established or proposed gutter grade, or as measured from the proposed or existing ground elevation (six feet from the top of curb).

The Contractor shall take adequate precautions to protect all grade stakes. The Contractor shall be responsible for the cost of replacement of stakes which are damaged or lost through his negligence.

There shall be a minimum of six inches of clearance on each side of the barrel of the pipe and a maximum width of the trench at the level of the top of the pipe of not more than a distance equal to the O.D. of the pipe plus 24 inches. On paved streets, the pavement shall be cut by means of concrete

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saws to a neat and straight line along the top edge of the intended trench opening, and all sawing shall be included in the cost of trench repair.

All material in excess of that needed or which is unusable shall be disposed of at such locations as the Engineer may direct. If the disposal site has been specified in the special provisions, the cost of disposal shall be included in the lineal foot cost of the pipe. If no disposal site has been specified, all excess material becomes the property of the Contractor.

The Contractor shall call Miss Dig 3 working days (Excluding Sat. Sun. and Holidays) before digging (1-800-482-7171) for the location of existing under ground systems. The Contractor is liable for all damages to existing underground systems.

13.03.02 Sheeting and Bracing

When the depth of the trench or soil conditions require, or to prevent damage to adjacent structures and property, or to protect workmen, the sides of the trench shall be sheeted, shored and braced adequately to prevent sliding or caving. All underground utilities crossing the trench or running parallel to the proposed pipe, shall be supported and braced in an approved manner. All materials and labor for sheeting, shoring and/or bracing shall be furnished by the Contractor and will be considered incidental to the work. The Contractor is fully responsible for the sufficiency of such supports and for the integrity of his work. In the removing of the sheeting or bracing, special care shall be taken to prevent any caving of the sides of the excavation and to prevent damage to the completed work or to adjacent property, and to prevent loss of density in the pipe bedding material.

13.03.03 Obstructions

Wherever obstructions, not shown on the plans, are encountered and interfere to such an extent that an alteration to the plan is required, the Engineer shall be notified at once and shall make such changes in the plans as he deems necessary. If such a change results in a significant increase in the amount of work required of the Contractor, such a change shall be paid by change order to the contract, only to the extent that his change in work is not covered by contract unit prices.

13.03.04 Deflections

Deflections for obstructions or other purposes shall be governed by these allowable limits in the table presented below, unless further deflection is allowed by written communication from the Engineer.

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DEFLECTION TABLE

Unrestrained Connections only

<u>Pipe Size</u>	<u>Deflection in inches</u> <u>Per 20 foot length</u>
3	27"
4	27"
6	22"
8	17"
10	17"
12	17"
14	11"
16	11"
18	9"
20	9"
24	7"

13.03.05 Laying Condition

Laying Conditions Unless Specified Otherwise, Shall conform to the most Current Michigan Department of Transportation Standard Specifications for Construction or subsequent revision thereof for the trench detail specified.

13.03.06 Unsuitable Conditions

Where unstable soil is encountered at pipe grade, Trench undercut and backfill will be done and Unless Specified Otherwise, Shall conform to the most Current Michigan Department of Transportation Standard Specifications or subsequent revision thereof.

13.03.07 Pipe Care

Care shall be taken to keep the interior of the pipe clean and free from dirt and other foreign materials. Bulkheads shall be used at open ends of the pipe to insure cleanliness, especially at the end of each day's work. If there is water in the trench, a water-tight plug will be utilized, and the seal must remain in place until the trench is pumped completely dry. The end shall also be plugged whenever the pipe is left unattended. The pipe shall be laid with the bell ends facing in the direction of laying, unless otherwise directed by the Engineer.

13.03.08 Dewatering

When dewatering is encountered, Unless Specified Otherwise, Shall conform to the most Current Michigan Department of Transportation Standard Specifications or subsequent revision thereof.

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13.03.09 Push-On Joint Assembly

It is essential that the gasket groove be clean and free of foreign matter prior to lubrication and gasket installation. Wire brushing, wiping or flushing may be required. The cleaned gasket groove shall be lubricated to make gasket installation easier and to assist in proper positioning of the gasket. The gasket must be correctly positioned within the groove. Check with fingers to be sure of correct placement. Lubricate the gasket over its entire inner surface; as well as to the bevel of the plain end. The joint should be assembled with both pipes reasonably straight alignment. Any deflection should be made after the joint is assembled. On any field cut pipe, the outside edge must be beveled and smoothed as any sharp corner may cause gasket damage. Straight alignment is especially important when assembling field cut pipe. Field inspection by the Engineer must be accomplished before a field cut pipe may be joined. During cold weather installations, keep gaskets warm prior to placement within the bell, to reduce their stiffness.

13.03.10 Mechanical Joint Assembly

The inside of the bell and the plain end of the pipe must be thoroughly cleaned of foreign matter and wire brushed if necessary. All surfaces and gaskets should be brushed over with soapy water. A rubbed gasket and follower gland should be placed on the plain end “seated” in the mechanical flanged bell; and then the gasket firmly and evenly pressed into the bell. After the gland is in position for bolting, insert all bolts and make all nuts finger-tight. Keeping the plain end centrally located within the bell, begin tightening bolts, bringing all bolts up evenly at all points around the bell flange. Alternate bolts from side to side until all bolts are uniformly tight within the correct range of torque of 75 to 90 foot pounds (4” thru 24” sizes). If effective sealing is not attained at the maximum torque level, the joint should be disassembled and reassembled after thorough cleaning. Megalug style retainer glands shall be used on all mechanical joints, after all gland bolts are tight, bring all retainer bolts up evenly around the pipe, tighten all retainer bolts by alternating tightening on opposite sides of the pipe until the twist-off nuts snap off.

13.03.11 Existing Water Main Connections

Existing water main connections may be oversized. The Contractor shall confirm the size of the existing water main prior to the connections. No additional payment shall be made if over sized fittings are required.

13.03.12 Cut and Cap ___ Inch Water main

The existing ___ inch water main as shown on the construction plans, shall be cut and capped with a ductile iron, mechanical joint cap and restrained with retaining glands. The existing water main will be thrust

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blocked in a manner to prevent movement of the existing water main. Engineer will determine if the contractor's method of thrust blocking is acceptable

The completed work, Cut and Cap, ___ inch Water main as shown on the construction plans and in the proposal, shall including all materials, labor and equipment, as measured and will be paid for at the contract unit price for Cut and Cap, ___ inch Water main. No other payment will be allowed.

13.03.13 Compaction Tests

All soil compaction tests shall be preformed by the City with full cooperation and labor and equipment assistance from the contractor. The Contractor shall be allowed one re-test. All costs for any additional testing due to failure of the Contractor to meet density requirements shall be borne by the Contractor. These costs shall include all labor and equipment and supervision needed to re-test failed areas.

13.03.14 Field Cutting Pipe

The spigot ends of pipe which have been field cut, shall be ground to a smooth surface and painted with two coats of asphaltum metal protective paint.

13.04 WATER SERVICES

13.04.01 Definition

As used herein, water services shall be considered to include all pipe, corporation cocks, curb stops, curb boxes and all necessary appurtenances to transport water from the water main to private property. For larger services requiring valves instead of corporation cocks, specifications will be covered in the Special Provisions.

13.04.02 Scope

The Contractor shall, unless otherwise noted, furnish all materials, equipment, tools and labor necessary to accomplish the installation of all water services at the locations shown on the plans or as located by the Engineer. The Contractor shall conduct his work as to minimize traffic interruptions.

13.04.03 Corporation Cocks

The unit price of this item shall include all labor and materials for tapping the existing water main and installing the corporation cocks, utilizing a Mueller # P25008, Ford # FB1000-X pack joint or approved equal. On services 1 1/4" to 2" a ductile cast iron saddle Ford # FS101 or approved equal

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shall be used and will be included with the corporation cock payment. Payment will be for installation complete.

13.04.04 Water Service Line

The unit price of this item shall include all labor and materials for laying copper service pipe, type K, at the location specified and of the size indicated on the plans; in the proposal, or as specified by the Engineer. The service shall be connected to the corporation cock and “goose-necked” for expansion purposes, with a minimum of 5 ½ feet of bury below the proposed grade. Payment for water service shall be by the lineal foot as measured horizontally from the centerline of the main to the centerline of the curb stop or meter pit and from the centerline of the curb stop to the connection point of the existing water service, from the connection point of the meter pit to the connection point of the existing water service shall be lineal foot of pipe used, the connection fitting shall be included in the new water service line and shall have continuity between the old and new service.

13.04.05 Curb Stop and Box

The unit price of this item shall include all labor and materials to install a working and useable curb stop and box., utilizing a Mueller # P25155, Ford # B44-444M pack joint or approved equal with 2 inch Minneapolis thread, bushed for 1 ½ inches. Connections shall be copper pipe to copper pipe. Payment will be for installation complete.

13.04.06 Meter Pit

The unit price of this item shall include all labor and materials to install a working and useable meter pit, utilizing a Ford # W3-T Cover with Locking lid, Ford # AV94-324W pack joint Angle Yoke Key Valve, Ford # L94-24D pack joint Yoke Ell, Ford # EC-23 Expansion Connection, Ford # Y503 Series Yoke Bar, Sono-Loc 20 inch diameter 36 inch high Meter Box, or approved equal on all items, the City of Muskegon will provide the meter. The Contractor will install to finish grade at locations specified on the plans; in the proposal, or as specified by the Engineer. Payment will be for installation complete.

13.05 HYDROSTATIC TESTS

Connecting to Existing Water Mains Prior to Pressure Testing Will Not Be Allowed. Preliminary testing of mains shall be done by the Contractor to ascertain if there are any major leaks. Final pressure tests shall be made in presence of the Engineer, who shall receive 24 hours notice prior to testing. The Contractor shall pressure test each 5000 foot section of water main as it is constructed or as directed by the Engineer. Pressure testing of each 5000 foot section shall be made in increments of 1500 feet or less.

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Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants for blow off are not available at high points, the Contractor shall make the necessary taps to release the air and insert plugs after the test has been completed, or install corporation cocks and leave them in place after testing. The Engineer shall notify the Municipal Water Department prior to making connections to any existing water mains, filling of mains with water and flushing of any water mains. Reasonable use of water from City mains for purposes of testing will be available at no cost to the Contractor.

The Contractor shall furnish proper appliances and facilities for testing and draining the main without injury to the work and surrounding territory. The Contractor shall test by filling the main with clean water under minimum hydrostatic pressure of 150 lbs per square inch. In no case shall the leakage in any stretch of pipe being tested exceed the following amounts in a 2-hour period: All pipe installed on the project shall be tested in accordance with the requirements of ANSI / AWWA C600-05.

$$L = \frac{S \times D \times \sqrt{P}}{148,000}$$

Where;

L = Allowable Leakage (Gal./Hr.)

S = Length of Pipe (Ft.)

D = Nominal Diameter of Pipe Tested (Inches)

P = Average Test Pressure (PSIG)

For 6" pipe – 1.10 gallons per 1000 lineal feet per two hour period
For 8" pipe – 1.46 gallons per 1000 lineal feet per two hour period
For 10" pipe – 1.83 gallons per 1000 lineal feet per two hour period
For 12" pipe – 2.20 gallons per 1000 lineal feet per two hour period
For 14" pipe – 2.57 gallons per 1000 lineal feet per two hour period
For 16" pipe – 2.94 gallons per 1000 lineal feet per two hour period
For 18" pipe – 3.31 gallons per 1000 lineal feet per two hour period
For 20" pipe – 3.68 gallons per 1000 lineal feet per two hour period
For 24" pipe – 4.42 gallons per 1000 lineal feet per two hour period
For 30" pipe – 5.53 gallons per 1000 lineal feet per two hour period
For 36" pipe – 6.64 gallons per 1000 lineal feet per two hour period

In the event that a leak is detected and located, the Contractor shall review the method of repair with the engineer for concurrence before proceeding with the repair. After repairs are made the main will be retested. The Contractor shall notify the Engineer of his intent to retest at least 24 hours in advance. However, the Contractor shall not begin the retest until all attempts have been made to correct all defects, and approval for retesting has been given by the Engineer.

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The City shall be responsible for all inspection costs for the first two hydrostatic tests of any section. If a section requires a third hydrostatic retest, the Contractor may be held liable for such inspection costs incurred by the City of Muskegon personnel.

13.06 ELECTRICAL CONDUCTIVITY

All ductile iron pipe and fittings furnished and installed under this contract shall be provided with electrical conductivity connections. Electrical conductivity connections shall be brass wedges, copper cable bond, copper strap bond, conductive push-on gaskets and megalug retainer glands as specified. After installation of the mains, backfilling and the hydrostatic pressure tests are completed, the system (pipe line and hydrants) shall be tested for electrical continuity and current capacity. It is imperative that all lines and appurtenances be filled with water prior to conductivity testing. The line will be tested in sections between hydrants and or stand pipes. The hydrants and hydrant valves will be opened to bleed off any air in the lead. The hydrant will then be closed and the hydrant valve left open. Adjacent hydrants or stand pipes will serve as test section termini. The Contractor will provide electric current of 100 to 150 amperes for the test. Direct current of 150 amperes, shall be passed through the pipe line for a period of five minutes. Current flow through the pipe shall be measured continuously on a suitable ammeter and shall remain steady without interruption or excessive fluctuation throughout the five minute test. Insufficient current or intermittent current or arcing, indicated by large fluctuations of the ammeter needle, shall be evidence of defective electrical contact in the pipe line. The cause shall be isolated and corrected. Thereafter, the section in which the defective test occurred shall be retested as a unit and shall meet the test requirements to the satisfaction of the Engineer. All electrical connections shall be capable of carrying 60 amps. Any pipe cut and repaired with couplings shall have electrical connections. In addition to the above work the Contractor at the time the joint is made shall test each joint for contact effectiveness. The payment for electrical conductivity shall be included in the cost of the new water main. No other payment shall be made.

13.07 Tapping Existing Water Mains 4 Inch and Larger

All work relative to tapping existing water mains shall be under the supervision of the Water Department Superintendent. The Contractor, after proper notice and coordination, shall have at the site adequate personnel, equipment and materials to properly install the tapping sleeve and valve. The existing water main shall be exposed and the pipe cleaned to accept the tapping sleeve. The sleeve shall then be installed and valve attached. The Contractor shall then perform the pressure test at (150#) for five (5) minutes in the presence of the project Inspector. After testing, personnel from the Water Department will make the tap using City equipment. The Contractor will assist as necessary. No charges shall be made to the Contractor by the City for such described work.

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13.08 CLEANING AND DISINFECTING

13.08.01 Flushing

After the pressure test, flush out the water main until the water runs clear. Each valve section of newly laid pipe should be flushed separately with water from existing water mains. All disinfecting shall be done in accordance AWWA Standard C651.

13.08.02 Disinfecting

Disinfect the pipe lines with chlorine. The preferable point of application of the chlorinating agent is at the beginning of the new pipe line, or any valve section of it and through the stand pipe or a corporation cock inserted in the horizontal axis of the newly laid pipe. Water from existing water mains should be controlled to flow very slowly into the newly laid pipe during application of chlorine. Partially open the end-most hydrant or valve on the section of pipe line under treatment to permit the flow of water through the pipe line. Continue treatment until the water flowing from the far end of the main contains a chlorine residual of at least 50 parts per million. Stop the flow of water and chlorine by closing appropriate openings. See Sections 13.08.05 and 13.08.06 for information on chlorine products and methods of application) A field test shall be done for determining that the proper amount of chlorine residual is in the new pipe line, the test shall be done by the Contractor with testing equipment approved by the Engineer.

13.08.03 Disinfecting Duration

Permit the treated water to remain in the pipe line for at least 24 hours, following which period the main shall be thoroughly flushed until all of the heavily chlorinated water is removed. The Contractor will test the water to see that this has been accomplished.

13.08.04 Sampling

The Engineer will schedule with the water filtration plant for sample pick-ups. (First sample pick-ups shall be done Monday through Thursday, no first sampling will be done Friday through Sunday) No flushing of the main being tested shall be done after the first sample is taken. A second sample shall be taken 24 hours after the first sample. A 48 hour test is required for each sample. If the results of the samples are unsafe, a repeat of the chlorine treatment and sampling is necessary. Sampling shall be taken one per city block but not to exceed 600 feet. Sampling should never be collected from hoses or fire hydrants, Sampling shall be from stand pipes or a corporation tap with a copper pipe extension. Sampling points shall have a valve and a copper gooseneck assembly. Cost of collecting samples and laboratory analysis shall be paid for by the City of Muskegon, up to a maximum of two tests per

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section. Any additional testing will be at the Contractors expense. All materials, labor, equipment and tools for conducting the cleaning and disinfecting treatment shall be furnished by the Contractor without cost to the City.

13.08.05 Chlorine Products

Chlorine products for disinfecting water pipes are available in several forms. The most convenient forms are as follows:

A. Liquid Chlorine is available in 100 and 150 lb. steel cylinders. The pressure of the chlorine in the cylinder varies with the outside temperature and will usually be found to vary between 40 and 140 lbs. per square inch.

B. High test calcium hypochlorite is a powder and is available in five pound cans and 155 pound drums. The chlorine is approximately 65% to 70% ("Perchloron" and "HTH" are commercial products).

C. Liquid laundry bleach is available in pint, quart, and gallon bottles at most grocery stores. The chlorine content is usually 5-1/4% ("Clorox" and "Roman Cleanser" are commercial products).

13.08.06 Liquid Chlorine Application

Liquid chlorine should be applied to water mains by means of solution feed chlorinating device with a power operated booster pump. High test calcium hypochlorite or liquid laundry bleach must be prepared as a water mixture for introduction into the water mains. The powder should be made into a paste and then thinned to about a 1% chlorine solution (10,000 parts per million). The preparation of a 1% chlorine solution requires the following proportions of powder or liquid laundry bleach to water.

<u>Product</u>	<u>Amount of Compound</u>	<u>Gals. of Water</u>
High test calcium Hypochlorite 65% to 70%	1 lb	7.50
Liquid laundry bleach 5-1/4%	1 gal	4.25

Prepare the 1% chlorine solution in a container and permit solids to settle. Apply the clear supernatant solution to the main by pumping through a power operated chemical feeder. The following table indicates the amount of chlorine required for each one hundred feet of various pipes.

<u>Size of Pipe</u>	<u>Vol. gals. In 100 ft. pipe</u>	<u>Amounts of chlorine or chlorine solution per 100 ft of main for 50 p.p.m.</u>
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CITY OF MUSKEGON SPECIFICATIONS FOR WATER MAINS

		Chlorine 100%	1% Chlorine Water Solution
4"	65.3	.027 lbs.	1/3 gal.
6"	146.5	.061 lbs.	3/4 gal.
8"	261.0	.108 lbs.	1-1/3 gal.
10"	408.0	.169 lbs.	2 gal.
12"	588.7	.240 lbs.	3 gal.
14"	798.3	.331 lbs.	4 gal.
16"	1044.0	.433 lbs.	5-1/3 gal.
18"	1321.2	.548 lbs.	6-3/4gal.
20"	1618.0	.670 lbs.	8-1/4 gal.
24"	2348.7	.973 lbs.	12 gal.
30"	3669.9	1.521lbs.	18-3/4 gal.
36"	5284.6	2.190 lbs.	27 gal.

13.09 METHOD OF MEASUREMENT AND PAYMENT

13.09.01 Water main Pipe

Water main Pipe shall be measured by lineal feet of pipe in place, including the lengths of fittings and valves, as measured along the center line of the pipe. At hydrant leads, water main pipe shall be measured by lineal foot from the centerline of the main to the centerline of the hydrant including fittings and valves.

13.09.02 Valves and Fittings

Valves and Fittings shall be paid for as "each", and the unit price shall include the cost of all materials and accessories, testing installation, restraining devices and labor necessary for proper operation.

13.09.03 Restraining Devices

Restraining devices, thrust blocks, retainer glands, tie rods, etc., shall be incidental to the piping costs and the cost of which shall be included in the unit price for water mains and / or valves, fittings, etc.

13.09.04 Hydrants

Hydrants shall be paid for as "each", and shall include all materials, accessories and labor to install this item in the proper manner. Hydrant valves shall be paid for separately as an "each" item but the cost of all the restraining devices is incidental and should be included in the cost of the pipe in place.

Project Specifications

Owner: City of Muskegon, Muskegon County, Michigan

Project Title: Water System Improvements: Butler Street and Catherine Avenue
DWRP Project Number: 7717-01

Project #: 2240838

1 GENERAL

1.01 Specifications

Work under this Contract must be completed in accordance with the following:

General and Supplementary Conditions

Insurance Specifications

Standard Specifications

Section 2: Specifications for Excavating, Trenching and Backfilling for Utilities

Section 3: Specifications for Surface Construction

Section 5: Specifications for Storm Sewer

Section 6: Specifications for Sanitary Sewer

Current MDOT Standard Specifications for Construction

MDOT Standard Plans/Special Details

MDOT Special Provisions (contained herein)

City of Muskegon Standard Specifications for Water Main

The General Conditions, Supplementary Conditions, Insurance Specifications, and Project Specifications of this contract will supersede any conflicting provisions in the referenced standard specifications.

Project Specification section numbering generally follows the numbering of the corresponding Standard Specification section. Unrevised Standard Specification sections may not be listed in the Project Specifications but are still applicable. Project Specifications without a corresponding Standard Specification have a unique section number.

1.02 Preconstruction Site Documentation

Contractor must document the condition of the project area prior to construction. Contractor must use digital video and photography to document pre-construction conditions.

Pre-construction documentation will be made available to the Owner and Engineer upon request.

Pre-construction site documentation collected by the Owner and Engineer will also be made available to the Contractor upon request.

In the event of a dispute regarding pre-construction conditions, documentation from the Owner, Engineer, and Contractor will be reviewed to determine pre-construction conditions.

1.03 Project Management

1.03.01 Project Schedule

Contractor must provide a detailed construction schedule to the Owner and Engineer at or prior to the pre-construction meeting. Contractor must be responsible for coordination of all work activities.

Contractor is responsible for sequencing construction operations in an efficient manner to minimize the length of service interruptions and to meet the Contract completion dates. See Agreement for additional project schedule information.

1.03.02 Project Coordination

Contractor must coordinate and cooperate with the Owner, Engineer, local businesses, local schools, and other construction projects.

Where Contractor's operations, including offsite haul routes and permitted traffic impacts, may affect others performing work in the area, Contractor must coordinate schedules to minimize impacts to others performing work in the area.

1.03.03 Project Emergency Contact Information

Contractor must provide Owner and Engineer contact information for the project superintendent and foreman.

Contractor must provide 24-hour emergency contact information and must have personnel available to address an emergency situation related to the Contractor's work throughout the duration of the entire project.

1.03.04 Project Meetings

Project meetings will be scheduled biweekly throughout the project. Meetings will be scheduled at the request of the Engineer and will facilitate the coordination of construction activities and the Contractor's adherence to the project schedule. Contractor representative must be present at the meeting.

1.03.05 Submittals

Contractor must submit descriptive information regarding the following:

Water Main Materials and Appurtenances
Storm Sewer Materials and Appurtenances

Sanitary Sewer Materials and Appurtenances
Pipe Cleaning, Pressure Testing, and Disinfection Plan
Imported Aggregates (road gravel, sand, etc.)
HMA Mix Designs
Restoration Materials (seed mixes, etc.)
Dewatering Plan

Specific submittal content requirements must be coordinated with the Engineer.

Descriptive information may consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information necessary to illustrate conformance with the Contract Documents. The Contractor must be responsible for the accuracy and completeness of the information contained in each submittal and must ensure that the material, equipment or method of work implemented is as described in the submittal. The Contractor must initial and sign each submittal, certifying their review of the submittal and its compliance with the Contract Documents.

1.03.05.01 Transmittal Procedure

Submittals must be submitted electronically via the Prein&Newhof Plan Room. Submittals must include clear identification of the material, equipment or method of work, and any variations from the Contract Documents. A unique number, sequentially arranged, must be noted on the transmittal form accompanying each item's submittal.

Submittals must have the following naming format: Submittal Number – Specification Section – Description.pdf (Example: 001-III.3.-Water Main Valves.pdf). Resubmittals must follow the same general format with a sequential letter following the submittal number, i.e. A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively (Example: 001A-III.3.-Water Main Valves.pdf.)

Contractor must be given a Login ID and Password to the Prein&Newhof Plan room. The website for the Prein&Newhof Plan Room is <http://www.preinnewhof.com/plan-room/>. Upon logging into the website, Contractor will have access to a project folder labeled with the name of the Owner and Project. This folder will only be accessible to the Contractor, Owner, and Engineer.

Login and password will not be provided to subcontractors. If the Contractor provides their login information to their subcontractors, Contractor assumes responsibility for the subcontractor's actions.

Within the "Project Folder" there will be a "To Be Reviewed" folder and a "Reviewed" Folder. Contractor must upload submittals in PDF format to the "To Be Reviewed" subfolder. The time and date of the upload will be logged and automatic email notifications will be sent.

Within 15 calendar days, reviewed submittals will be posted in the "Reviewed" folder. Automatic email notifications of the upload will be sent.

The Engineer will update the “Shop Drawing Status Log” and post it in the Project Folder as submittals are received and reviewed, where it will be accessible by the Owner, Contractor, and Engineer.

Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

1.03.05.02 Review Procedure

If the review indicates that the material, equipment or work method is in general conformance with the design concept and complies with the Drawings and Specifications, submittal copies will be marked "NO EXCEPTIONS TAKEN". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.

If the review indicates limited corrections are required, submitted copies will be marked "FURNISH AS CORRECTED". Contractor may begin implementing the work method by the submittal in accordance with the noted corrections.

If the review reveals that the submittal is insufficient or contains incorrect data, submitted copies will be marked "REVISE AND RESUBMIT". If the review indicates that the material, equipment or work method is not in general conformance with the Contract Documents, copies of the submittal will be marked "REJECTED". Submittals with deviations which have not been identified clearly may be rejected.

Except at its own risk, the Contractor must not undertake work covered by submittals marked “REVISE AND RESUBMIT” or “REJECTED” until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "FURNISH AS CORRECTED".

If the review indicates “ACKNOWLEDGED RECEIPT”, the submittal under review has been appropriately noted and filed. No further action is required for a submittal so noted.

1.03.05.03 Effect of Review of Contractor’s Submittal

Review of Drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, will not relieve the Contractor of its responsibility for errors therein and will not be regarded as an assumption of risks or liabilities by the Engineer or Owner, or by an officer or employee thereof, and the Contractor will have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed.

Review of Drawings also will not relieve the Contractor of responsibility for the proper fitting and construction of the work nor for the furnishing of materials or work required by the Contract and not indicated on the Drawings.

A mark of "NO EXCEPTIONS TAKEN" or "FURNISH AS CORRECTED" will mean that the Owner has no objection to the Contractor, upon its own responsibility,

using the plan or method of work proposed, or providing the materials or equipment proposed.

1.03.06 Construction Observation

Construction will be observed by Prein&Newhof and/or the Owner.

Contractor must provide a minimum 72 hour written notice (email is acceptable), exclusive of weekends and holidays, to the Engineer and Owner prior to conducting any on-site work.

1.03.07 Construction Staking

Unless otherwise specified, construction stakes will be furnished by the Engineer. Contractor must give 72 hour written notice (email is acceptable), exclusive of weekends and holidays when requesting stakes.

Contract must coordinate and schedule their work and the work of their subcontractors to minimize the number of staking requests submitted to the Engineer. Staking requests must be prepared to incorporate a full day of staking in each survey crew mobilization. Additional staking requests made by the Contractor will be at the Contractor's cost.

Contractor must exercise proper care in the preservation of all stakes set for their use or the use of the Engineer and if such stakes are damaged, lost or removed by Contractor's operation, the cost of resetting may be charged to Contractor.

Any irregularity in grade and/or line stakes discovered by Contractor must be reported to the Engineer for correction before proceeding with the work.

Contractor must provide additional methods, materials, or equipment as may be necessary to facilitate lay out, inspection, and construction of the work. Contractor must assume full responsibility for all detailed dimensions and elevations measured from the lines, grades and elevations established by the Engineer.

The construction stakes must be left in place until the work has been completed and inspected. In the event of discrepancies in the location or grade of the work, Contractor must be responsible for making the necessary corrections unless grade stakes are left in places that show evidence of an error in staking.

Unless otherwise specified, construction stakes will be furnished by the Engineer as described below.

Storm Sewer – Centerline of manholes will be staked with a “here” position, an offset and either a line stake or another offset depending on site conditions. Catch basins or manholes that are designed in the curb and gutter or bituminous valley will be staked at the back of curb or back of bituminous valley at the structures with a “here” position, offset and line or second offset stake. If a sewer run is over 75 feet in length, a 50-foot check points will be provided.

Water Main – Water main will be staked every 100 feet plus special conditions (hydrant tees, valves and change in slope or direction). These stakes will be provided with a minimum offset of 10 feet.

Sanitary Sewer – Centerline of manholes will be staked with a “here” position, an offset and either a line stake or another offset depending on site conditions. Check points will be provided at 50 feet, 100 feet and every full hundred feet thereafter unless the last point is less than 125 feet.

Road Staking with Concrete Curb and Gutter – In radial sections, stakes will be provided for the radius points and back of curb with flowline elevations at end of returns, high points, low points and/or quarter points. In straight line sections, stakes will be provided for back of curb with flowline elevations every 50 feet along with high and low points.

1.03.08 Material Testing

1.03.08.01 General

Owner reserves the right to sample and test any of the materials required for the proposed construction, either before or after delivery to the project, and to reject any material represented by any sample which fails to comply with the minimum requirements specified.

Contractor must furnish all materials reasonably required for sampling, testing and analysis necessary for the testing of materials as required by these specifications.

If any material fails to meet the specified requirements, all material represented by the sample must be rejected unless the Contractor can demonstrate through additional tests, at the Contractor’s own expense, that the remainder of the material is satisfactory.

Upon request, Contractor must provide certified standard test reports for materials used on the project.

1.03.08.02 Compaction

Engineer will perform required compaction testing. Contractor must provide Engineer a minimum 48 hours advance notice prior to performing work requiring compaction testing.

1.03.08.03 Backfill Materials

Contractor must provide a source list and gradation test results for all controlled fill backfill, road subbase, and aggregate base materials.

Sampling and testing frequencies must be per MDOT requirements and must be no less than the following:

Coarse, Dense-Graded, and Open-Graded Aggregates: 1 sample per 1,000 ton (1 sample per 10,000 ton if pre-qualified)

Granular Material, Class II: 1 sample per 3,000 cyd (regardless of pre-qualified status)

Granular Material, Class III: 1 sample per 10,000 cyd (1 sample per 30,000 cyd if pre-qualified)

A minimum of 1 test must be completed for each common supply of off-site material.

On-site excavated material utilized for trench backfill must be tested once per stratum. Additional samples will be required at Engineer's discretion.

No separate payment will be made for gradation tests.

1.03.08.04 Concrete

Contractor must engage a qualified testing agency to perform field tests and prepare test reports. All test reports must be provided by the testing agency to the Owner and Engineer.

No separate payment will be made for concrete testing. Cost for concrete testing must be included in the concrete improvement unit price pay items.

Contractor must verify in writing that all materials meet MDOT specifications and must provide copies of MDOT test reports and/or samples for testing upon receipt.

Testing of composite samples of fresh concrete obtained according to ASTM C 31 and ASTM C 172 must be performed according to the following requirements:

Testing Frequency: Obtain one composite sample, four specimens, for each day's pour of each concrete mixture less than 50 cu. yd., plus additional sets of four specimens for each additional 50 cu. yd. or fraction thereof.

Slump: ASTM C 143; 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 or every other concrete delivery truck. Perform additional tests when concrete consistency appears to change.

Air Content: ASTM C 231, 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.

Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above; and one test for each composite sample.

Compressive-Strength Test: ASTM C 39; test one laboratory-cured specimen at 7 days and one set of two laboratory cured specimens at 28 days. A compressive-strength test must be the average compressive strength from a set of two specimens from the same composite sample and tested at the age indicated.

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.

Reporting: Test results must be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests must contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

1.03.08.05 HMA

Contractor must engage a qualified third-party testing agency disassociated with the asphalt production facility to perform sampling, testing, and prepare test reports. All test reports must be provided by the testing agency to the Contractor, Owner, and Engineer.

Samples are to be collected to verify asphalt production is within Uniformity Tolerance Limits based on the Job Mix Formula provided by the Contractor prior to paving. Samples must be collected in accordance with Michigan Test Method (MTM) 313 or MTM 324. Sampling and testing frequencies must be no less than the following:

Production/Mainline-Type Paving: A minimum of 2 samples, 20,000 grams each for each day of production paving, for each mix type. A minimum of 3 samples for each mix type regardless of the number of days of production.

Non-Production Paving (approaches and patching): visual inspection.

Samples are to be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing.

Sample results must be shared within 7 calendar days after sample collection.

Basis for Uniformity Tolerance Limits, penalties, and payment will be per MDOT 20SP-501I-01 (see Appendix B), except that Contractor will be responsible for all testing and reporting, and Owner will have the right to request dispute resolution testing and select an independent lab for testing.

1.03.09 Construction Record Drawings

The Contractor must maintain a set of construction record drawings throughout the project.

The Contractor must make the drawings available to the Owner and Engineer in a timely manner upon request. A set of construction record drawings must be submitted to the Engineer at the completion of the project.

1.04 Permits

The Owner will obtain an Act 399 Permit for Water Supply System Construction from the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

The Owner will obtain an Act 451 Part 41 Permit for Sanitary Sewer Construction from the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

The Owner will obtain a Soil Erosion and Sedimentation Control (SESC) permit from Muskegon County.

The Contractor must obtain all plumbing permits from the City of Muskegon for work inside buildings on water service replacements.

The Contractor must complete all work according to the aforementioned permits and must be responsible for any fines that may be incurred due to failure to meet any of the conditions of the permits.

The Contractor must obtain all other permits necessary for construction of this project, including building permits. The Contractor must pay for any charges or bonds required by agencies for permits, inspections, or similar charges to construct this project as shown on the drawings. The cost of obtaining permits must be included in the major items of construction, unless otherwise specified. The Contractor must comply with all permit conditions.

Permits obtained by the Owner will be provided upon request or as soon as available. Contractor is responsible to post permits at the job site if required.

1.05 Datum Plane

All elevations indicated or specified refer to the datum listed on the drawings and are expressed in feet and decimal parts thereof, or in feet and inches. The Contractor must field verify actual site conditions. The Contractor must be held responsible for the correct elevation of his work. Construction activity must integrate new facilities with existing construction.

1.06 Existing Utilities

1.06.01 General

Contractor must cooperate with the utility companies in any repair, relocation or other work to be performed on the utility caused by the construction of the contract.

Contractor must refer to Section 5.05 of the Supplementary Conditions as to the responsibilities of the Contractor regarding underground facilities. No claim for additional compensation will be allowed based on the work of the utility companies to replace, relocate, or repair their utility in the project area whether noted on the drawings or in the specifications or if deemed necessary during construction.

1.07 Community Relations and Protection of Adjacent Property

The Contractor is entirely responsible for all damage to water pipes, electric conduits or cables, drains, sewers, gas mains, poles, communication lines, railroad bridges and tracks, streets, pavements, sidewalks, curbs, fences, street and highway bridges and culverts, building foundations, retaining walls or other structures of any kind met with during the progress of the work, and is liable for damages to public or private property resulting therefrom.

The Contractor must shore, brace, install sheeting, and/or then take all precautions necessary to protect against damage to existing structures due to dewatering, excavation, backfilling or other construction at the site. The Contractor must minimize the amount of excavation and site disturbance and must save existing structures and landscaping where possible.

1.08 Mobilization, Max 10%

Mobilization must be per section 110 of the current MDOT Standard Specifications for Construction.

When the percentage of the original contract amount earned is less than 5%, Contractor may submit proof of payment for costs associated with project specific bonding and insurance not specifically covered elsewhere. Costs will be applied toward the “Mobilization, Max 10%” pay item.

1.09 Traffic Control

The work must be in accordance with the requirements of the current MDOT Standard Specifications for Construction, the current Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), and as specified herein.

Contractor must coordinate work within the right-of-way with the Owner. Contractor must also inform the local police, ambulance service, fire department and public school system in advance of planned closures. Access to fire hydrants, water and gas valves must be maintained at all times during construction.

1.09.01 Maintaining Traffic

Contractor must limit disruption to the area by sequencing events. Contractor must provide access at night and on weekends for all properties in the immediate construction area. A minimum 13-foot drivable lane width for emergency vehicle access must be maintained at all times. Contractor must maintain the drivable lane as necessary to provide a smooth, dust free condition for adjoining properties.

Contractor must give property owners 24-hour notice prior to any driveway closure. Driveway closures must only be as necessary to perform the work herein. Driveways must be immediately restored following work within the driveway. Driveway closures must not extend overnight unless specifically approved by the Owner or Engineer and coordinated with the property owner. Contractor must temporarily restore driveways with 21AA or 22A road gravel as necessary to provide property owners access to their property. Temporary drives must be maintained as necessary to keep a smooth riding

surface. Maintenance of temporary drives must be included in the major items of construction.

Contractor must coordinate traffic control plans with other contractors working in the area to ensure continuity of traffic controls across projects.

1.09.01.01 Maintaining Traffic - Phasing and Limitations

Terrace Street traffic must be maintained throughout the project. Traffic regulators/flagging must be used during work within the intersection to maintain through access for the Muskegon Area Transit System (MATS) bus route.

Work within Irwin Street must be limited to 30 days. This work may be completed at anytime during the project. All work must be completed within the 30 days including final paving of HMA. Following completion the road closure signage must be removed.

1.09.02 Existing Signs

Existing regulatory, warning, and guide signs must be maintained by the Contractor. This includes all labor, materials and equipment necessary to temporarily relocate existing signs.

1.09.03 Payment

The “Traffic Control” pay item must include all costs associated with completing the traffic control items as specified herein, including maintaining traffic, relocating existing signs, and providing temporary traffic control signage.

1.10 Site Maintenance

The construction site must be maintained in a neat and orderly manner on a daily basis. Litter, debris, construction material, and other items must be properly handled to the Owner’s requirements. Construction materials and debris must not be disposed of in the excavation.

Protection and maintenance of public safety is of critical concern. Trenches left open must be properly fenced with safety fencing; caution tape must not be utilized. No trenches must be left open more than 24 hours. Manholes must not be left open.

1.10.01 Right-of-Way and Easements

Contractor must confine the work to the rights-of-way and easements as shown on the drawings. Written permission for use of any other area required for equipment or material storage or for construction operation must be the responsibility of the Contractor.

1.10.02 Mail Service/Refuse Removal

The contractor must temporarily relocate mail boxes that interfere with construction to a location easily accessible to the U.S. Post Office. Mail boxes must be replaced in a condition, elevation and location equal to that existing prior to construction. If the mailbox to be replaced was not in accordance with U.S Post Office requirements prior to construction, the Contractor must install the mailbox in such a way that it is as similar to

pre-construction condition as possible while also being in compliance with the U.S. Post Office requirements.

Contractor must maintain access to the front yard of properties for parcel delivery services.

Contractor must coordinate activities with waste haulers to allow continued service to the area under construction. This will require access to the individual properties or a central location for pick up. The Contractor will be responsible for transporting waste containers to a centralized location and returning them to their respective properties following trash pickup.

Contractor must provide residents with 24-hour notification of temporary mailbox relocation or refuse removal. The relocation of mail boxes and the facilitation of refuse removal must be incidental to the major items of construction.

1.10.03 Noise Control

Contractor must exercise reasonable care to minimize noise generated by construction operations, bypass pumping, dewatering (if necessary), and all other activities. The Contractor must work with the Owner or Engineer to address all complaints from property owners.

1.10.04 Dust Control

All haul roads, detour roads and other public and private roads (including backfilled trenches), driveways and parking lots used by the Contractor must be maintained in a dust free condition during the life of this Contract. The control of dust must be accomplished by sweeping and/or application of dust control materials, and must be done as often as is necessary to control the dust, or within 6 hours, including weekends, after notification to do so by the Owner or Engineer.

The cost of providing dust control must be included in the major items of work. Should the Contractor be negligent in his duties in providing dust control, the Owner will take the necessary steps to perform such work and will charge the Contractor for all costs.

1.10.05 Protection of Natural Resources

Contractor must take all necessary steps to prevent damage to fish and game habitats and to preserve the natural resources of the State. Excavation and backfill must be carried out so as to minimize discharge of damaging material to any stream, lake, or reservoir.

Contractor must exercise caution in the discharge of waters from pumps, deep wells, or well point systems, in order that such discharges do not cause erosion, siltation, soil depositions, etc., in sewers, streams or other water courses or drainage structures.

Contractor must not permit any sand or debris of any kind to enter the existing ditches, streams, storm sewers or culverts.

The rules and regulations of all work must comply with Part 31 (Water Resources Protection), Part 301 (Inland Lakes and Streams Act), Part 91 (Soil Erosion), and Part

303 (Wetland Protection) of P.A. No. 451(Natural Resources and Environmental Protections Act of 1994).

1.10.06 Protection of Work

Contractor must protect the work until it is accepted by the Engineer. Any part of the completed work that is damaged prior to acceptance by the Engineer must be replaced at the expense of the Contractor.

1.11 Payment

Payment will be made for the proposal items only. All of the work specified herein and indicated on the contract drawings must be considered to be included in the unit prices shown in the proposal.

2 EXCAVATING, TRENCHING, & BACKFILLING FOR UTILITIES

See Standard Specification for Excavating, Trenching, and Backfilling for Utilities for complete specifications. The following sections only serve to supplement and modify the Standard Specifications.

2.03 Removal of Surface Improvements

2.03.01 Pavement Milling

Cold Milling HMA Surface must be in conformance with Section 501 of the MDOT 2020 Standard Specifications for Construction. Milling must be to the limits shown on the drawings.

Measurement for payment of Cold Milling, HMA Surface will be per square yard and must include all labor, materials, and equipment required for milling of the existing roadway as proposed.

2.03.02 Pavement Removal

Pavement removal must be in conformance with Section 204 and Section 501 of the MDOT 2020 Standards Specifications for Construction. Removal must be to the limits shown on the plans and must include removal of all HMA surfaces, concrete pavement, concrete drive approaches and brick pavement.

Measurement for Pavt, Rem, Modified will be per square yard and must include all labor, materials, and equipment required for removal of the existing roadway and drive approaches as proposed.

2.03.03 Curb and Gutter Removal

Curb and gutter removal must be in conformance with Section 204 of the MDOT 2020 Standards Specifications for Construction. Removal must be to the limits shown on the plans and must include integral and non-integral curb and gutter removal. Saw cutting required for this item of work must be included in the Curb and Gutter, Rem pay item.

Measurement for Curb and Gutter, Rem will be per foot and must include all labor, materials, and equipment required for removal of the existing curb and gutter as proposed.

2.03.04 Sidewalk Removal

Sidewalk removal must be in conformance with Section 204 of the MDOT 2020 Standards Specifications for Construction. Removal must be to the limits shown on the plans and must include all saw cutting required for this item of work.

Measurement for Sidewalk, Rem will be per square yard and must include all labor, materials, and equipment required for removal of the existing sidewalk as proposed.

2.05 Existing Underground Utilities and Structures

2.05.06 Limiting Vibrations

The Muskegon County Resource Recovery Center (MCRRC) owns and operates a 36-inch sanitary pressure main along Ambrosia Street. The line is located along the west side of the Ambrosia right-of-way and crosses Catherine Street within the project limit. This pipeline must be protected throughout the project. Vibrations must be limited by the Contractor within the proximity of the pipeline at all times. Compaction of subgrade and aggregate must be by small plate compactors within 25 ft of the pipeline. The Contractor must not use vibratory compaction for paving operations within 50 ft of the pipeline. Excavating around the pipe will not be allowed.

2.06 Excavating and Trenching

2.06.06 Dewatering

2.06.06.01 Dewatering Contaminated Groundwater

A groundwater restricted zone has been established by ordinance (Section 34, Article III Ordinance No. 2039 of the City of Muskegon Code of Ordinances) within the project limits. The restricted zone within the project limit is from Pine Street to Wood Street.

The Contractor must submit a dewatering plan and schedule to the Engineer a minimum of 30 days prior to installation of the dewatering system. The plan and schedule must provide information on equipment to be used for dewatering, depth of dewatering, location of discharge, anticipated flow rate and duration of discharge. Dewatering operations must be limited to the minimum time and depth required for construction.

Prior to continuous operation of the dewatering system, Contractor must install and make functional the dewatering equipment, operate for a minimum of 3 hours and help facilitate collection of an initial groundwater sample by the Owner. Analysis of the groundwater sample will be completed by the Owner. Results will be shared with the Contractor. Dewatering may not continue until sample results have been received.

Based on the sample results the Owner will direct the Contractor where to discharge the dewatering water. Dewatering discharge will either be into the storm sewer or the sanitary sewer.

3 SURFACE CONSTRUCTION

See Standard Specification for Surface Construction for complete specifications. The following sections only serve to supplement and modify the Standard Specifications.

3.02 Earthwork

Contractor must restore the project area to original grade, unless a proposed grade is shown which indicates otherwise. Fill outside of the road influence and any surface improvements may be any suitable trench backfill as defined by Section 2.12 of the Standard Specifications for Excavating, Trenching, and Backfilling for Utilities.

3.02.01 Machine Grading, Modified

Machine Grading must be in conformance with Section 205 of the 2020 Standard Specifications for Construction except that it must include loading and hauling of excess material, placement of any Granular Class II fill material, and grading to the depth required to build the cross section shown on the drawings.

Machine grading must also include grading, shaping and compacting of the subgrade required to construct the proposed surface improvements such as the proposed pavement, curb and gutter, drive approaches, sidewalks, etc. to the required lines and grades indicated on the drawings and cross-section details. It must also include the removal of all sod, topsoil, excess soils, geo-fabrics and other unsuitable items that interfere with construction not paid for under separate items. This work must also include relocation of minor items that interfere with construction such as mailboxes, landscaping, and address posts.

Measurement for payment of Machine Grading, Modified will be in stations along the centerline of the proposed roadways which must include all work within the right-of-way (on both sides of the centerline), easements, and to the construction limits on intersecting streets.

3.05 Hot Mix Asphalt (HMA) Streets and Driveways

The Contractor must provide Job Mix Formulas for the project from an approved independent laboratory at least two weeks prior to starting HMA construction.

3.05.01 Materials

The material for Aggregate Base must be MDOT 21AA, modified. The gradation must be as shown.

MDOT	1½"	1"	½"	No. 8	No. 30	LBW
21AA-Mod.	100	85-100	50-70	20-35	8-22	0-7

Footnote – "E" in Table 902-1 must not apply to assure the base is permeable

Physical Requirements:

Crushed material, Min95%

Loss, % Max. Los Angeles Abrasion (MTM 102)50%

No Slag or Crushed Concrete will be allowed for aggregate base. The finished grade of the aggregate surface must be smoothed and shaped to the required line and grade with

a tolerance of +/- 3/8" approved by the Engineer prior to placement of bituminous leveling course.

3.05.02 Construction Methods

HMA surfaces must be swept prior to application of the bond coat.

3.08 Concrete Pavement and Driveways

Concrete drives removed during construction must be replaced with 6" thick nonreinforced concrete installed per MDOT 2020 Standard Specifications for Construction Section 801. Payment will be per square yard as given in the proposal

3.09 Concrete Sidewalk

Detectable warning plates must be fiberglass material. Coloring of the plates must be FED 20109.

3.12 Turf Restoration

The Contractor must over seed and/or repair and replace the restoration as often as necessary to produce a close stand of grass, at no additional cost to the Owner. Payment for restoration will be measured by stations along the centerline of the road and will include any necessary restoration on either side of the roadway and on intersecting streets to the full extent of the disturbed areas including areas for water service and sewer lateral installation.

3.12.09 Water Service, Restoration, Private

The item "Water Service Restoration, Private" must include all restoration performed beyond the Right-of-Way which were disturbed during water service installation. It must include furnishing and placing topsoil, seed, fertilizer and mulch to all disturbed lawn areas. Furthermore, it must also include removal and replacement of all landscaping disturbed during installation of water services including mulch, flowers, shrubs, hardscaping such as walls or edging etc. and removal and replacement of fencing as necessary to complete the work. The restoration must also include repair and replacement of existing irrigation systems which are disturbed during installation. Replacement must be with an equal replacement in accordance with the Standard Specifications for Restoration. If the residence requests the Contractor to not replace elements of the landscaping the Contractor must receive such requests in writing with the homeowner's signature. Copy of the request must be provided to the Engineer.

Payment of Water Service Restoration, Private will be the unit price in the proposal and will be per water service. The price will include all labor and materials to meet this specification.

3.12.10 Irrigation Allowance

An irrigation allowance is available for repairs to private irrigation lines. Contractor may use their own unless the Customer requests their own irrigation contractor. Then the Contractor may hire the Customer's irrigation contractor for repairs, but payment will only be made for repairs to sections damaged.

5 STORM SEWER

See Standard Specifications for Storm Sewer for complete specification. The following sections serve only to supplement and modify the Standard Specifications.

Contractor must be responsible for maintaining storm sewer drainage during construction. No additional payment will be made for maintaining stormwater flow.

5.02. MATERIALS

5.02.08 Castings

All type B drainage structure covers must have the City of Muskegon Logo cast into it.

6 SANITARY SEWER

See Standard Specification for Sanitary Sewer for complete specifications. The following sections only serve to supplement and modify the Standard Specifications.

6.02 Materials

6.02.01 Sewer Pipe

6.02.01.01 Polyvinyl Chloride (PVC) Solid Wall Pipe

All PVC solid wall pipe must have a minimum wall thickness equal to a standard dimension ratio of 26 (SDR-26).

13 WATER MAIN

See City of Muskegon Specification for Water Main for complete specifications. The following sections only serve to supplement and modify the Standard Specifications. See Section 14 for water service requirements.

13.02 Materials

13.02.03 Provisions for Electrical Thawing

Delete section 13.02.03.a). Serrated Silicon Bronze Wedges will not be approved for use to obtain continuity. Continuity must be obtained using continuity gaskets or straps.

13.02.05 Gate Valves

All valves must be resilient seated valves that conform to AWWA C509 or AWWA C515, Standards for Resilient-Seated Gate Valves for Water Supply Service. The valves must be fully bronze mounted and must be furnished with O-ring packing. The valves must have a 2-inch operating nut and open to the right.

Valves must be EJ FlowMaster, Clow Valve Co. R/W Resilient Wedge, American Resilient Wedge, or equal.

13.03 Construction Methods

13.03.15 Temporary Service

Temporary water service may be required to maintain service during water main installation. If the alignment of the proposed water main is in conflict with the existing water main the existing water main must be removed. The Contractor must provide temporary service connections for those residences affected by a loss of water lasting longer than 12 hours. Temporary service may be supplied from existing hydrants or standpipes on the existing water main. Hydrants and standpipes on the proposed main may be used following acceptance of the water main. The temporary service must be connected to the house via a hose bib or to the existing curb stop if the private side water service is copper or plastic. Temporary connection to a galvanized steel water service line will not be allowed. Temporary service piping must be new material, NSF approved for use on potable water, must be disinfected prior to use, and tested in accordance with AWWA C651.

The Contractor must submit a Temporary Service Plan to the Owner and Engineer prior to implementation. Care must be taken to protect temporary service lines from damage while in use. Temporary water service must be included in the major items of work and no additional payment will be made.

13.04 Water Services

See section 14 Water Service Line Replacement of the project specifications for water service requirements.

13.09 Measurement and Payment (Replace Section 13.09 with the following)

All proposed construction will be measured for payment by the Engineer in accordance with the items listed in the proposal.

The unit price bid for each proposal item will be payment in full for completing the work, ready for use as specified.

Removal of existing water main and appurtenances must be considered incidental to other major items of work unless otherwise noted and provided for by specific proposal items.

All labor, materials, and costs associated with excavation, bedding, and backfill for water main items must be included in the price of those items unless otherwise noted and provided for by specific proposal items.

All labor, materials, and costs associated with flushing, chlorination, and testing must be considered incidental to other major items of work unless noted otherwise.

13.09.01 Water Main, ___ Inch, Tr Det G

Measurement of the length of the main will be in feet along the centerline of the main through any fittings along the length being measured and must include any joint restraint or polyethylene encasement required.

13.09.02 Hydrant

Hydrants will be measured as single units including all joint restraint, fittings, and extensions required to bring the hydrant to proper grade. The cost of the branch pipe will be paid as water main.

13.09.03 Fittings

Fittings such as bends, tees, crosses, plugs, reducers, and sleeves will be measured as single units and must include any joint restraint required. Sleeves must include all costs associated with connecting to existing water main. No additional payment will be made for oversized sleeves or fittings that may be necessary for connection to the existing water main.

13.09.04 Water Main, Valve & Box, ___ Inch

Valves will be measured as single units and must include valve box, joint restraint, and other materials as required for installation of the valve and valve box.

13.09.05 Water Main, Tapping Sleeve and Valve, 24" x 8"

Payment for Water Main, Tapping Sleeve and Valve, 24"x8" must include all materials and labor to install a tapping sleeve in accordance with Section 13.02.07 and tap the existing water main.

13.09.06 Water Main, Cut & Cap, ___”

Payment for Water Main, Cut & Cap, ___” must include all materials and labor to cut the existing water main and install a cap to allow for installation of the proposed water main while keeping the existing main live. The water main at these locations will be abandoned once the proposed water main is completed.

13.09.07 Water Main, Cut & Cap, Temp

Payment for Water Main, Cut & Cap, Temp, must include all materials to install a plug or cap on the existing water main at locations called out on the drawings. This item is only to be used to provide a temporary plug at connection points to the existing system to facilitate construction of the proposed main. The cap or plug must be removed when the final connections are completed. Caps or plugs on the proposed water main to facilitate testing are to be considered included in the major items of work and no additional payment will be made.

14 WATER SERVICE LINE REPLACEMENT

14.01 General

The Contractor must, unless otherwise noted, furnish all materials, equipment, tools and labor necessary to accomplish the installation of the designated water services. As used herein, water services must be considered to include all pipe, corporation stop, curb stops, curb boxes, meter pits and all necessary appurtenances to transport water from the water main to a point that is 18 inches inside the building wall or to the first valve inside the building wall, whichever comes first unless otherwise noted, or if materials in the field indicate it was already replaced.

14.02 Background Information

Service information provided on the drawings is based on available records. Actual material status and location have not been physically confirmed at all locations. Additional information such as service records and property owner contact information will be provided upon request.

The Owner will send out notifications to property owners regarding the service line replacement and will obtain Consent to Access forms from each resident. Forms will be provided to the Contractor once received. The Contractor must assist with obtaining Consent to Access forms from non-responsive properties via door knocking and door hangers. Work may not be performed on private property without signed Consent to Access forms.

14.03 Permits

The Contractor must obtain plumbing permits from the City of Muskegon for each water service to be extended onto private property. A plumbing permit will be required for each location where a water service is replaced beyond the right-of-way. Plumbing permit costs will be included in the Connect to Existing item. Permit fees will not be paid for services that are not replaced. A licensed plumber is required to complete the interior piping connection to the property.

Where new electrical grounding is required, the Contractor must obtain an electrical permit from the Owner prior to installation of grounding.

14.04 Coordination and Scheduling

The Contractor must coordinate/communicate schedule of shut down and reconnection of service with Resident/Bill Payer for each property. Owner will provide contact information available from billing records and consent to access forms.

All water service pipe connections including at the curb stop will be inspected under pressure by Safebuilt prior to backfill.

14.05 Water Service Material Verification

Contractor must verify and document materials on the private side of the customer's curb stop box/meter pit and at the point of entry inside the customer's building prior to proceeding

with water service replacement. If it is evident that both inspection points are not galvanized or lead pipe, then Contractor must not replace the private side service unless directed by the Owner. The material must be recorded and provided to the Owner.

14.06 Material

All materials must conform to the Owner's Standards "City of Muskegon Specifications for Water Main" Section 13.04 with the following amplifications.

14.06.01 Curb Box

Curb boxes must comply with Owner standard with the following revision, lid must be provided with a tracer wire terminal.

14.06.02 Water Service Piping

Between water main and curb box/meter pit: Water service must be copper in accordance with the City of Muskegon Specifications for Water Main.

Between curb box/meter pit and inside of building: Water Service may be Type "K" copper or Crosslinked Polyethylene (PEX) Tubing. PEX tubing must not be used in any location where there may be petroleum or chemical contamination in soil. PEX tubing must be PEX(A) for underground use. Locator wire must be installed with PEX tubing.

PEX Pressure Tubing must be PEX(A), in accordance with ANSI/AWWA C904, NSF 61.

14.06.03 Locator Wire

Locator wire installed in open trench must be #12 AWG Copper Clad Steel, High Strength with minimum 450 lb break load, with minimum 30 mil HDPE insulation thickness. Directional drilling/boring trace wire must be #12 AWG Copper clad Steel, Extra High Strength with minimum 1,150 lb break load with minimum 30 mil HDPE insulation thickness.

14.06.04 Private Side Valves

All valves inside residences must be brass/stainless steel, contain no lead and be rated 600 WOG. Valves must be ¼ turn ball valves. Gate valves are prohibited.

14.06.05 Water Filters

The Contractor must supply a water filter that meets NSF/ANSI 53 for removal of lead. The filter must be Brita Longlast+ or approved equal. Instructions for filter replacement must be left with the resident. Proof of delivery of filter to resident must be provided to the Engineer.

14.07 Installation

Water service pipe, corporation stops, and curb boxes must be installed according to manufacturer's instructions, these specifications, City of Muskegon Standard Specifications for Water Main, and in accordance with ANSI/AWWA C904, ANSI/AWWA C800-14.

14.07.01 Corporation Stops

Owner or Engineer will approve tap location prior to installation. Service lines below driveways should be avoided. Water services to be located at least 5-feet horizontally from sanitary sewer laterals. The tap must be installed at 12 degrees from horizontal above center of the pipe.

14.07.02 Water Service Tubing

The service tubing must be connected to the corporation stop and "goose-necked" for expansion purposes. Tubing must be installed perpendicular to the right-of-way with a minimum depth of bury of 5 ½ ft below finish grade. Services installed on private property must be drilled directly into the building if possible to minimize impacts to landscaping.

14.07.03 Curb Stop and Box

Curb Stop and Box must be located at the Right-of-Way line per Owner direction. Avoid placing curb boxes in concrete driveways or sidewalks where possible. Curb box must be extended to the surface and be flush with the finish grade. Curb stop and box must be placed on a section of the service that is perpendicular to the building being serviced without exception.

14.07.04 Building Penetration and Connections

The Contractor must grout and repair all building penetrations for the proposed service in a neat and watertight manner.

When PEX is run through foundation or basement walls, it must be protected by a rigid sleeve that spans the distance from within the wall out to the compacted pipe bedding in the trench. The point where the sleeve terminates inside the foundation or wall, the space between the PEX tubing and the sleeve must be sealed to prevent leakage into the building. In no case may petroleum-based caulk or sealant be used.

For all private side services, a new valve must be placed between the wall penetration and the interior meter setting or proposed connection point regardless of the presence of an

existing valve. If an existing valve is present, it must be removed and disposed of by the Contractor.

The first joint inside the residence must be completed with a brass mechanical fitting (threaded or compression). PEX bends will not be allowed for the first joint into the residence.

Water meters must be installed horizontally and supported independently from the water service piping. Pipe support must be installed at the meter if not present to ensure the meter is not placing weight onto the water service.

14.07.05 Locator Wire

If PEX Pipe is used, then a locator wire must be installed with the service line. Locator wire must be attached to the service line at approximately 5 foot intervals using tape or other suitable methods to ensure that wire is not dislocated during pipe installation and backfilling. All splices must use wire connectors that are dielectric silicone filled to seal out moisture and must be able to provide electrical conductivity.

The locator wire must be brought into the building with the service pipe and terminated and connected to the metallic curb box. A minimum of 2 feet of excess slack is required at each location neatly rolled up and attached to the service. Prior to acceptance, the Contractor must verify the continuity of the tracer wire in the presence of the Owner or Engineer and repair any breaks in the line.

14.07.06 Post Installation Flushing

The Contractor must flush the service line immediately after all connections have been completed in accordance with ANSI/AWWA C810-17: Replacement and Flushing of Lead Service Lines. Water must be flushed from an outside connection such as a hose-bib on the house side of the meter. This must be closest to the point of entry as possible. Flushing must be done at full velocity for at least 10 minutes.

The Owner will provide the customer with instructions on interior flushing.

14.07.07 Water Meters

The Owner reserves the right to replace water meters. If water meters are to be replaced, the Contractor must install new meter settings with new valves upstream and downstream of the new meter setting. The Owner will provide and mount the new meter. Contractor to coordinate with the Owner regarding meter replacements, temporary jumpers will not be allowed.

14.07.08 Final Inspection

Owner or Engineer will inspect all water services under pressure prior to backfill and all piping and appurtenances must be free of all drips. The Contractor is responsible for

scheduling final plumbing inspections. Documentation of approved plumbing inspections must be provided to the Owner/Engineer.

14.08 Electrical Grounding

If any water service is found to serve as building electrical ground, the ground must be relocated to proper ground per all current State and local building codes. The grounding wire may remain on the existing service if not disturbed.

If a new grounding rod is required, an electrical permit and inspection will be needed. Pricing for grounding must be submitted to the Owner and Engineer for review and will be processed with a change order.

14.09 Water Service Abandonment

Upon completion of each new water service connection, Contractor must remove and dispose of existing curb stop boxes and meter pits.

14.10 Special Situations

If the meter for a building on the project list is located outside in a pit, the Contractor must notify the Owner, and the Owner will work with the Contractor to move the meter inside if an appropriate location can be found. All work in the building must be done by a licensed plumber. The existing meter pit must be removed and disposed of by the Contractor.

14.11 Payment

Payment will be made per completed service line replacement according to the unit pricing as submitted in the proposal. Only items installed will be paid. Abandonment of existing services that are replaced as part of this contract must be included in the major items of work and no additional payment will be made.

14.11.01 Water Service, Corporation Stop, ___ Inch

Payment for “Water Service, Corporation Stop, ___ Inch” must include all labor and materials to tap the water main and install a new corporation stop. Payment will be per each as listed in the proposal.

14.11.02 Water Service, Curb Stop and Box, ___ Inch

Payment for “Water Service, Curb Stop and Box, ___ Inch” must include all labor and materials to install a new curb stop and box and terminate the tracer wire to the curb box. Payment will be per each as listed in the proposal.

14.11.03 Water Service, ___ Inch

Payment for “Water Service, ___ Inch” must include all labor and materials to install new water service line and tracer wire regardless of the water service location. Payment will be by the foot as listed in the proposal.

14.11.04 Connect to Existing

Will only apply once to each service replaced regardless of type of replacement. This item must include a new interior valve for all private side services. Payment will be per each as listed in the proposal.

14.11.05 Meter Setting

This item will include all labor and materials to remove the existing meter setting, salvage the meter to the Owner, install a new meter setting and downstream valve and coordinate with the Owner installation of the new meter. This item will only be used if the Owner elects to replace the existing meter. Payment will be per each as listed in the proposal.

Appendix A

DWRF Standard Contract Language



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Finance Division

NON-EQUIVALENCY PROJECTS CONTRACT BOILERPLATE LANGUAGE

Instructions:

The following is the required standard contract language that must appear in bidding documents of Clean Water State Revolving Fund and Drinking Water State Revolving Fund non-equivalency projects. Determination of equivalent vs. non-equivalent projects is made on a yearly basis as indicated in the Intended Use Plan (IUP) and will be communicated by your EGLE project manager. If you are unsure whether your project is equivalent, consult with your EGLE project manager.

- [American Iron & Steel Contract Language](#)
- [Davis-Bacon and Related Acts/Prevailing Federal Wages](#)
- [Labor Standards Provisions for Federally Assisted Projects](#)
- [Certification Regarding Debarment, Suspension, and Other Responsibility Matters*](#)

*Bidders should note this section contains instructions regarding forms/information that must be completed and included with any submitted bid.

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations.

American Iron and Steel Contract Language

The Contractor acknowledges to and for the benefit of the City of Muskegon (“Purchaser”) and the Michigan Department of Environment, Great Lakes, and Energy (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or the Drinking Water State Revolving Fund and such laws contain provisions commonly known as “American Iron and Steel (AIS);” that requires all iron and steel products used in the project be produced in the United States (“AIS Requirements”) including iron and steel provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the AIS Requirements, (b) all iron and steel used in the project will be and/or have been produced in the United States in a manner that complies with the AIS Requirements, unless a waiver of the requirements is approved or the State made the determination in writing that the AIS Requirements do not apply to the project, and (c) the Contractor will provide any further verified information, certification, or assurance of compliance with this paragraph, or information necessary to support a waiver of the AIS requirements, as may be requested by the Purchaser.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Davis-Bacon and Related Acts/Prevailing Federal Wages

P.L. 111-88 requires compliance with the Davis Bacon Act and adherence to the current U.S. Department of Labor Wage Decision. Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Contract Documents (see Wage Decision included herein) must be paid on this project. The Wage Decision, including modifications, must be posted by the Contractor on the job site. The "Contracting Agency" or "Contracting Officer" for Davis-Bacon Wage Decision posters on jobsites is the loan applicant/bond issuer. A copy of the Labor Standards Provisions for Federally Assisted Projects is included and is hereby a part of this contract.

Superseded General Decision Number: MI20240001

State: Michigan

Construction Types: Highway (Highway, Airport & Bridge xxxxx and Sewer/Incid. to Hwy.)

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/03/2025
1	05/16/2025

CARP0004-004 06/01/2019

REMAINDER OF STATE

	Rates	Fringes
CARPENTER (Piledriver).....	\$ 27.62	20.59

CARP0004-005 06/01/2018		

LIVINGSTON (Townships of Brighton, Deerfield, Genoa, Hartland, Oceola & Tyrone), MACOMB, MONROE, OAKLAND, SANILAC, ST. CLAIR AND WAYNE COUNTIES

	Rates	Fringes
CARPENTER (Piledriver).....	\$ 30.50	27.28

ELEC0017-005 06/01/2024		

STATEWIDE

	Rates	Fringes
Line Construction		
Groundman/Driver.....	\$ 32.00	33%+7.31
Journeyman Signal Tech, Communications Tech, Tower		
Tech & Fiber Optic Splicers..	\$ 47.35	33%+7.31
Journeyman Specialist.....	\$ 54.45	33%+7.31
Operator A.....	\$ 40.09	33%+7.31
Operator B.....	\$ 37.46	33%+7.31

Classifications

Journeyman Specialist: Refers to a crew of only one person working alone.

Operator A: Shall be proficient in operating all power equipment including: Backhoe, Excavator, Directional Bore and Boom/Digger truck.

Operator B: Shall be proficient in operating any 2 of the above mentioned pieces of equipment listed under Operator A.

ENGI0324-003 06/01/2024

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LENAWEE, LIVINGSTON, MACOMB, MIDLAND, MONROE, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLAIR, SANILAC, SHIAWASSEE, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
GROUP 1.....	\$ 55.42	25.25
GROUP 2.....	\$ 56.42	25.25
GROUP 3.....	\$ 53.92	25.25
GROUP 4.....	\$ 54.92	25.25
GROUP 5.....	\$ 52.42	25.25

GROUP 6.....	\$ 53.42	25.25
GROUP 7.....	\$ 52.15	25.25
GROUP 8.....	\$ 53.15	25.25
GROUP 9.....	\$ 51.70	25.25
GROUP 10.....	\$ 52.70	25.25
GROUP 11.....	\$ 50.97	25.25
GROUP 12.....	\$ 51.97	25.25
GROUP 13.....	\$ 50.61	25.25
GROUP 14.....	\$ 51.61	25.25
GROUP 15.....	\$ 49.97	25.25
GROUP 16.....	\$ 46.77	25.25
GROUP 17.....	\$ 32.29	12.40
GROUP 18.....	\$ 35.78	25.25

FOOTNOTE:

Paid Holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Engineer when operating combination of boom and jib 400' or longer

GROUP 2: Engineer when operating combination of boom and jib 400' or longer on a crane that requires an oiler

GROUP 3: Engineer when operating combination of boom and jib 300' or longer

GROUP 4: Engineer when operating combination of boom and jib 300' or longer on a crane that requires an oiler

GROUP 5: Engineer when operating combination of boom and jib 220' or longer

GROUP 6: Engineer when operating combination of boom and jib 220' or longer on a crane that requires an oiler

GROUP 7: Engineer when operating combination of boom and jib 140' or longer

GROUP 8: Engineer when operating combination of boom and jib 140' or longer on a crane that requires an oiler

GROUP 9: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level)

GROUP 10: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level) on a crane that requires an oiler

GROUP 11: Engineer when operating combination of boom and jib 120' or longer

GROUP 12: Engineer when operating combination of boom and jib 120' or longer on a crane that requires an oiler

GROUP 13: Crane operator; job mechanic and 3 drum hoist and excavator

GROUP 14: Crane operator on a crane that requires an oiler

GROUP 15: Hoisting operator; 2 drum hoist and rubber tired backhoe

GROUP 16: Forklift and 1 drum hoist

GROUP 17: Compressor or welder operator

GROUP 18: Oiler

ENGI0324-004 06/01/2024

AREA 1: ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, EATON, HILLSDALE, IONIA, KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN

AREA 2: ANTRIM, BENZIE, CHARLEVOIX, EMMET, GRAND TRAVERSE, KALKASKA, LEELANAU, MISSAUKEE AND WEXFORD COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
AREA 1		
GROUP 1.....	\$ 55.02	25.25
GROUP 2.....	\$ 52.15	25.25
GROUP 3.....	\$ 50.61	25.25
GROUP 4.....	\$ 46.77	25.25
GROUP 5.....	\$ 32.29	12.40
GROUP 6.....	\$ 35.78	25.25
AREA 2		
GROUP 1.....	\$ 55.02	25.25
GROUP 2.....	\$ 52.15	24.25
GROUP 3.....	\$ 50.61	25.25
GROUP 4.....	\$ 46.77	25.25
GROUP 5.....	\$ 32.29	12.40
GROUP 6.....	\$ 35.78	25.25

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: \$1.50 additional to the group 1 rate. Crane operator with main boom and jib 400' or longer: \$3.00 additional to the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1: Crane Operator with main boom & jib 400', 300', or 220' or longer.

GROUP 2: Crane Operator with main boom & jib 140' or longer, Tower Crane; Gantry Crane; Whirley Derrick.

GROUP 3: Regular Equipment Operator, Crane, Dozer, Loader, Hoist, Straddle Wagon, Mechanic, Grader and Hydro Excavator.

GROUP 4: Air Tugger (single drum), Material Hoist Pump 6" or over, Elevators, Brokk Concrete Breaker.

GROUP 5: Air Compressor, Welder, Generators, Conveyors

GROUP 6: Oiler and fire tender

AREA 1: GENESEE, LAPEER, LIVINGSTON, MACOMB, MONROE, OAKLAND,
 ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALLEGAN, ALGER, ALPENA, ANTRIM, ARENAC, BARAGA,
 BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS,
 CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD,
 DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND
 TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA,
 IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT,
 KWEENAW, LAKE, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE,
 MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE,
 MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW,
 ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE,
 ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST.
 JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
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OPERATOR: Power Equipment
 (Underground construction
 (including sewer))

AREA 1:		
GROUP 1.....	\$ 43.48	25.25
GROUP 2.....	\$ 38.75	25.25
GROUP 3.....	\$ 38.02	25.25
GROUP 4.....	\$ 37.45	25.25
GROUP 5.....	\$ 27.85	12.10
AREA 2:		
GROUP 1.....	\$ 43.48	25.25
GROUP 2.....	\$ 38.75	25.25
GROUP 3.....	\$ 38.02	25.25
GROUP 4.....	\$ 37.45	25.25
GROUP 5.....	\$ 27.85	12.10

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backfiller tamper; Backhoe; Batch plant operator
 (concrete); Clamshell; Concrete paver (2 drums or larger);
 Conveyor loader (Euclid type); Crane (crawler, truck type
 or pile driving); Dozer; Dragline; Elevating grader;
 Endloader; Gradall (and similar type machine); Grader;
 Mechanic; Power shovel; Roller (asphalt); Scraper
 (self-propelled or tractor drawn); Side boom tractor (type
 D-4 or equivalent and larger); Slip form paver; Slope
 paver; Trencher (over 8 ft. digging capacity); Well
 drilling rig; Concrete pump with boom operator; Hydro
 Excavator

GROUP 2: Boom truck (power swing type boom); Crusher; Hoist;
 Pump (1 or more - 6-in. discharge or larger - gas or
 diesel- powered or powered by generator of 300 amperes or
 more - inclusive of generator); Side boom tractor (smaller
 than type D-4 or equivalent); Tractor (pneu-tired, other
 than backhoe or front end loader); Trencher (8-ft. digging
 capacity and smaller); Vac Truck and End dump operator;

GROUP 3: Air compressors (600 cfm or larger); Air compressors
 (2 or more-less than 600 cfm); Boom truck (non-swinging,
 non- powered type boom); Concrete breaker (self-propelled
 or truck mounted - includes compressor); Concrete paver (1
 drum-1/2 yd. or larger); Elevator (other than passenger);

Maintenance person; Pump (2 or more-4-in. up to 6-in. discharge-gas or diesel powered - excluding submersible pumps); Pumpcrete machine (and similar equipment); Wagon drill (multiple); Welding machine or generator (2 or more-300 amp. or larger - gas or diesel powered)

GROUP 4: Boiler; Concrete saw (40 hp or over); Curing machine (self-propelled); Farm tractor (with attachment); Finishing machine (concrete); Hydraulic pipe pushing machine; Mulching equipment; Pumps (2 or more up to 4-in. discharge, if used 3 hours or more a day, gas or diesel powered - excluding submersible pumps); Roller (other than asphalt); Stump remover; Trencher (service); Vibrating compaction equipment, self-propelled (6 ft. wide or over); Sweeper (Wayne type); Water wagon and Extend-a boom forklift

Group 5: Fire Person, Oiler

* ENGI0324-006 06/01/2024

GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW, WAYNE, ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
Power equipment operators: (AIRPORT, BRIDGE & HIGHWAY CONSTRUCTION)		
GROUP 1.....	\$ 43.71	25.25
GROUP 2.....	\$ 42.56	25.25
GROUP 3.....	\$ 35.83	25.25
GROUP 4.....	\$ 35.27	25.25

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Paver Operator (5 bags or more); Slip Form Paver; Asphalt Paver (self propelled); Shovel (Excavator) installing utilities over 20 feet in depth.

Group 2: Asphalt plant operator; crane operator (does not include work on bridge construction projects when the crane operator is erecting structural components); Dragline operator; Shovel (Excavator) operator; Locomotive operator; Elevating grader operator; Pile driving operator; Roller operator (asphalt); Blade grader operator; Trenching machine operator (ladder or wheel type); Auto-grader; Self-propelled or tractor-drawn scraper; Conveyor loader operator (Euclid type); Bulldozer; Hoisting engineer; Tractor operator; Finishing machine operator (asphalt); Mechanic; Pump operator (6-in. discharge or over, gas, diesel powered or generator of 300 amp. or larger); Shouldering or gravel distributing machine operator (self-

propelled); Backhoe (with over 3/8 yd. bucket); Side boom tractor (type D-4 or equivalent or larger); Tube finisher (slip form paving); Gradall (and similar type machine); Asphalt planner (self- propelled); Batch plant (concrete-central mix); Slurry machine (asphalt); Concrete pump (3 in. and over); Roto-mill; Swinging boom truck (over 12 ton capacity); Hydro demolisher (water blaster); Farm-type tractor with attached pan; Vacuum truck operator; Batch Plant (concrete dry batch); Concrete Saw Operator (40h.p. or over; Tractor Operator (farm type); Finishing Machine Operator (concrete); Grader Operator (self-propelled fine grade or form (concrete); tractor operator (farm type with attachment); Wagon Drill operator; Boom or winch hoist truck operator.

GROUP 3: Screening plant operator; Washing plant operator; Crusher operator; Backhoe (with 3/8 yd. bucket or less); Side boom tractor (smaller than D-4 type or equivalent); Sweeper (Wayne type and similar equipment); Greese Truck; Air Compressor Operator (600 cu.ft. per min or more); Air Compressor Operator (two or more, less than 600 cfm); End Loader operator (1 yard Capacity and over); Side boom tractor (type D or equivalent or larger; Endloader operator *under 1 yard capacity; Trencher (service).

GROUP 4: Boiler fire tender; Concrete Breaker; Oiler; Fire tender; Trencher (service); Flexplane operator; Cleftplane operator; Roller operator (other than asphalt); Curing equipment operator (self-propelled); Power bin operator; Plant drier operator (asphalt); Vibratory compaction equipment operator (6 ft. wide or over); Guard post driver operator (power driven); All mulching equipment; Stump remover; Concrete pump (under 3-in.); Mesh installer (self-propelled); End dump;Skid steer.

ENGI0324-007 05/01/2024

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment		
(Steel Erection)		
Compressor, welder and forklift.....	\$ 40.90	25.00
Crane operator, main boom & jib 120' or longer.....	\$ 47.37	25.00
Crane operator, main boom & jib 140' or longer.....	\$ 47.37	24.60
Crane operator, main boom & jib 220' or longer.....	\$ 48.26	25.00
Mechanic with truck and tools.....	\$ 46.50	25.00
Oiler and fireman.....	\$ 39.96	25.00
Regular operator.....	\$ 44.72	25.00

ENGI0324-008 10/01/2023

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA,

DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment (Sewer Relining)		
GROUP 1.....	\$ 37.37	15.44
GROUP 2.....	\$ 35.33	15.44

SEWER RELINING CLASSIFICATIONS

GROUP 1: Operation of audio-visual closed circuit TV system, including remote in-ground cutter and other equipment used in connection with the CCTV system

GROUP 2: Operation of hot water heaters and circulation systems, water jetters and vacuum and mechanical debris removal systems

ENGI0325-012 05/01/2024

	Rates	Fringes
Power equipment operators - gas distribution and duct installation work:		
GROUP 1.....	\$ 37.98	25.25
GROUP 2.....	\$ 34.75	25.25

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as ""distribution work,"" starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

Group 1: Backhoe, crane, grader, mechanic, dozer (D-6 equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).

GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader). Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service). Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

IRON0008-007 06/01/2024

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON,
IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON
AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector.....	\$ 23.70	6.95
IRONWORKER		
General contracts \$10,000,000 or greater.....	\$ 39.91	32.32
General contracts less than \$10,000,000.....	\$ 39.91	32.32

Paid Holidays: New Year's Day, Memorial Day, July 4th, Labor
Day, Thanksgiving Day & Christmas Day.

IRON0025-002 06/01/2024

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON,
CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO,
ISABELLA, JACKSON, LAPEER, LIVINGSTON, MACOMB, MIDLAND,
MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE,
ROSCOMMON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, TUSCOLA,
WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector		
ALLEGAN, ANTRIM, BARRY, BENZIE, BRANCH, CALHOUN, CHARLEVOIX, EATON, EMMET, GRAND TRAVERSE, HILLSDALE, IONIA, KALAMAZOO, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN AND WEXFORD COUNTIES:..	\$ 35.55	33.14
Bay, Genesee, Lapeer, Livingston (east of Burkhardt Road), Macomb, Midland, Oakland, Saginaw, St. Clair, The University of Michigan, Washtenaw (east of U.S. 23) & Wayne...	\$ 25.81	26.43
IRONWORKER		
Ornamental and Structural...	\$ 34.50	38.44
Reinforcing.....	\$ 33.43	37.15

IRON0055-005 07/01/2022

LENAWEE AND MONROE COUNTIES:

	Rates	Fringes
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IRONWORKER

Pre-engineered metal buildings.....	\$ 23.59	19.35
All other work.....	\$ 33.00	27.20

IRON0292-003 06/01/2020

BERRIEN AND CASS COUNTIES:

	Rates	Fringes
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IRONWORKER (Including pre-engineered metal building erector).....	\$ 31.75	22.84
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* LAB00005-006 10/01/2022

	Rates	Fringes
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Laborers - hazardous waste abatement: (ALCONA, ALPENA, ANTRIM, BENZIE, CHARLEVOIX, CHEBOYGAN, CRAWFORD, EMMET, GRAND TRAVERSE, IOSCO, KALKASKA, LEELANAU, MISSAUKEE, MONTMORENCY, OSCODA, OTSEGO, PRESQUE ISLE AND WEXFORD COUNTIES - Zone 10)

Levels A, B or C.....	\$ 17.45 **	12.75
class b.....	\$ 18.64	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 16.45 **	12.75
class a.....	\$ 17.64 **	12.90

Zone 10

Laborers - hazardous waste abatement: (ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES - Zone 11)

Levels A, B or C.....	\$ 25.18	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	\$ 22.58	12.90

Laborers - hazardous waste abatement: (ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, IONIA COUNTY (except the city of Portland); KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH AND VAN BUREN COUNTIES

- Zone 9)		
Levels A, B or C.....\$ 21.88		13.26
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....\$ 20.80		12.90
Laborers - hazardous waste abatement: (ARENAC, BAY, CLARE, GLADWIN, GRATIOT, HURON, ISABELLA, MIDLAND, OGEMAW, ROSCOMMON, SAGINAW AND TUSCOLA COUNTIES - Zone 8)		
Levels A, B or C.....\$ 23.74		12.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....\$ 20.80		12.90
Laborers - hazardous waste abatement: (CLINTON, EATON AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); LIVINGSTON COUNTY (west of Oak Grove Rd., including the City of Howell) - Zone 6)		
Levels A, B or C.....\$ 26.33		12.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....\$ 24.64		12.90
Laborers - hazardous waste abatement: (GENESEE, LAPEER AND SHIAWASSEE COUNTIES - Zone 7)		
Levels A, B or C.....\$ 24.20		13.80
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....\$ 23.20		13.80
Laborers - hazardous waste abatement: (HILLSDALE, JACKSON AND LENAWEE COUNTIES - Zone 4)		
Levels A, B or C.....\$ 27.13		14.95
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....\$ 24.17		12.90
Laborers - hazardous waste abatement: (LIVINGSTON COUNTY (east of Oak Grove Rd. and south of M-59, excluding the city of Howell); AND WASHTENAW COUNTY - Zone 3)		
Levels A, B or C.....\$ 29.93		14.20
Work performed in		

conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	14.20
Laborers - hazardous waste abatement: (MACOMB AND WAYNE COUNTIES - Zone 1)	
Levels A, B or C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (MONROE COUNTY - Zone 4)	
Levels A, B or C.....\$ 31.75	14.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 31.75	14.90
Laborers - hazardous waste abatement: (OAKLAND COUNTY and the Northeast portion of LIVINGSTON COUNTY bordered by Oak Grove Road on the West and M-59 on the South - Zone 2)	
Level A, B, C.....\$ 29.93	16.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 28.93	16.90
Laborers - hazardous waste abatement: (SANILAC AND ST. CLAIR COUNTIES - Zone 5)	
Levels A, B or C.....\$ 26.21	16.62
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....\$ 24.75	16.35

LAB00259-001 09/01/2024

AREA 1: MACOMB, OAKLAND AND WAYNE COUNTIES
 AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA,
 BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX,
 CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA,
 DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND
 TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA,
 IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT,
 KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE,
 MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE,
 MIDLAND, MISSAUKEE, MONROE, MONTCALM, MONTMORENCY, MUSKEGON,
 NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO,
 OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST.
 JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN,

WASHTENAW AND WEXFORD COUNTIES

	Rates	Fringes
Laborers - tunnel, shaft and caisson:		
AREA 1		
GROUP 1.....	\$ 27.86	22.11
GROUP 2.....	\$ 29.86	22.11
GROUP 3.....	\$ 25.86	22.11
GROUP 4.....	\$ 23.97	16.93
GROUP 5.....	\$ 24.22	16.93
GROUP 6.....	\$ 24.55	16.93
GROUP 7.....	\$ 17.83	16.93
AREA 2		
GROUP 1.....	\$ 30.00	17.45
GROUP 2.....	\$ 32.00	17.45
GROUP 3.....	\$ 28.00	17.45
GROUP 4.....	\$ 29.57	16.93
GROUP 5.....	\$ 25.76	16.93
GROUP 6.....	\$ 26.07	16.93
GROUP 7.....	\$ 25.57	16.93

SCOPE OF WORK: Tunnel, shaft and caisson work of every type and description and all operations incidental thereto, including, but not limited to, shafts and tunnels for sewers, water, subways, transportation, diversion, sewerage, caverns, shelters, aquafers, reservoirs, missile silos and steel sheeting for underground construction.

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Tunnel, shaft and caisson laborer, dump, shanty, hog house tender, testing (on gas) and watchman

GROUP 2: Manhole, headwall, catch basin builder, bricklayer tender, mortar machine and material mixer

GROUP 3: Air tool operator (jackhammer, bush hammer and grinder), first bottom, second bottom, cage tender, car pusher, carrier, concrete, concrete form, concrete repair, cement invert laborer, cement finisher, concrete shoveler, conveyor, floor, gasoline and electric tool operator, gunite, grout operator, welder, heading dinky person, inside lock tender, pea gravel operator, pump, outside lock tender, scaffold, top signal person, switch person, track, tugger, utility person, vibrator, winch operator, pipe jacking, wagon drill and air track operator and concrete saw operator (under 40 h.p.)

GROUP 4: Tunnel, shaft and caisson mucker, bracer, liner plate, long haul dinky driver and well point

GROUP 5: Tunnel, shaft and caisson miner, drill runner, key board operator, power knife operator, reinforced steel or mesh (e.g. wire mesh, steel mats, dowel bars, etc.)

GROUP 6: Dynamite and powder

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

	Rates	Fringes
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Laborers - open cut:

ZONE 1 - MACOMB, OAKLAND

AND WAYNE COUNTIES:

GROUP 1.....	\$ 27.71	22.11
GROUP 2.....	\$ 29.71	22.11
GROUP 3.....	\$ 25.87	22.11
GROUP 4.....	\$ 23.71	16.72
GROUP 5.....	\$ 24.17	16.72
GROUP 6.....	\$ 22.00	16.72
GROUP 7.....	\$ 17.84	16.72

ZONE 2 - LIVINGSTON COUNTY

(east of M-151 (Oak Grove

Rd.)); MONROE AND

WASHTENAW COUNTIES:

GROUP 1.....	\$ 29.65	17.45
GROUP 2.....	\$ 31.65	17.45
GROUP 3.....	\$ 27.65	17.45
GROUP 4.....	\$ 25.10	16.72
GROUP 5.....	\$ 25.25	16.72
GROUP 6.....	\$ 22.55	16.72
GROUP 7.....	\$ 22.11	16.72

ZONE 3 - CLINTON, EATON,

GENESEE, HILLSDALE AND

INGHAM COUNTIES; IONIA

COUNTY (City of Portland);

JACKSON, LAPEER AND

LENAWEE COUNTIES;

LIVINGSTON COUNTY (west of

M-151 Oak Grove Rd.);

SANILAC, ST. CLAIR AND

SHIAWASSEE COUNTIES:

GROUP 1.....	\$ 27.84	17.45
GROUP 2.....	\$ 29.84	17.45
GROUP 3.....	\$ 25.84	17.45
GROUP 4.....	\$ 23.30	16.72
GROUP 5.....	\$ 23.44	16.72
GROUP 6.....	\$ 20.74	16.72
GROUP 7.....	\$ 22.23	16.72

ZONE 4 - ALCONA, ALLEGAN,

ALPENA, ANTRIM, ARENAC,

BARRY, BAY, BENZIE,

BERRIEN, BRANCH,

CALHOUN, CASS, CHARLEVOIX,

CHEBOYGAN, CLARE,

CRAWFORD, EMMET,

GLADWIN, GRAND TRAVERSE,

GRATIOT AND HURON

COUNTIES; IONIA COUNTY

(EXCEPT THE CITY OF

PORTLAND); IOSCO,

ISABELLA, KALAMAZOO,

KALKASKA, KENT,

LAKE, LEELANAU, MANISTEE,

MASON, MECOSTA, MIDLAND,

MISSAUKEE, MONTCALM,

MONTMORENCY, MUSKEGON,

NEWAYGO, OCEANA, OGEMAW,

OSCEOLA, OSCODA, OTSEGO,

OTTAWA, PRESQUE ISLE,

ROSCOMMON, SAGINAW, ST.

JOSEPH, TUSCOLA, VAN BUREN
AND WEXFORD COUNTIES:

GROUP 1.....	\$ 26.32	17.95
GROUP 2.....	\$ 28.32	17.95
GROUP 3.....	\$ 24.32	17.95
GROUP 4.....	\$ 22.33	16.72
GROUP 5.....	\$ 22.45	16.72
GROUP 6.....	\$ 19.67	16.72
GROUP 7.....	\$ 22.30	16.72

ZONE 5 - ALGER, BARAGA,
CHIPPEWA, DELTA,
DICKINSON, GOGEBIC,
HOUGHTON, IRON,
KEWEENAW, LUCE, MACKINAC,
MARQUETTE, MENOMINEE,
ONTONAGON AND SCHOOLCRAFT
COUNTIES:

GROUP 1.....	\$ 26.09	18.45
GROUP 2.....	\$ 28.09	18.45
GROUP 3.....	\$ 24.09	18.45
GROUP 4.....	\$ 22.56	16.72
GROUP 5.....	\$ 22.64	16.72
GROUP 6.....	\$ 19.99	16.72
GROUP 7.....	\$ 22.45	16.72

SCOPE OF WORK:

Open cut construction work shall be construed to mean work which requires the excavation of earth including industrial, commercial and residential building site excavation and preparation, land balancing, demolition and removal of concrete and underground appurtenances, grading, paving, sewers, utilities and improvements; retention, oxidation, flocculation and irrigation facilities, and also including but not limited to underground piping, conduits, steel sheeting for underground construction, and all work incidental thereto, and general excavation. For all areas except the Upper Peninsula, open cut construction work shall also be construed to mean waterfront work, piers, docks, seawalls, breakwalls, marinas and all incidental work. Open cut construction work shall not include any structural modifications, alterations, additions and repairs to buildings, or highway work, including roads, streets, bridge construction and parking lots or steel erection work and excavation for the building itself and back filling inside of and within 5 ft. of the building and foundations, footings and piers for the building. Open cut construction work shall not include any work covered under Tunnel, Shaft and Caisson work.

OPEN CUT LABORER CLASSIFICATIONS

GROUP 1: Construction laborer

GROUP 2: Mortar and material mixer, concrete form person, signal person, well point person, manhole, headwall and catch basin builder, headwall, seawall, breakwall and dock builder

GROUP 3: Air, gasoline and electric tool operator, vibrator operator, driller, pump person, tar kettle operator, bracer, rodger, reinforced steel or mesh person (e.g., wire mesh, steel mats, dowel bars, etc.), welder, pipe jacking and boring person, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger

person and directional boring person

GROUP 4: Trench or excavating grade person

GROUP 5: Pipe layer (including crock, metal pipe, multi-plate or other conduits)

GROUP 6: Grouting man, audio-visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

* LAB00465-001 06/01/2024

LABORER: Highway, Bridge and Airport Construction

AREA 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALLEGAN, BARRY, BAY, BERRIEN, BRANCH, CALHOUN, CASS, CLINTON, EATON, GRATIOT, HILLSDALE, HURON, INGHAM, JACKSON, KALAMAZOO, LAPEER, LENAWEE, LIVINGSTON, MIDLAND, MUSKEGON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA AND VAN BUREN COUNTIES

AREA 3: ALCONA, ALPENA, ANTRIM, ARENAC, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, IONIA, IOSCO, ISABELLA, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MONTMORENCY, NEWAYGO, OCEANA, OGEMAW, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON AND WEXFORD COUNTIES

AREA 4: ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES

	Rates	Fringes
LABORER (AREA 1)		
GROUP 1.....	\$ 34.01	14.45
GROUP 2.....	\$ 34.14	14.45
GROUP 3.....	\$ 34.32	14.45
GROUP 4.....	\$ 34.40	14.45
GROUP 5.....	\$ 34.61	14.45
GROUP 6.....	\$ 34.91	14.45
LABORER (AREA 2)		
GROUP 1.....	\$ 31.87	14.45
GROUP 2.....	\$ 32.07	14.45
GROUP 3.....	\$ 32.31	14.45
GROUP 4.....	\$ 32.66	14.45
GROUP 5.....	\$ 32.53	14.45
GROUP 6.....	\$ 32.87	14.45
LABORER (AREA 3)		
GROUP 1.....	\$ 31.12	14.45
GROUP 2.....	\$ 31.33	14.45
GROUP 3.....	\$ 31.62	14.45
GROUP 4.....	\$ 32.06	14.45

GROUP 5.....	\$ 31.68	14.45
GROUP 6.....	\$ 32.11	14.45
LABORER (AREA 4)		
GROUP 1.....	\$ 32.02	13.45
GROUP 2.....	\$ 31.73	13.45
GROUP 3.....	\$ 32.52	13.45
GROUP 4.....	\$ 32.96	13.45
GROUP 5.....	\$ 32.58	13.45
GROUP 6.....	\$ 33.01	13.45

LABORER CLASSIFICATIONS

GROUP 1: Asphalt shoveler or loader; asphalt plant misc.; burlap person; yard person; dumper (wagon, truck, etc.); joint filling laborer; miscellaneous laborer; unskilled laborer; sprinkler laborer; form setting laborer; form stripper; pavement reinforcing; handling and placing (e.g., wire mesh, steel mats, dowel bars); mason's tender or bricklayer's tender on manholes; manhole builder; headwalls, etc.; waterproofing, (other than buildings) seal coating and slurry mix, shoring, underpinning; pressure grouting; bridge pin and hanger removal; material recycling laborer; horizontal paver laborer (brick, concrete, clay, stone and asphalt); ground stabilization and modification laborer; grouting; waterblasting; top person; railroad track and trestle laborer; carpenters' tender; guard rail builders' tender; earth retention barrier and wall and M.S.E. wall installer's tender; highway and median installer's tender (including sound, retaining, and crash barriers); fence erector's tender; asphalt raker tender; sign installer; remote control operated equipment.

GROUP 2: Mixer operator (less than 5 sacks); air or electric tool operator (jackhammer, etc.); spreader; boxperson (asphalt, stone, gravel); concrete paddler; power chain saw operator; paving batch truck dumper; tunnel mucker (highway work only); concrete saw (under 40 h.p.) and dry pack machine; roto-mill grounds person.

GROUP 3: Tunnel miner (highway work only); finishers tenders; guard rail builders; highway and median barrier installer; earth retention barrier and wall and M.S.E. wall installer's (including sound, retaining and crash barriers); fence erector; bottom person; powder person; wagon drill and air track operator; diamond and core drills; grade checker; certified welders; curb and side rail setter's tender.

GROUP 4: Asphalt raker

GROUP 5: Pipe layers, oxy-gun

GROUP 6: Line-form setter for curb or pavement; asphalt screed checker/screw man on asphalt paving machines.

LAB01076-005 04/01/2024

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1.....	\$ 27.16	13.45
Zone 2.....	\$ 25.42	13.45

Zone 3.....	\$ 23.55	13.45
Zone 4.....	\$ 22.92	13.45
Zone 5.....	\$ 22.95	13.45

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: \$.40 per hour above the base pay rate.

Zone 1 - Macomb, Oakland and Wayne

Zone 2 - Monroe and Washtenaw

Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair

Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft

Zone 5 - Remaining Counties in Michigan

PAIN0022-002 07/01/2008

HILLSDALE, JACKSON AND LENAWE COUNTY; LIVINGSTON COUNTY (east of the eastern city limits of Howell, not including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 25.06	14.75

FOOTNOTES: For all spray work and journeyman rigging for spray work, also blowing off, \$0.80 per hour additional (applies only to workers doing rigging for spray work on off the floor work. Does not include setting up or moving rigging on floor surfaces, nor does it apply to workers engaged in covering up or tending spray equipment. For all sandblasting and spray work performed on highway bridges, overpasses, tanks or steel, \$0.80 per hour additional. For all brushing, cleaning and other preparatory work (other than spraying or steeplejack work) at scaffold heights of fifty (50) feet from the ground or higher, \$0.50 per hour additional. For all preparatorial work and painting performed on open steel under forty (40) feet when no scaffolding is involved, \$0.50 per hour additional. For all swing stage work-window jacks and window belts-exterior and interior, \$0.50 per hour additional. For all spray work and sandblaster work to a scaffold height of forty (40) feet above the floor level, \$0.80 per hour additional. For all preparatorial work and painting on all highway bridges or overpasses up to forty (40) feet in height, \$0.50 per hour additional. For all steeplejack work performed where the elevation is forty (40) feet or more, \$1.25 per hour additional.

PAIN0312-001 06/01/2018

EXCLUDES: ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); INCLUDES: Barry, Berrien, Branch, Calhoun, Cass, Hillsdale, Kalamazoo, St. Joseph, Van Buren

	Rates	Fringes
PAINTER		
Brush and roller.....	\$ 23.74	13.35
Spray, Sandblast, Sign		
Painting.....	\$ 24.94	13.35

PAIN0845-003 05/10/2018

CLINTON COUNTY; EATON COUNTY (does not include the townships of Bellevue and Olivet); INGHAM COUNTY; IONIA COUNTY (east of Hwy. M 66); LIVINGSTON COUNTY (west of the eastern city limits of Howell, including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); AND SHIAWASSEE COUNTY (Townships of Bennington, Laingsbury and Perry):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

PAIN0845-015 05/10/2018

MUSKEGON COUNTY; NEWAYGO COUNTY (except the Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OCEANA COUNTY; OTTAWA COUNTY (except the townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

PAIN0845-018 05/10/2018

ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); IONIA COUNTY (west of Hwy. M-66); KENT, MECOSTA AND MONTCALM COUNTIES; NEWAYGO COUNTY (Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OSCEOLA COUNTY (south of Hwy. #10); OTTAWA COUNTY (Townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER.....	\$ 25.49	13.74

FOOTNOTES: Lead abatement work: \$1.00 per hour additional.

PAIN1011-003 06/02/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON,
IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON
AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 24.66	14.99

FOOTNOTES: High pay (bridges, overpasses, watertower): 30 to
80 ft.: \$.65 per hour additional. 80 ft. and over: \$1.30
per hour additional.

PAIN1474-002 06/01/2010

HURON COUNTY; LAPEER COUNTY (east of Hwy. M-53); ST. CLAIR,
SANILAC AND TUSCOLA COUNTIES:

	Rates	Fringes
PAINTER.....	\$ 23.79	12.02

FOOTNOTES: Lead abatement work: \$1.00 per hour additional.
Work with any hazardous material: \$1.00 per hour
additional. Sandblasting, steam cleaning and acid cleaning:
\$1.00 per hour additional. Ladder work at or above 40 ft.,
scaffold work at or above 40 ft., swing stage, boatswain
chair, window jacks and all work performed over a falling
height of 40 ft.: \$1.00 per hour additional. Spray gun
work, pick pullers and those handling needles, blowing off
by air pressure, and any person rigging (setting up and
moving off the ground): \$1.00 per hour additional.
Steeplejack, tanks, gas holders, stacks, flag poles, radio
towers and beacons, power line towers, bridges, etc.: \$1.00
per hour additional, paid from the ground up.

PAIN1803-003 06/01/2024

ALCONA, ALPENA, ANTRIM, ARENAC, BAY, BENZIE, CHARLEVOIX,
CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE,
GRATIOT, IOSCO, ISABELLA, KALKASKA, LAKE, LEELANAU, MANISTEE,
MASON, MIDLAND, MISSAUKEE, MONTMORENCY AND OGEMAW COUNTIES;
OSCEOLA COUNTY (north of Hwy. #10); OSCODA, OTSEGO, PRESQUE
ISLE, ROSCOMMON, SAGINAW AND WEXFORD COUNTIES:

	Rates	Fringes
PAINTER Work performed on water, bridges over water or moving traffic, radio and powerline towers, elevated tanks, steeples, smoke stacks over 40 ft. of falling heights, recovery of lead-based paints and any work associated with industrial plants, except maintenance of industrial		

plants.....	\$ 29.35	19.05
All other work, including		
maintenance of industrial		
plant.....	\$ 29.35	19.05

FOOTNOTES: Spray painting, sandblasting, blowdown associated with spraying and blasting, water blasting and work involving a swing stage, boatswain chair or spider: \$1.00 per hour additional. All work performed inside tanks, vessels, tank trailers, railroad cars, sewers, smoke stacks, boilers or other spaces having limited egress not including buildings, opentop tanks, pits, etc.: \$1.25 per hour additional.

PLAS0514-001 06/01/2023

ZONE 1: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, SAGINAW, WASHTENAW AND WAYNE COUNTIES

ZONE 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
ZONE 1.....	\$ 33.00	18.51
ZONE 2.....	\$ 31.50	18.51

PLUM0190-003 05/01/2015

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
Plumber/Pipefitter - gas		
distribution pipeline:		
Welding in conjunction		
with gas distribution		
pipeline work.....	\$ 33.03	20.19
All other work:.....	\$ 24.19	12.28

TEAM0007-004 06/01/2024

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
AREA 1		
Euclids, double bottoms and lowboys.....	\$ 32.55	.75 + a+b
Trucks under 8 cu. yds.....	\$ 32.30	.75 + a+b
Trucks, 8 cu. yds. and over.....	\$ 32.40	.75 + a+b
AREA 2		
Euclids, double bottoms and lowboys.....	\$ 32.65	.75 + a+b
Trucks under 8 cu. yds.....	\$ 32.40	.75 + a+b
Trucks, 8 cu. yds. and over.....	\$ 32.50	.75 + a+b

Footnote:

a. \$470.70 per week

b. \$68.70 daily

TEAM0247-004 04/01/2013

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, SAGINAW, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
Sign Installer		
AREA 1		
GROUP 1.....	\$ 21.78	11.83
GROUP 2.....	\$ 25.27	11.8375

AREA 2		
GROUP 1.....	\$ 22.03	11.83
GROUP 2.....	\$ 25.02	11.8375

FOOTNOTE:

a. \$132.70 per week, plus \$17.80 per day.

SIGN INSTALLER CLASSIFICATIONS:

GROUP 1: performs all necessary labor and uses all tools required to construct and set concrete forms required in the installation of highway and street signs

GROUP 2: performs all miscellaneous labor, uses all hand and power tools, and operates all other equipment, mobile or otherwise, required for the installation of highway and street signs

TEAM0247-010 04/01/2018

AREA 1: LAPEER AND SHIAWASSEE COUNTIES

AREA 2: GENESEE, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER (Underground construction)		
AREA 1		
GROUP 1.....	\$ 23.82	19.04
GROUP 2.....	\$ 23.91	19.04
GROUP 3.....	\$ 24.12	19.04
AREA 2		
GROUP 1.....	\$ 24.12	19.04
GROUP 2.....	\$ 24.26	19.04
GROUP 3.....	\$ 24.45	19.04

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

SCOPE OF WORK: Excavation, site preparation, land balancing, grading, sewers, utilities and improvements; also including but not limited to, tunnels, underground piping, retention, oxidation, flocculation facilities, conduits, general excavation and steel sheeting for underground construction. Underground construction work shall not include any structural modifications, alterations, additions and repairs to buildings or highway work, including roads, streets, bridge construction and parking lots or steel erection.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Truck driver on all trucks (EXCEPT dump trucks of 8 cubic yards capacity or over, pole trailers, semis, low boys, Euclid, double bottom and fuel trucks)

GROUP 2: Truck driver on dump trucks of 8 cubic yards capacity or over, pole trailers, semis and fuel trucks

GROUP 3: Truck driver on low boy, Euclid and double bottom

* SUMI2002-001 05/01/2002

	Rates	Fringes
FLAG PERSON.....	\$ 10.10 **	0.00
LINE PROTECTOR (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)....	\$ 22.89	13.45
LINE PROTECTOR (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE).....	\$ 20.19	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1.....	\$ 30.52	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2.....	\$ 27.47	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1.....	\$ 26.92	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2.....	\$ 24.23	13.45

WORK CLASSIFICATIONS:

PAVEMENT MARKER GROUP 1: Drives or operates a truck mounted striper, grinder, blaster, groover, or thermoplastic melter for the placement or removal of temporary or permanent pavement markings or markers.

PAVEMENT MARKER GROUP 2: Performs all functions involved for the placement or removal of temporary or permanent pavement markings or markers not covered by the classification of Pavement Marker Group 1 or Line Protector.

LINE PROTECTOR: Performs all operations for the protection or removal of temporary or permanent pavement markings or markers in a moving convoy operation not performed by the classification of Pavement Marker Group 1. A moving convoy operation is comprised of only Pavement Markers Group 1 and Line Protectors.

WELDERS - Receive rate prescribed for craft performing

operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes

over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination

- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

"General Decision Number: MI20250067 03/14/2025

Superseded General Decision Number: MI20240067

State: Michigan

Construction Type: Heavy

County: Muskegon County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/03/2025
1	03/14/2025

CARP0100-009 06/01/2023

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 27.63	20.93

ELEC0275-001 06/01/2024

	Rates	Fringes
ELECTRICIAN.....	\$ 36.52	41%+10.18

ENGI0325-016 09/01/2024

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 43.48	25.25
GROUP 2.....	\$ 38.75	25.25
GROUP 3.....	\$ 38.02	25.25
GROUP 4.....	\$ 37.45	25.25

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Boring Machine, Roller, Scraper, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor, Bobcat/ Skid
Steer /Skid Loader

ENGI0326-009 06/01/2024

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1.....	\$ 41.28	25.25
GROUP 2.....	\$ 39.57	25.25
GROUP 3.....	\$ 39.57	25.25
GROUP 4.....	\$ 33.71	25.25

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of
July, Labor Day, Thanksgiving Day and Christmas Day.

Swing Boom Truck Operator over 12 tons-\$.50 per hour

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Boring Machine; Roller; Scraper; Tractor; Trencher

GROUP 2: Bobcat/Skid Loader; Broom/Sweeper; Fork Truck (over
20' lift)

GROUP 3: Boom truck (non-swinging)

GROUP 4: Fork Truck (20' lift and under for masonry work)

IRON0025-011 06/01/2024

	Rates	Fringes
IRONWORKER (REINFORCING).....	\$ 35.00	33.14
IRONWORKER (STRUCTURAL).....	\$ 35.55	33.14

LAB00334-006 09/01/2022

SCOPE OF WORK:

OPEN CUT CONSTRUCTION: Excavation of earth and sewer,
utilities, and improvements, including underground
piping/conduit (including inspection, cleaning, restoration,
and relining)

	Rates	Fringes
LABORER		
(1) Common or General.....	\$ 22.42	12.95
(2) Mason Tender- Cement/Concrete.....	\$ 22.55	12.95
(4) Grade Checker.....	\$ 22.73	12.95

 * LAB00355-019 06/01/2024

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
LABORER		
Common or General; Grade Checker; Mason Tender - Cement/Concrete.....	\$ 23.34	11.60

 PAIN0845-017 05/21/2014

	Rates	Fringes
PAINTER: Brush, Roller and Spray.....	\$ 21.89	11.85

 PLAS0016-017 04/01/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 21.15	12.78

 PLUM0174-003 07/01/2022

	Rates	Fringes
PLUMBER.....	\$ 39.80	23.82

 TEAM0007-010 06/01/2024

	Rates	Fringes
TRUCK DRIVER		
Lowboy/Semi-Trailer Truck...	\$ 32.55	.75 + a+b

FOOTNOTE:

- a. \$470.70 per week.
 b. \$68.70 daily.
-

* SUMI2010-065 11/09/2010

	Rates	Fringes
LABORER: Landscape.....	\$ 12.21 **	1.96
LABORER: Pipelayer.....	\$ 15.54 **	4.16
OPERATOR: Backhoe/Excavator.....	\$ 20.94	8.15
OPERATOR: Bulldozer.....	\$ 20.48	6.14
OPERATOR: Crane.....	\$ 18.50	5.10
OPERATOR: Grader/Blade.....	\$ 16.64 **	0.00
OPERATOR: Loader.....	\$ 17.52 **	5.51
TRUCK DRIVER: Dump Truck.....	\$ 17.00 **	5.71
TRUCK DRIVER: Off the Road Truck.....	\$ 20.82	3.69
TRUCK DRIVER: Tractor Haul Truck.....	\$ 16.50 **	4.89

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including

preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for

those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

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WAGE DETERMINATION APPEALS PROCESS

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U.S. Department of Labor
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U.S. Department of Labor
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Washington, DC 20210

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Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

Labor Standards Provisions for Federally Assisted Projects - 29 CFR Part 5

§5.5 Contract provisions and related matters.

(a) The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in Sec. 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, *Provided*, That such modifications are first approved by the Department of Labor):

(1) *Minimum wages.* (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in Sec. 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination, and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (C) In the event the contractor, the laborers, or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.
- (2) *Withholding.* The **(write in name of Federal Agency or the loan or grant recipient)** shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action

as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

- (3) *Payrolls and basic records.* (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- (ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at [dol.gov/agencies/whd/government-contracts/construction/forms](https://www.dol.gov/agencies/whd/government-contracts/construction/forms) or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).
- (B) Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

- (1) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
- (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
- (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.
- (D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- (iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Michigan Department of Environment, Great Lakes, and Energy or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as maybe necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.
- (4) *Apprentices and trainees-* (i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the jobsite in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates

(expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (iii) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- (5) ***Compliance with Copeland Act requirements.*** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- (6) ***Subcontracts.*** The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

- (7) *Contract termination: debarment.* A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- (8) *Compliance with Davis-Bacon and Related Act requirements.* All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (9) *Disputes concerning labor standards.* Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
- (10) *Certification of eligibility.* (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C.1001.
- (b) *Contract Work Hours and Safety Standards Act.* The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Sec. 5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.
- (1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (c) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible there for shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

- (3) Withholding for unpaid wages and liquidated damages. The **(write in the name of the Federal agency or the loan or grant recipient)** shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.
- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.
- (5) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in Sec.5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Michigan Department of Environment, Great Lakes, and Energy and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prime contractor must provide a completed *Certification Regarding Debarment, Suspension, and Other Responsibility Matters Form* with its bid or proposal package to the owner.

The prospective participant certifies, to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in transactions under federal nonprocurement programs by any federal department or agency;
- (2) Have not, within the three-year period preceding the proposal, had one or more public transactions (federal, state, or local) terminated for cause or default; and
- (3) Are not presently indicted or otherwise criminally or civilly charged by a government entity (federal, state, or local) and have not, within the three-year period preceding the proposal, been convicted of or had a civil judgment rendered against it:
 - (a) For the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public transaction (federal, state, or local) or a procurement contract under such a public transaction;
 - (b) For the violation of federal or state antitrust statutes, including those proscribing price fixing between competitors, the allocation of customers between competitors, or bid rigging; or
 - (c) For the commission of embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or receiving stolen property.

I understand that a false statement on this certification may be grounds for the rejection of this proposal or the termination of the award. In addition, under 18 U.S.C. §1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to five years, or both.

Name and Title of Authorized Representative

Name of Participant Agency or Firm

Signature of Authorized Representative

Date

☐ I am unable to certify to the above statement. Attached is my explanation.

Appendix B

MDOT Special Provisions

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 2

APPR:JWB:CJB:02-26-20
FHWA:APPR:03-02-20

Add the following subsection to subsection 501.02.A.2 of the Standard Specifications for Construction.

- c. **Reclaimed Asphalt Pavement (RAP) and Binder Grade Selection.** The method for determining the binder grade in HMA mixtures incorporating RAP is divided into three categories designated Tier 1, Tier 2 and Tier 3. Each tier has a range of percentages that represent the contribution of the RAP binder toward the total binder, by weight. The tiers identified below apply to HMA mixtures with the following exception: Superpave mixture types EML, EML High Stress, EMH, EMH High Stress, and EH, EH High Stress used as leveling or top course must be limited to a maximum of 27 percent RAP binder by weight of the total binder in the mixture.

Recycled materials may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract.

- **Tier 1 (0% to 17% RAP binder by weight of the total binder in the mixture).** No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in RAP.
- **Tier 2 (18% to 27% RAP binder by weight of the total binder in the mixture).** For all mixtures no binder grade change will occur in Tier 2 for all shoulder and temporary road mixtures.

Ensure the required asphalt binder grade is at least one grade lower for the low temperature than the design binder grade required for the specified project mixture type. Lowering the high temperature of the binder one grade is optional. For example, if the design binder grade for the mixture type is PG 58-22, the required grade for the binder in the HMA mixture containing RAP would be a PG 52-28 or a PG 58-28.

For Marshall Mixes, no binder grade change will be required when Average Daily Traffic (ADT) is above 7000 or Commercial Average Daily Traffic (CADT) is above 700. No binder grade change will occur for EL mixtures used as leveling or top course.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. Supply the blending chart and the RAP test data used in determining the binder selection according to *AASHTO M323*.

- **Tier 3 ($\geq 28\%$ RAP binder by weight of the total binder in the mixture).** The binder grade for the asphalt binder is selected using a blending chart for high and low temperatures per *AASHTO M323*. Supply the blending chart and the RAP test data

used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
MARSHALL HOT MIX ASPHALT MIXTURE

CFS:JWB

1 of 2

APPR:KPK:CJB:03-04-20

FHWA:APPR:03-13-20

a. Description. This work consists of furnishing a hot mix asphalt (HMA) mixture, designed using Marshall Mixture Design Methods, in accordance with the standard specifications except as modified by this special provision.

b. Mix Design. Submit the mix design for evaluation in accordance with the Department's *HMA Production Manual*. Use a 50 blow Marshall hammer when compacting mixtures for developing Marshall mix designs.

c. Recycled Mixtures. Substituting reclaimed asphalt pavement (RAP) for a portion of the new material required to produce the HMA mixture is allowed provided that the mixture is designed and produced to meet all criteria specified herein, unless otherwise prohibited. Ensure RAP materials are in accordance with the standard specifications.

d. Materials. Table 1 provides the mix design criteria and volumetric properties. Table 2 provides the required aggregate properties. Use aggregates of the highest quality available to meet the minimum specifications. Use the mixture designation number shown in the pay item name when determining mix design properties from Tables 1 and 2.

e. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item**Pay Unit**HMA, (type)Ton**Table 1: Mix Design Criteria and Volumetric Properties**

	Mixture No.				
	2C	3C	4C	13A	36A
Target Air Void, % (a)	3.00	4.00	4.00	4.00	4.00
VMA (min) (b)	11.00	13.00	14.00	14.00	15.00
VFA	65-78	65-78	65-78	65-78	65-78
Fines to Binder Ratio (max) (c)	1.2	1.2	1.2	1.2	1.2
Flow (0.01 inch)	8-16	8-16	8-16	8-16	8-16
Stability (min), lbs	1200	1200	1200	900	900

- a. Lower target air voids by 1.00% if used in a separate shoulder paving operation. Consider reducing air void targets to 3.00% for lower traffic volume roadways when designing 13A and 36A mixtures for local agency use.
- b. VMA calculated using Gsb of the combined aggregates.
- c. Ratio of the weight of aggregate passing the No. 200 sieve to total asphalt binder content by weight; including fines and binder contributed by RAP.

Table 2: Aggregate Properties

	Mixture No.				
	2C	3C	4C	13A	36A
	Percent Passing Indicated Sieve or Property Limit				
1½ inch	100				
1 inch	91-100	100			
¾ inch	90 max.	91-100	100	100	
½ inch	78 max.	90 max.	91-100	75-95	100
⅜ inch	70 max.	77 max.	90 max.	60-90	92-100
No. 4	52 max.	57 max.	67 max.	45-80	65-90
No. 8	15-40	15-45	15-52	30-65	55-75
No. 16	30 max.	33 max.	37 max.	20-50	
No. 30	22 max.	25 max.	27 max.	15-40	25-45
No. 50	17 max.	19 max.	20 max.	10-25	
No. 100	15 max.	15 max.	15 max.	5-15	
No. 200	3-6	3-6	3-6	3-6	3-10
Crushed (min), % (MTM 117)	90	90	90	25	60
Soft Particle (max), % (a)	12.0	12.0	8.0	8.0	8.0
Angularity Index (min) (b)	4.0	4.0	4.0	2.5	3.0
L.A. Abrasion (max), % loss (c)	40	40	40	40	40
Sand Ratio (max) (d)	-	-	-	50	50
<ul style="list-style-type: none"> a. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 8.0 percent for aggregates used in top course. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 12.0 percent for aggregates used in base and leveling courses. b. The fine aggregate angularity of blended aggregates, determined by MTM 118, must meet the minimum requirement. In mixtures containing RAP, the required minimum fine aggregate angularity must be met by the virgin material. NAA fine aggregate angularity must be reported for information only and must include the fine material contributed by RAP if present in the mixture. c. Los Angeles abrasion maximum loss must be met for the composite mixture, however, each individual aggregate must be less than 50 d. Sand ratio for 13A and 36A no more than 50% of the material passing the No. 4 sieve is allowed to pass the No. 30 Sieve. 					

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 7

APPR:CJB:JWB:02-26-20

FHWA:APPR:03-13-20

a. Description. This special provision provides sampling and testing requirements for local agency projects using the roller method and the nuclear density gauge testing. Provide the hot mix asphalt (HMA) mixture in accordance with the requirements of the standard specifications, except where modified herein.

b. Materials. Provide aggregates, mineral filler (if required), and asphalt binder to produce a mixture proportioned within the master gradation limits shown in the contract, and meeting the uniformity tolerance limits in Table 1.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Course		Base Course	
Number	Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2
1	% Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50
2	% Passing	# 8 and Larger Sieves	±5.0	±8.0	±7.0
		# 30 Sieve	±4.0	±6.0	±6.0
		# 200 Sieve	±1.0	±2.0	±2.0
3	Crushed Particle Content (b)	Below 10%	Below 15%	Below 10%	Below 15%
a. This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF).					
b. Deviation from JMF.					

Parameter number 2 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on Table 1. Aggregates which are to be used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

c. Construction. Submit a Mix Design and a JMF to the Engineer. Do not begin production and placement of the HMA until receipt of the Engineer's approval of the JMF. Maintain the binder content, aggregate gradation, and the crushed particle content of the HMA mixture within the Range 1 uniformity tolerance limits in Table 1. For mixtures meeting the definition of top or leveling course, field regress air void content to 3.5 percent with liquid asphalt cement unless specified otherwise on HMA application estimate. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified

otherwise on HMA application estimate.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are "Local Agency HMA Sampling Qualified" samplers. At the pre-production or preconstruction meeting, the Engineer will determine the method of sampling to be used. Ensure all sampling is done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Paving Mixtures Behind the Paver)*. Samples are to be taken from separate hauling loads.

For production/mainline type paving, obtain a minimum of two samples, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample and maintain possession of the sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Obtain samples that are representative of the day's paving. Sample collection is to be spaced throughout the planned tonnage. One sample will be obtained in the first half of the tonnage and the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified.

Ensure daily test samples are obtained, except, if the first test results show that the HMA mixture is in specification, the Engineer has the option of not testing additional samples from that day.

At the pre-production or preconstruction meeting, the Engineer and Contractor will collectively determine the test method for measuring asphalt content (AC) using *MTM 319 (Determination of Asphalt Content from Asphalt Paving Mixtures by the Ignition Method)* or *MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures)*. Back calculation will not be allowed for determining asphalt content.

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual* and the *Michigan Quality Assurance Procedures Manual*, and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory* (AMRL) accredited for *AASHTO T30* or *T27*, and *AASHTO T164* or *T308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 14 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendars days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide QA test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from *MTM 319*. Gradation (*ASTM D5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established

at the pre-production meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

For production/mainline type paving, the mixture may be accepted by visual inspection up to a quantity of 500 tons per mixture type, per project (not per day). For non-production type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment per the Measurement and Payment section of this special provision.

Contractor operations will be suspended when the mixture is determined to be out-of-specification, but contract time will continue to run. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. Submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties will be taken into consideration. Production and placement cannot resume until receipt of the Engineer's approval to proceed.

Pavement in-place density will be measured using one of two approved methods. The method used for measuring in-place density will be agreed upon at a pre-production or preconstruction meeting.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to paving of subsequent lifts and being open to traffic.

Option 1 - Direct Density Method

Use of a nuclear density gauge requires measuring the pavement density using the Gmm from the JMF for the density control target. The required in-place density of the HMA mixture must be 92.0 to 98.0 percent of the density control target. Nuclear density testing and frequency will be in accordance with the *MDOT Density Testing and Inspection Manual*.

Option 2 - Roller Method

The Engineer may use the Roller Method with a nuclear or non-nuclear density gauge to document achieving optimal density as discussed below.

Use of the density gauge requires establishing a rolling pattern that will achieve the required in-place density. The Engineer will measure pavement density with a density gauge using the Gmm from the JMF for the density control target.

Use of the Roller Method requires developing and establishing density frequency curves, and

meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer's recommended procedures.

Table 2: Minimum Number of Rollers Recommended Based on Placement Rate

Average Laydown Rate, Square Yards per Hour	Number of Rollers Required (a)	
	Compaction	Finish
Less than 600	1	1 (b)
601 - 1200	1	1
1201 - 2400	2	1
2401 - 3600	3	1
3601 and More	4	1
a. Number of rollers may increase based on density frequency curve.		
b. The compaction roller may be used as the finish roller also.		

After placement, roll the HMA mixture as soon after placement as the roller is able to bear without undue displacement or cracking. Start rolling longitudinally at the sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drum. Ensure each required roller is 8 tons minimum in weight unless otherwise approved by the Engineer.

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been adhered to. The Engineer can stop production when the roller pattern is not adhered to.

d. Measurement and Payment. The completed work, as described, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified below.

Base Price. Price established by the Department to be used in calculating incentives and adjustments to pay items and shown in the contract.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt

of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractors QC test results for the corresponding QA test results must result in an overall payment greater than QA test results otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the lab once dispute resolution testing is requested. The dispute resolution sample will be sent to an independent lab selected by the Local Agency, and the resultant dispute test results will be used to determine the penalty per parameter, if any. Ensure the independent lab is a MDOT QA/QC qualified lab or an AMRL HMA qualified lab. The independent lab must not have conflicts of interest with the Contractor or Local Agency. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 2 tolerance limits, the 10,000 gram sample part retained for possible dispute resolution testing will be sent, within 4 calendar days, to the MDOT Central Laboratory for further testing. The MDOT Central Laboratory's test results will be used to determine the penalty per mixture parameter, if any. If the MDOT Central Laboratory's results do not confirm the mixture parameter is out-of-specification, then no price adjustment is required. If the MDOT Central Laboratory's results show that the mixture is out-of-specification and the Engineer approves leaving the out-of-specification mixture in place, the contract base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

In the case that the Contractor disputes the results of the test of the second sample obtained for a particular day of production, the test turn-around time frames given would apply to the second test and there would be no time frame on the first test.

The laboratory (MDOT Central Laboratory or independent lab) will complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples.

In all cases, when penalties are assessed, the penalty applies to each parameter, up to two parameters, that is out of specification.

Table 3: Penalty Per Parameter

Mixture Parameter out-of-Specification per Acceptance Tests	Mixture Parameter out-of-Specification per Dispute Resolution Test Lab	Price Adjustment per Parameter
No	N/A	None
Yes	No	None
	Yes	Outside Range 1 but not Range 2: decrease by 10%
		Outside Range 2: decrease by 25%

The quantity of material receiving a price adjustment is defined as the material produced from the time the first out-of-specification sample was taken until the time the sample leading to the first in-specification test was taken.

Each parameter of Table 1 is evaluated with the total price adjustment applied to the contract base price based on a sum of the two parameter penalties resulting in the highest total price adjustment as per Table 4. For example, if three parameters are out-of-specification, with two parameters outside Range 1 of Table 1 tolerance limits, but within Range 2 of Table 1 limits and one parameter outside of Range 2 of Table 1 tolerance limits and the Engineer approves leaving the mixture in place, the total price adjustment for that quantity of material is 35 percent.

Table 4: Calculating Total Price Adjustment

Cost Adjustment as a Sum of the Two Highest Parameter Penalties		
Number of Parameters Out-of-Specification	Range(s) Outside of Tolerance Limits of Table 1 per Parameter	Total Price Adjustment
One	Range 1	10%
	Range 2	25%
Two	Range 1 and Range 1	20%
	Range 1 and Range 2	35%
	Range 2 and Range 2	50%
Three	Range 1, Range 1 and Range 1	20%
	Range 1, Range 1 and Range 2	35%
	Range 1, Range 2 and Range 2	50%
	Range 2, Range 2 and Range 2	50%

Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

Route/Location:		Air Temp:
Control Section/Job Number:		Weather:
Mix Type:	Tonnage:	Gauge:
Producer:	Depth:	Gmm:

Roller #1 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #2 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #3 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Summary: _____
